

Coping Strategies in Young Men
With and Without Drinking Problems

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partial fulfillment of the requirements for
the degree of Doctor of Philosophy (Ph.D.)
in Clinical Psychology

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SUMMARY

Social learning theory (Abrams & Niaura, 1987) assumes that individuals who lack effective coping strategies are more likely to drink in response to stressful situations. A review of the literature suggests that coping strategies have not typically been studied in the context of a specific theory of alcohol abuse. Consequently, little progress has been made in the understanding of possible links between alcohol abuse and the use of coping strategies. The primary objective of the present study was to assess whether drinking problems are associated with specific coping strategies. Coping strategies were defined according to the coping models of Lazarus and Folkman (1984), Tobin, Holroyd, Reynolds and Wigal (1989) and Rosenbaum (1980). It was hypothesized that students with drinking problems, in comparison to students with no drinking problems, would report engaging less in self-control and problem-focused strategies and more in avoidant coping strategies. A secondary objective was to determine whether these coping characteristics are associated with a family history of drinking problems, a risk factor for drinking problems.

One hundred and eighty-nine male university students completed screening questionnaires about their alcohol and drug consumption and about the drinking behaviors of their family members. Students accepted for this study met the criteria for one of the following groups: (a) no family history of drinking

problems (FH-) and no drinking problems, (b) FH- and drinking problems, (c) family history of drinking problems (FH+) and no drinking problems, or (d) FH+ and drinking problems. Students completed self-report questionnaires on the reactions they experience in stressful situations. Self-control strategies were assessed by the Self-Control Schedule (Rosenbaum, 1980), and task-oriented and avoidant strategies by the Coping Inventory for Stressful Situations (Endler & Parker, 1990a). The last questionnaire was repeated for three different situations: (a) negative emotion, (b) interpersonal conflict, and (c) pressure to drink.

Multivariate analyses of variance showed that students with drinking problems, in comparison to students without drinking problems, reported engaging less in self-control and task-oriented coping strategies. However, students with drinking problems did not report engaging more in avoidant strategies. This finding was contrasted with the results of other studies in which avoidant strategies were found to be related to alcohol abuse. Finally, there were no significant differences in coping between FH+ students and FH- students. The potential relevance of coping to a model of alcohol abuse was discussed as well as its practical implications. For example, students with drinking problems might benefit from being taught task-oriented strategies and self-control skills, in addition to specific skills to reduce drinking.

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1. REVIEW OF THE LITERATURE

1.1 Introduction

Approximately 5 to 15 percent of the population consumes large amounts of alcohol or reports problems related to drinking (Hilton, 1987; Kamerow, Pincus, & Macdonald, 1986). Similar and higher percentages of heavy drinkers have been reported in male university students (Schall, Kemeny, & Maltzman, 1992). Although students who drink heavily will not necessarily remain heavy drinkers after finishing university, some students experience negative consequences of alcohol use, such as poor grades and driving-while-impaired charges, that may affect their future. Negative consequences of alcohol use also affect other individuals such as family members, friends, and victims of motor vehicle accidents caused by intoxicated drivers.

Although students may have different drinking patterns than non-students (Crowley, 1991), the high prevalence of drinking in a student population justify the choice of this population for the study of drinking problems. Another advantage of a student population is that characteristics associated with drinkers who have not progressed to late stages of alcohol dependence can be studied. In studies of alcohol use, students are usually screened by self-report questionnaires for alcohol use. They do not receive a DSM-III-R assessment and diagnosis of alcohol abuse or alcohol dependence. The severity of drinking problems is assumed to be lower than in a clinical population. The literature on

alcohol use in the student population has included different measures and criteria to define the severity of drinking. Terms including "alcohol abusers" and "problem drinkers" have been used to describe students who consume large amounts of alcohol. The criteria vary from one study to another and there are no consistent differences between the terms. In the following literature review, the term reported will be the one originally used in the article.

1.2 Alcohol Abuse and Social Learning Theory

One of the most comprehensive theories of alcohol use and abuse has been developed from Bandura's social learning theory (Bandura, 1969, 1977, 1978, 1982, 1985). Abrams and Niaura (1987) summarized the major principles of social learning theory pertaining to alcohol use and abuse. Briefly, social learning theory suggests that there is no essential factor (i.e., personality characteristic, genetic marker) or combination of factors responsible for alcohol abuse. Instead, the assumption of social learning theory is that there are multiple biopsychosocial pathways to alcohol abuse. Alcohol abuse is not only a product of individual and environmental factors. The individual's drinking behavior creates reciprocal interactions with these factors. For example, an individual who does not get along with his family may find an escape in drinking. If the drinking behavior increases, it is likely that interpersonal tensions will also increase. If

the drinking behavior persists, a vicious circle of negative person-environment interactions is produced.

Fortunately, the individual has the option of regulating his behavior: "the central thesis of social learning theory of alcohol use is that responsible alcohol use depends on cognitive self-regulation in a stressful world where many "quick fixes" are readily available." (Abrams & Niaura, p.140). To self-regulate his/her emotions, thoughts and behaviors, the individual may choose certain activities over others. To be able to do this, the individual must have a rich repertoire of cognitive and behavioral skills to deal with a variety of situations. If the individual drinks, he/she also needs specific coping skills to regulate his/her alcohol consumption.

There is empirical evidence that alcohol consumption is used by some individuals as an escape strategy. These may be persons having low confidence in their problem-solving skills (Williams & Kleinfelter, 1989) or who feel vulnerable to stress and lack confidence in themselves (Timmer, Veroff, & Colten, 1985). A review of the literature by Sher (1987) also suggests that there is empirical support for the hypothesis that the availability of alternative coping responses decreases alcohol consumption. Social learning theory proposes that use of coping strategies may increase self-efficacy and reduce the need to use alcohol. On the other hand, there is also the possibility that alcohol use may serve to prevent the development of appropriate coping skills.

Few studies have assessed how alcohol abusers deal with tension and unpleasant emotions or address problems, other than by drinking. In other words, one may ask whether the problem is only that alcohol abusers drink too much or whether alcohol abusers also differ from non-alcohol abusers in how they cope with stressful situations. The current formulation of social learning theory (Abrams & Niaura, 1987) is vague concerning ways of coping with stress or ways of regulating alcohol consumption. To assess self-regulation and coping strategies, one can turn to definitions of these concepts in the literature.

1.2.1 Coping Strategies

1.2.1.1 Learned Resourcefulness

There are different approaches to the assessment of coping strategies. One emphasizes the trait or individual dispositions that are assumed to be relatively stable over time. In this model, a person might be classified as having a large repertoire or a small repertoire of coping strategies. Rosenbaum (1980, 1988, 1989, 1990) has used the term "learned resourcefulness" to describe an acquired cognitive and behavioral repertoire of self-control skills. The concept of learned resourcefulness described by Rosenbaum (1990) includes the following aspects of self-control:

- (a) use of cognitions and self-instructions to cope with emotional and physiological responses, (b) application of problem-solving strategies (e.g. planning, problem

definition, evaluating alternatives and anticipation of consequences), (c) ability to delay immediate gratification, and (d) a general belief in one's ability to self-regulate internal events. (p.15)

Only one study has examined learned resourcefulness in relation to alcohol use. Carey, Carey, Carnrike and Meisler (1990) gave the Self-Control Schedule (SCS, Rosenbaum, 1980) and other self-report questionnaires to 175 undergraduate male and female students. They found that students reporting higher levels of alcohol consumption had lower levels of learned resourcefulness. The authors interpreted their findings as suggesting that students with high self-control scores may be protected against alcohol abuse.

1.2.1.2 Problem-Focused and Avoidant Coping Strategies

Lazarus and Folkman (1984) divided coping efforts into two categories: (a) problem-focused coping (strategies directed at managing or altering the problem causing the distress), and (b) emotion-focused coping (strategies aimed at regulating the emotional response). Although according to Lazarus and Folkman an adaptive or effective coping response cannot be defined without considering the situational context, some authors have assumed that active, problem-focused coping is generally adaptive (Carver, Scheier, & Weintraub, 1989; Cooper, Russell, Skinner, Frone, & Mudar, 1992; Folkman & Lazarus, 1988; Holahan & Moos,

1987). In a meta-analysis of studies of coping with stress, Matheny, Aycock, Pugh, Curlette, and Silva Cannella (1986) reported that a problem-solving approach seemed one of the most effective strategies to combat stressors.

In contrast, the effectiveness of emotion-focused strategies is more difficult to assess because they include a wide variety of strategies such as distancing, escape-avoidance, accepting responsibility, self-control, seeking social support, and positive appraisal (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). One type of emotion-focused coping, avoidance, has been the most studied coping strategy in relation to alcohol use. If alcohol use has been reported to be an escape mechanism by alcohol abusers (Cooper, Russel, & George, 1988), it is possible to hypothesize that other avoidant strategies will also be preferred by alcohol abusers.

Avoidant styles of coping have been assumed to be maladaptive (Cronkite & Moos, 1984; Aldwin & Revenson, 1987). An avoidant strategy can be defined as "a strategy that focuses attention away from either the source of stress or away from one's psychological/somatic reaction to the stressor" (Suls & Fletcher, 1985, p.250). Focusing attention away from the problem may interfere with its resolution. Although avoidant behaviors may be appropriate in some circumstances, disengaging from the problem may also result in emotional numbness or disruptive behaviors when there is an attempt to keep threatening affects or cognitions out of awareness (Roth & Cohen, 1986).

In the literature on addiction, problem-focused strategies are the second coping strategies most studied. Problem-focused strategies, as opposed to avoidant strategies, have been described by Tobin et al. (1989) as engagement versus disengagement coping. In a factor analysis, these authors found support for problem-focused engagement coping (cognitive and behavioral strategies used to change the situation or the meaning of the situation) and problem-focused disengagement coping (cognitive and behavioral strategies to avoid the situation).

Another formulation of avoidance as opposed to problem-focused strategies has been suggested by Suls and Fletcher (1985), who reviewed the effects of avoidant and attention strategies on the reduction of stress, anxiety, and pain. These authors reported that, although avoidant strategies might be more effective in the short term, attention strategies appeared more effective in the long term.

The addiction literature contains contradictory findings on coping strategies. The main difficulty is that coping strategies have been defined and classified differently from study to study. Billings and Moos (1983) defined avoidance as strategies to discharge emotions or to ignore the problem. They reported that relapsed alcoholics, in comparison to recovering alcoholics and non-alcoholic controls, made more use of avoidant coping strategies. In another study, Moos, Brennan, Fondacaro and Moos (1990) found that older men and women with drinking problems were

more likely to use avoidant strategies than were those without drinking problems.

When both problem-focused and avoidant coping strategies have been assessed in alcohol abusers, the most common finding has been that alcohol use is associated with avoidant coping but not with problem-focused coping. In a study by Moos, Finney, & Chan (1981), recovering alcoholics who relied on avoidant coping strategies were more likely to drink in response to stressful events. However, the use of problem-focused coping did not predict alcohol use in response to stress.

Cooper et al. (1988) interviewed 119 adults meeting the DSM-III criteria for alcohol abuse or dependence and 948 drinkers with no such history. They found that the tendency to drink alcohol to escape, avoid, or regulate unpleasant emotions predicted alcohol consumption and problem drinking. Drinking to cope with unpleasant emotions was most likely to occur in those who relied on an avoidant style of coping with emotions, but was not related to the use of problem-focused strategies.

Conte, Plutchik, Picard, Galanter and Jacoby (1991) assessed 23 men and 17 women in an alcohol detoxication unit and compared them to 17 men and 23 women outpatients from a medical clinic. They found that alcoholics tended to cope by avoiding their problems but did not differ from control subjects in the use of problem-solving strategies. Most of the differences in coping strategies were found between the women in the two groups. Although these results are limited because of the small sample

size and the lack of data supporting the reliability and validity of the questionnaire, they suggest that avoidant strategies may be more related to alcohol abuse than are problem-focused strategies.

In a recent longitudinal study, problem-focused strategies were found to be inversely correlated with alcohol use. Finney and Moos (1992) assessed 429 persons who were treated for alcoholism in an inpatient program. Coping responses were assessed at 2 and 10 years after treatment. Subjects were asked to consider a stressful event and to describe how they handled it. Responses were classified as active coping (cognitive or behavioral) or avoidant coping, according to the Health and Daily Living Form (Moos, Cronkite, Billings, & Finney, 1984). Partial correlations were obtained reflecting the variation in alcohol use accounted by coping factors. Patients who reported engaging in more active cognitive coping at two years posttreatment tended to drink less eight years later. Assessment at the 10-year follow-up showed that avoidant coping was positively correlated with alcohol consumption, whereas active cognitive coping was inversely correlated with alcohol use. A number of studies reviewed by Chaney (1989) have also suggested that coping and social skills training of alcoholics results in greater reduction in alcohol use in comparison to untrained groups.

When coping strategies have been studied in non-clinical populations, a wide range of cognitive and behavioral coping

strategies has been found to help problem and non-problem drinkers resist the temptation to drink (Brown, Stetson, & Beatty, 1989; Neidigh, Gesten, & Shiffman, 1988; Stone, Lennox, & Neale, 1985). For example, Werch and Gorman (1988) asked 410 university students how often they used specific strategies to limit their drinking. The strategies were goal setting, self-monitoring, self-reinforcement, self-punishment, stimulus control and alternative activities to drinking. Most of these self-control strategies were problem-focused. Results showed that cognitive-behavioral self-control strategies were reported more often by moderate than by heavy drinkers. It is not surprising that those who drink more report fewer self-control methods to control their drinking. On the other hand it would be interesting to see if those who drink more also report fewer self-control strategies in non-drinking situations.

1.2.2 Situations

One possible reason why problem-focused strategies were found not to differentiate alcohol abusers from non-abusers is that coping strategies were not assessed in high risk situations for drinking. Considering situational factors would be in agreement with Lazarus and Folkman (1984) who proposed that an interactional model, including personal and situational factors, might best describe the coping process. Studies of high risk situations for drinking, using both alcohol abusers and normal

drinkers, have found that some situations are more likely to provide temptations to drink.

In a study by Brown et al. (1989), adolescents described situations in which it was difficult to resist drinking. They indicated that social pressure to drink was present in 91 percent of these situations. Studies of relapse situations for alcoholics also suggest that social pressure to drink is one of the most common relapse situations (Annis & Davis, 1988; Annis & Graham, 1988; Litman, Eiser, Rawson, & Oppenheim, 1979; Marlatt, 1978; 1979a, b; Marlatt & Gordon, 1980; 1985). Two other common relapse situations are negative emotional states (e.g., frustration or anger) and interpersonal conflicts. The latter two situations do not necessarily involve the use of alcohol and we do not know if individuals who have drinking problems use inadequate coping strategies to deal with such situations.

1.3 Family History of Drinking Problems

Having a family history of alcoholism has been studied extensively as a risk factor for drinking problems. Both clinical studies (Cloninger, Bohman & Sigvardsson, 1981; Goodwin, Schulsinger, Hermansen, Guze, & Winokur, 1973) and general population studies (Barnes & Welte, 1990; Dawson, Harford, & Grant, 1992) have shown that a family history of alcoholism is associated with an increased probability of alcohol abuse and dependence. The family-history vulnerability has been observed particularly in sons of male alcoholics.

The knowledge of variables mediating this risk is limited (Sher, Walitzer, Wood, & Brent, 1991). The consensus in the literature is that at least part of the vulnerability to develop drinking problems is inherited (Goodwin, 1988; Schuckit, 1987). A number of studies have attempted to identify physiological, behavioral, and cognitive variables that distinguish individuals with a family history of alcoholism from individuals without such a history. For example, laboratory investigations have shown that men with a family history of alcoholism experience greater stress-response-dampening effects from alcohol, such as a more pronounced attenuation of heart rate response to a stressor after alcohol consumption, than do men without such a history (Finn, Earleywine, & Pihl, 1992; Sher, 1987). As suggested by Cooper et al. (1992), such findings raise the possibility that a family history of alcoholism may genetically predispose an individual to use alcohol as a strategy to cope with stress.

Other etiological theories propose that personality traits are fundamental to the transmission of alcoholism (Cloninger et al. 1981; Pihl, Peterson, & Finn, 1990; Tarter, Alterman, & Edwards, 1985). Cognitive and behavioral characteristics such as impulsivity have been associated with risk of alcoholism in adult children of alcoholics (Mann, Chassin, & Sher, 1987; Rogosch, Chassin & Sher, 1990; Saunders & Schuckit, 1982; Sher, 1987; Tarter & Edwards, 1988). Offspring of alcoholics have been found to be more likely to suffer from symptoms of hyperactivity and

conduct disorders than are children of non-alcoholics (Frances, Timm, & Bucky, 1989; McKenna & Pickens, 1981; Werner, 1986).

Other authors have hypothesized an environmental intergenerational transmission of alcohol problems by comparing parent and offspring patterns of alcohol use (Harburg, Gleiberman, DiFranceisco, Schork, & Weissfeld, 1990; Orford & Velleman, 1991). The drinking patterns were found to be associated and assumed to be learned by imitation. Coping strategies in alcoholics and their offsprings have not been studied but could be explored as a possible factor in the transmission of vulnerability to drinking problems.

Genetic and environmental contributions to drinking problems are not necessarily mutually exclusive. The assumption of social learning theory is that biological and/or acquired predisposing individual differences may determine initial patterns of alcohol consumption (Abrams & Niaura, 1987). Coping strategies could be learned in the family or transmitted with inherited personality characteristics. A distinction between hereditary versus environmental transmission of coping and drinking problems is beyond the scope of this thesis. If differences in coping are found, one may want to explore further hereditary versus environmental mechanisms of transmission.

Although most studies of coping strategies and alcohol use have not considered family history, a few studies found differences in coping strategies according to this factor. Clair and Genest (1987) studied a sample of university students and

found that daughters of alcoholics reported engaging in avoidant behaviors (smoking, eating, sleeping) more than did daughters of non-alcoholic parents. The Ways of Coping Checklist also showed that daughters of alcoholics reported more emotion-focused strategies (e.g., wishful thinking and help-seeking avoidance) than daughters of non-alcoholic parents. There was no significant differences on problem-focused strategies.

Brown et al. (1989) studied the efficacy of coping strategies to resist the temptation to drink in 66 adolescents falling into one of three groups: (a) alcohol abusers, (b) non-abusing adolescents with one alcoholic parent in treatment (FH+), (c) non-abusing adolescents with no family history of alcoholism (FH-). Participants were asked to describe verbally three recent situations where they had felt tempted to drink and wanted to resist. Even with the small sample size, FH+ non-abusing adolescents reported different coping strategies than did FH- non-abusing adolescents. For example, FH+ non-abusing adolescents reported more participation in alternative activity than did FH- non-abusing adolescents. Unfortunately, FH+ and FH- abusing students were not compared.

Slavkin, Heimberg, Winning and McCaffrey (1992) examined the problem-solving performance and self-appraisals of problem-solving ability of college students with and without a parental history of problem drinking. Problem solutions of current alcohol abusers were rated as significantly less effective than those of non abusers. Also, contrary to predictions, children of problem

drinkers were rated as slightly more effective in their problem-solving skills than were children of non-problem drinkers. However, among the alcohol abusers, those with a parental history of problem drinking appraised themselves as poorer problem-solvers than did those with no parental history of problem drinking. If students with a parental history of problem drinking are less confident in their problem-solving skills, it would be interesting to assess whether they rely less on such skills for coping in stressful situations.

1.4 Summary of the Literature

Although studies differ in sample characteristics, measurement procedures and instruments, they appear to suggest that coping strategies are related to alcohol use and abuse. However, the study of coping strategies has not typically been embedded in a theoretical framework and little progress has been made in understanding the relationship between alcohol use and coping strategies. The two most studied coping strategies in drinkers have been avoidant strategies and problem-focused strategies. Avoidant strategies have been associated with greater alcohol consumption in alcoholics. Problem-focused strategies have been associated with reduced drinking in recovering alcoholics. These strategies have not been well studied in non-clinical populations and in children of alcoholics to assess whether coping strategies are associated with drinking problems and a family risk for drinking problems. Finally, there appear to

be high-risk situations for drinking that have not been evaluated with respect to these coping strategies.

2. OBJECTIVES AND HYPOTHESES

2.1 Drinking Problems and Coping Strategies

"Drinking problems" are defined here as "a pattern of alcohol use that has contributed to negative consequences such as physical, interpersonal, or legal problems". The primary aim of this study is to examine the relation between the presence or absence of drinking problems and differences in coping strategies. It will not show the direction of the relation, but may provide specific information regarding which coping strategies (problem-focused, avoidance, or self-control) are associated with drinking problems.

The general assumption of this thesis is that coping strategies may be related to the development and maintenance of drinking problems, either as antecedents or consequences. Social learning theory predicts that individuals with drinking problems will show differences in coping not only in alcohol-related situations but also in other situations that might lead to drinking. If differences in coping are found in stressful situations not directly related to alcohol use as well as in situations related to alcohol use, this would add support for the hypothesis that drinking problems are associated with particular

coping strategies. The following hypotheses for both non-alcohol related and pressure-to-drink situations are advanced for testing in this thesis.

2.1.1 Hypothesis 1

Individuals with drinking problems, compared to individuals without drinking problems, will report engaging:

1. less in self-control strategies;
2. less in problem-focused strategies;
3. more in avoidant strategies.

2.2 Family History of Drinking Problems

The literature on sons of male alcoholics suggests that a family history of alcoholism is a risk factor for the development of drinking problems. Several mechanisms are possible. Drinking problems may be transmitted (a) genetically via biological or personality factors or (b) environmentally through behaviors learned in the family.

Another assumption is that there should be a relation between a familial predisposition to drinking problems and coping strategies. Alcohol use in the family may interfere with adequate learning of coping strategies. The second aim of this study is to compare the coping strategies of students with and without a family history of drinking problems. This is a secondary objective because the effect is more indirect, as only a fraction

of sons of alcoholics will develop drinking problems.

Consequently, the effect should be smaller.

An additive effect or an interaction may exist between drinking problems and family history. The factors would be additive if they independently influenced the individual's coping strategies. In this case, students exposed to abusive drinking in their family would report more maladaptive coping than would students with no family history of drinking problems. There is empirical support that alcoholism and family history of alcoholism have additive effects on a number of psychosocial variables (Wagner Glenn & Parsons, 1989).

In an interaction model, the effect on coping may be seen particularly in those individuals who have both drinking problems and a family history of drinking problems. For example, it has been argued that a large number of the children of alcoholics who were at risk to develop drinking problems may already have developed drinking problems by the time they are assessed (Sher, 1991a). This would suggest that if coping strategies are related to risk of drinking problems in sons of parents with drinking problems, deficits in coping strategies would be most apparent in individuals with both drinking problems and a family history of drinking problems. The additive and interaction models are reflected in hypotheses 2 and 3, respectively.

2.2.1 Hypothesis 2: Additive Model

Students with a family history of drinking problems, in comparison to those with no such family history, will report engaging:

1. less in self-control strategies;
2. less in problem-focused strategies;
3. more in avoidant strategies.

2.2.2 Hypothesis 3: Interaction

Individuals who have both drinking problems and a family history of drinking problems, compared to those in the other three groups, will report engaging:

1. less in self-control strategies;
2. less in problem-focused strategies;
3. more in avoidant strategies.

2.3 Research Question on Emotion-Focused Coping Strategies

As presented in the literature review, the most studied coping strategy with alcohol abuse has been avoidance, a form of emotion-focused coping. Lazarus and Folkman (1984) propose other forms of emotion-focused coping such as expressing negative emotions, self-blame, wishful thinking and seeking social support. There has been little research or theoretical interest in the relations between emotion-focused coping strategies and alcohol use. Because emotion-focused coping strategies are

frequently studied in other areas of coping and included in most coping scales, emotion-focused coping will be reported for subjects with and without drinking problems as well as for subjects with and without a family history of drinking problems.

Lazarus and Folkman (1984) suggest that overemphasis on emotion-focused strategies might interfere with problem-focused strategies. In the Coping Inventory for Stressful Situation used in this study, emotion-focused strategies consist mainly of becoming upset and blaming oneself. If alcohol abusers feel more negative emotions in high risk situations for drinking, they may be more prone to escape from the problem or situation and to rely on alcohol to cope. This type of emotion-focused coping has not been studied in relation to alcohol use but have been found to be related to psychological distress and psychopathology (Endler & Parker, 1990a).

Specific hypotheses on emotion-focused coping can not be made directly from the theoretical model presented. However, as an exploratory hypothesis, emotion-focused coping strategies are expected to be associated with drinking problems and family history of drinking problems and to correlate positively with avoidance strategies.

3. METHOD

3.1 Subjects

3.1.1 Identifying Students Eligible For The Study

Participants in the study were male volunteers recruited from undergraduate classes at the University of Ottawa and Carleton University. The research proposal was approved by both the University of Ottawa and Carleton University Ethics Committees.

Students from Carleton University received one course credit for completing the screening questionnaires and one additional credit for completing the second series of questionnaires. Students were asked to complete screening questionnaires for several studies during a one-hour class period. Students were told that the information would be treated confidentially and that they would receive their credit even if they refused to answer some questions or some questionnaires. Students could also refuse later to participate in the study even if they had completed the screening questionnaires.

Male subjects were recruited because alcohol abuse has been reported to be two to four times more prevalent in men than in women (Adrian, 1984; Hilton, 1987; Schall et al., 1992). Also, studies of family history of alcoholism have suggested that sons of male alcoholics are at particular risk for the development of early onset alcohol abuse (Cloninger et al., 1981; Schuckit, 1987; Tarter, Alterman & Edwards, 1985).

Inclusion Criteria

The inclusion criteria for completing the screening questionnaires for this study were:

1. Male student;
2. Good comprehension of written English;
3. If eligible, willing to complete a second 30-minute questionnaire within the next month;
4. Never treated for alcohol- or drug-related problems. This was to exclude students who may have had drinking problems and learned coping strategies in treatment.

The screening questionnaires were completed by 1013 students. On the basis of their answers, 550 students were excluded from the study for the following reasons: 382 did not meet the criteria for one of the study groups according to their drinking problems or family history of drinking problems (criteria are described in the Method section below); 127 did not give a phone number or did not complete all sections of the questionnaires; 24 were adopted or did not know one of their biological parent; 17 indicated that they did not drink for religious, health or other personal, unspecified reasons.

Two hundred and fifty-five students met the study criteria but did not complete the second series of questionnaires for the following reasons: 59 could not be reached; 9 refused to participate; 39 agreed to participate but did not come to their appointment; 148 were not called --mostly students with no

drinking problems and no family history of drinking problems-- because the sample size was sufficient. Also, there were no more students meeting criteria for the other groups. Including more students would thus have resulted in grossly unequal numbers in the various groups.

3.1.2 Participants in the Second Series of Questionnaires

Two hundred and eight students completed the second series of questionnaires. They comprised 77% of those asked to complete the second series of questionnaires. Fourteen students were excluded from the data analysis because a second check of the inclusion and exclusion criteria--after collection of all data--revealed that they met some of the exclusion criteria. A final group of 194 students composed the research sample. They comprised 21% of those who completed the screening questionnaires. All students who were eligible but who did not complete the second questionnaires were compared to students who completed the second questionnaires. This was done to assess generalization of results to students who did not participate in the second series of questionnaires. This comparison is presented in the Results section.

3.2 Measures

3.2.1 Independent Variables

Two categories of independent variables were assessed: (a) drinking problems and (b) family history of drinking problems. A detailed description of measures used to assess each independent variable follows.

3.2.1.1 Alcohol Use and Drinking Problems

Drinking problems versus no drinking problems were the preferred terms in this study. One advantage of using drinking problems rather than alcohol abuse is that the DSM-III-R diagnosis of alcohol abuse requires a clinical interview. Problem Drinkers versus Non-Problem Drinkers was also eliminated because the control sample includes nondrinkers as well as non-problem drinkers.

To determine the assessment of drinking problems, it was assumed that there is a continuum between occasional drinking and drinking problems. For the generalization of results, it is best to include as many individuals from the continuum as possible. One difficulty in assessing the severity of alcohol use is that one measure of alcohol consumption (e.g., frequency) may suggest a different degree of severity for an individual than another measure (e.g., quantity). The chosen method in this study was to include as many students as possible along the continuum of alcohol use but to exclude students if some of the measures did not agree (i.e., did not suggest clearly either drinking problems

or no drinking problems). The criteria for drinking problems and no drinking problems are described in detail below.

Michigan Alcoholism Screening Test

Drinking problems were assessed by the MAST (Michigan Alcoholism Screening Test, Selzer, 1971, Appendix A). The MAST is a 10-minute, self-administered questionnaire consisting of 24 questions about drinking behaviors and negative consequences of drinking. Negative consequences of drinking include psychological, interpersonal, familial, physical, and legal problems. MAST scores can be used to rank individuals along a continuum representing the consequences of their drinking (Skinner, 1979).

A score of five or more on the MAST has been suggested by Selzer (1971) as an indication of alcoholism. Although recent empirical evidence suggests that higher cutoff scores should be used for a clinical population (Ross, Gavin, & Skinner, 1990), most empirical support for the validity and reliability of the MAST has utilized a cutoff score of five.

Several studies and literature reviews have supported the reliability and validity of the MAST as a screening instrument for alcohol abuse (Gibbs, 1983; Hedlung & Vieweg, 1984; Jacobson, 1983, 1989; Magruder-Habib, Griggs Fraker, & Peterson, 1983; Powers & Spickard, 1984). Gibbs (1983) and Hedlung and Vieweg (1984) reviewed the literature on the reliability of the MAST. Internal consistency estimates using alpha coefficients ranged

from .83 to .95. Most of the test-retest reliability coefficients varied between .85 and .97 for intervals ranging from a few days to five months.

Literature reviews by Gibbs (1983) and Hedlung and Vieweg (1984) suggest that MAST scores agree with diagnostic interviews and other alcohol questionnaires such as the MacAndrew Alcoholism Scale of the MMPI. The sensitivity of the MAST--its accuracy in identifying diagnosed alcoholics-- varied between 79% and 100%. Its specificity --its ability to identify non-alcoholics correctly-- ranged from 59% to 95%, with most of the studies reporting over 75%. The sensitivity of the test tends to be somewhat higher than its specificity. In other words, false positive errors are more frequent than false negative errors. In a screening procedure, a cutoff score of five on the MAST might be used to identify subjects who are more likely to have drinking problems, and a measure of alcohol consumption would be helpful to exclude those who do not regularly drink alcohol. A cutoff score of five has the advantage of including a large population of students. Furthermore, MAST scores using this cutoff score have received support as a reliable and valid screening measure for drinking problems.

While most of the reliability and validity assessments of the MAST have been derived from clinical populations, there is also evidence that the MAST is useful as a screening device for alcohol problems in students. The rate of student with drinking problems determined by the MAST (Favazza & Cannell, 1977; Svikis,

McCaul, Turkkan, & Bigelow, 1991; Silver, Capon, & Kuperschmit, 1985) is consistent with most studies of drinking among college students. Approximately 20 to 25 percent of students appear to have drinking problems (Berkowitz & Perkins, 1988).

There are two limitations to the MAST. The first is that it addresses only alcohol use and does not include other drugs. Questions on drug use in this study will be described below. The second is that the questions are formulated in the past tense and are not restricted to a specific period of time. Although less likely with young adults, some individuals may have experienced negative consequences of alcohol use in the remote but not in the recent past. To obtain more specific information on the frequency and intensity of alcohol and other drug consumption, the following questions were asked in specific reference to the past 12 months. The first four questions are presented in Appendix B and the fifth question is presented in Appendix C.

Questions on Alcohol and Drug Consumption

1. What was your usual pattern of alcohol use? (never drank alcohol, drank less than once a month, drank one to three times a month, drank one to three times a week, drank four or more times a week, or drank almost daily).

2. In a typical week (seven-day period), how many days did you usually consume alcohol?

3. On a typical drinking day, how many drinks do you usually have? One standard drink was defined as 12 oz (341 ml) beer or 5 oz (142 ml) glass of wine or 1 1/2 oz (43 ml) of whisky, rum, etc. (Minister of Supply and Services Canada, 1987). The usual number of drinking days in a 7-day period (question 2) was multiplied by the usual number of standard drinks per drinking day (question 3) to obtain the total number of drinks consumed in one week.

4. What was the most number of drinks that you would drink in one day? Students were also asked how many times a month they would drink this number of drinks. This was used with question 2 and 3 to eliminate students who would score lower than five on the MAST but who would consume more than 14 drinks per week.

5. For each drug or drug category (cannabis, hallucinogens, tranquilizers/ sedatives, amphetamines, cocaine, narcotics/ analgesics), indicate how often you have consumed them in the past 12 months: never, less than once a month, once a month, or more than once a month. Scores were obtained for each drug and a single measure of frequency of use was obtained by taking the score for the most frequently used drug.

There is empirical support for the reliability of self-reports of alcohol and drug consumption in non-clinical populations. Williams, Aitken and Malin (1983) administered two questionnaires about the quantity and frequency of alcohol use. One form referred to the past 14 days and the second to the past 28 days. They also administered the same questionnaires five to

seven days later. The average correlation (Pearson) for the alternate forms and for the test-retest reliability was .91. They also compared self-reports of alcohol consumption with a daily record over a 30-day period. The Pearson correlations averaged about .80.

Drug use is a sensitive issue and it can be argued that self-reports of drug use may be less reliable and valid than self-reports of alcohol use. However drug use questionnaires, similar to the one used in this study, have been shown to be reliable and valid (Mills & Noyes, 1984; Oetting & Beauvais, 1983).

Other Questions Concerning History of Alcohol/Drug Use

Other measures were used for descriptive purposes and research questions but were not considered for inclusion or exclusion criteria. These questions concerned the age when regular alcohol use began, drug of choice--including alcohol--and driving while intoxicated:

1. How old were you when you began to drink (do not refer to an occasional experimentation but a pattern of use like parties, weekend, celebration)? The rationale for this question is that earlier onset of alcohol use may have interfered with the opportunity to learn coping strategies.

2. If you could choose only one substance, which one would you prefer (alcohol or any drug)? This question was asked to assess if alcohol was the most preferred substance or if a discussion of social learning theory of alcohol use should also include other drugs.

3. Have you driven in the past 12 months after having two or more drinks in the previous hour? This behavior can be considered a drinking problem because of the potential negative consequences (accidents, legal charges, etc.). If differences are found between groups, they could suggest a target for teaching coping strategies in intervention programs. Task-oriented coping strategies could be used to plan alternative strategies to driving after drinking alcohol.

3.2.1.2 Family History of Drinking Problems

F-SMAST and M-SMAST

Studies suggest that young adults describe their parents' drinking patterns and problems accurately as compared to their parents' self-reports (Cotton, 1979; Levenson, Oyama, & Meek, 1987; O'Malley, Carey, & Maisto, 1986). The family history of drinking problems was assessed by having each subject complete a short version of the MAST, the SMAST (Selzer, Vinokur, & Rooijen, 1975), in reference to their biological father's drinking behavior (F-SMAST, Appendix D), and a second in reference to their biological mother's drinking behavior (M-SMAST, Appendix E).

The F-SMAST and M-SMAST were first used by Sher and Descutner (1986). The most comprehensive assessment of the reliability and validity of these tests is provided by Crews and Sher (1992), who screened 3156 first-year university students. They assessed internal reliability of the questionnaires and obtained an alpha coefficient of .87 for the F-SMAST and .74 for the M-SMAST. Two other forms of reliability, test-retest and intersibling correlations, were examined. The most satisfactory levels of test-retest agreement and intersibling agreement was obtained with a cutoff score of five. This was the case for the F-SMAST as well as for the M-SMAST. Test-retest reliability for intervals ranging from 10 days to 3 weeks was .94 for the F-SMAST and .84 for the M-SMAST (Pearson r 's). Intersibling agreement was .94 for the F-SMAST and .84 for the M-SMAST, by the same correlation method.

The concurrent validity of the F- and M-SMAST was assessed using an interview of subjects concerning their family members, the Family History - Research Diagnostic Criteria (FH-RDS, Endicott, Andreasen, & Spitzer, 1975). Kappa values of .74 were obtained for both the F-SMAST and the M-SMAST. Kappa (Fleiss, 1981) is a measure of agreement incorporating a correction for the agreement expected by chance, and provides lower maximum values than does Pearson's r .

A second assessment of concurrent validity was obtained by comparing the parent's own rating on the SMAST to the offspring's rating of their parent's alcohol use. Pearson's correlation

between the mother's SMAST and the M-SMAST was .63 ($n = 389$); the correlation between the father's SMAST and the F-SMAST was .70. Measures of sensitivity and specificity were also obtained. The sensitivity rate was .71 for the F-SMAST and .45 for the M-SMAST. The specificity rate was .88 for the F-SMAST and .98 for the M-SMAST. The low sensitivity of the M-SMAST suggests that a small number of subjects in the no family history of drinking problems group may have had a mother with some drinking problems who was not identified by the M-SMAST.

Questions on Alcohol Use by Second-Degree Relatives

Studies have also shown the need to gather as much information as possible about the family history of alcoholism (Dawson et al., 1992; Wagner Glenn & Parsons, 1989). Subjects were asked how many biological second degree relatives (brothers, sisters, aunts, uncles and grandparents) were or had been alcohol abusers. Half-brothers and half-sisters were excluded (see Appendix F).

The following definition was used for alcohol abuse: "A pattern of drinking which significantly affects an individual's health, relationships, job, etc. In other words, drinking that causes problems". The expression "drinking problems" could have been used instead of "alcohol abuse", to be consistent with the study. However, the questionnaires had already been administered when drinking problems was chosen as the preferred term for this study.

3.2.2 Demographic Variables

Many demographic factors have been found to be related to levels of drinking (Heien & Pompelli, 1987; Kline, 1990; Martin & Pritchard, 1991; Webb, Redman, Hennrikus, Rostas, & Sanson-Fisher, 1990). Students were asked to indicate their age, marital status, area of study, highest year of education completed, highest year of education of father and mother, occupation of father and mother, and ethnic origin (see Appendix G).

3.2.3 Dependent Variables

Dependent measures were (a) self-control strategies and (b) coping responses measured by the Coping Inventory of Stressful Situations. Each of these measures is described in more detail below.

3.2.3.1 Self-Control Strategies

The Self-Control Schedule (Rosenbaum, 1980) is a self-report questionnaire designed to assess an individual's tendency to apply self-control methods in a variety of situations, especially when coping with unpleasant tasks, feelings and thoughts (see Appendix H). The Self-Control Schedule (SCS) consists of 36 items which the subject rates on six-point scales dependent on how he/she feels the item is characteristic of him/her. The internal reliability has been assessed by alpha coefficients ranging between .78 and .84 (Redden, Tucker, & Young, 1983; Rosenbaum,

1980; Rude, 1989). Rosenbaum (1980) reported a test-retest correlation of .86 over a 4-week period.

The SCS has been factor-analysed by several authors (Gruber & Wildman, 1987; Redden et al., 1983; Rude, 1989) and the results have confirmed the construct of learned resourcefulness described by Rosenbaum (1980). Rude (1989) and Redden et al. (1983) obtained very similar factor structures. Rude reported the following five factors: (a) thought management, (b) systematic planful approach, (c) external control of habits, (d) impulsivity and (e) helplessness. Redden et al. (1983) reported (a) control of unwanted thoughts, (b) planful behavior, (c) delay of immediate gratification, (d) impulse control, (e) mood control, and (f) pain control.

Evidence for construct validity can be found in an experiment by Rosenbaum (1980) with a cold pressor test. Subjects in this study had to keep their hand in icy water as long as possible. Rosenbaum reported a positive correlation between SCS scores and the time spent in cold water. Evidence for convergent validity of the SCS can be found in Rosenbaum (1980). SCS scores were negatively correlated with the Rotter Internal-External Locus of Control Scale (Rotter, 1966) and the Irrational Beliefs Test (Jones, 1968). SCS scores were positively correlated with the G Factor "Self-control" of Cattell's 16 Personality Factors (Cattell, Eber, & Tatsuoka, 1970). Gintner, West and Zarski (1989) found that graduate students scoring high on the SCS reported engaging more in problem-focused coping strategies, as

measured by the Ways of Coping Scale (Folkman & Lazarus, 1985) during the week preceding an examination.

3.2.3.2 Coping Strategies

The Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990a, 1990b) is a 5- to 10-minute self-administered questionnaire (see Appendix I). Subjects choose a number from not at all (1) to very much (5) to indicate the extent to which they engage in each activity when they encounter a difficult, stressful, or upsetting situation. The CISS has three scales of coping strategies: task, avoidance, and emotion.

1. **Task.** Sixteen items describe task-oriented strategies aimed at solving the problem or restructuring the problem cognitively.

2. **Avoidance.** Sixteen items describe activities and cognitive changes aimed at avoiding the stressful situation. These avoidant strategies include (a) distraction by other tasks, and (b) social diversion.

3. **Emotion.** Sixteen items describe emotional reactions that are oriented towards self. Reactions include self-blame, self-preoccupation, negative feelings (e.g. getting tense, getting angry). This scale is not used to evaluate the study hypotheses but results will be presented as a research question.

Endler and Parker (1990a) reported good internal consistency reliability for the CISS scales, with alpha coefficients ranging from .83 to .90 for undergraduate students. Six-week test-retest

reliability was assessed. The correlation coefficients varied between .68 and .73 for the task and emotion scales, and between .55 and .60 for the avoidance scale. The construct validity of the CISS was assessed by computing correlation coefficients between the scales of the CISS and those of the Ways of Coping Questionnaire (WCQ, Folkman & Lazarus, 1985). The results supported the use of the CISS in the following way: the CISS task-oriented scale correlated positively with the WCQ problem-focused coping scale, $r = .42$; the CISS emotion scale correlated positively with the emotion-focused coping scale, $r = .35$ to $.69$; and the CISS social diversion scale (avoidance) correlated positively with the WCQ seeking social support scale, $r = .45$.

Endler and Parker (1990a) instructed the subject to think of a variety of stressful situations before answering with his/her typical reaction. However, if coping strategies can differ according to the situation (Moos et al., 1990), it might be more accurate to ask about specific stressful situations. In the present study, subjects were asked to complete the questionnaire in reference to each of three situations. These situations were created on the basis of the literature on high risk situations for drinking in alcohol abusers (Marlatt & Gordon, 1985):

1. Negative emotion: "You are not in a good mood. You have had a bad day and you have a negative feeling or unpleasant emotion".

2. Interpersonal conflict: "You have had an argument or you are not getting along with a member of your family (or friend or employer, etc.)".

3. Social pressure to drink: "You feel that you are pressured by some people to drink more alcohol than you wish or intended."

There was no empirical assessment of how clearly participants were able to picture themselves in each of the three situations. However, pilot testing was done with a few students prior to the study. The sentence was rewritten until students felt the situation was clear. During the study, students were also invited to ask for clarification if necessary. A few students said they had never been in a pressure to drink situation and were asked to imagine how they would respond if they were in such a situation.

3.3 Procedure

3.3.1 Screening Questionnaires

The two-phase procedure is presented in Appendix J. Students were given verbal and written information on the study (see Appendix K and L). They could participate on a voluntary basis. If they agreed to participate, they signed a consent form (see Appendix M) and completed a 20-minute screening questionnaire. The questionnaire included the following: MAST, questionnaire on alcohol use, questionnaire on drug use, F-SMAST, M-SMAST and questionnaire on drinking practices of family members (see

Appendix A to F). Students were also given information on alcohol use and a series of phone numbers to obtain help or information on alcohol and drugs (see Appendix N).

3.3.2 Second Series of Questionnaires

Students meeting the study criteria were contacted by phone (see Appendix O) to ask if they would complete a second series of questionnaires. At the second testing session, a second consent form (see Appendix P) and the following questionnaires were given by an M.A. psychometrist: a questionnaire on personal and family information, the CISS adapted to high risk situations for drinking and the SCS. At the end of the session, subjects were given a debriefing sheet (see Appendix Q).

3.3.3 Assignment to Groups

Drinking problems in this study was defined by: negative consequences of drinking (physical, interpersonal or legal). These negative consequences were assessed by a score of five or more on the MAST.

Exclusion: Students who did not report drinking alcohol at least once a month during the past year. This was done to avoid high scores on the MAST as a result of remote drinking behavior (that is, prior to the past 12 months). Students with drinking problems meeting the exclusion criteria were excluded from the study.

No drinking problems was defined as: no or few negative consequences of drinking. This was assessed by a score less than five on the MAST.

Exclusion: Students who reported drinking more than 14 drinks per week during the past 12 months were excluded. The Ministry of Health (1988) considers that those who drink more than 14 drinks per week are at least at moderate risk for a drinking problem. Also, students who reported using illegal drugs more than once a month during the past 12 months. Students who met criteria for no drinking problems but met one of the two exclusion criteria were excluded from the study.

Family history of drinking problems (FH+) was defined as: negative consequences of drinking by the biological father, as reported by the student (score of five or above on the F-SMAST). M-SMAST scores were not taken into consideration for the FH+ groups.

No family history of drinking problems (FH-) was defined as: few or no negative consequences of drinking by the biological father or mother, as reported by the student (score less than five on both F-SMAST and M-SMAST).

Exclusion: Students who reported more than two second degree biological relatives who were or had been alcohol abusers. Students with no family history of drinking problems and meeting the exclusion criteria were excluded from the study.

A list of all inclusion and exclusion criteria is presented in Appendix R. Students meeting the criteria for either the drinking problems or the no drinking problems group were eligible to participate if they also met the criteria for either the FH+ or the FH- group. The number of students in each of the four groups was:

1. No drinking problems and FH-, $n = 51$.
2. No drinking problems and FH+, $n = 43$.
3. Drinking problems and FH-, $n = 51$.
4. Drinking problems and FH+, $n = 49$.

4. RESULTS

4.1 Level of Significance

This study comprises a large number of statistical analyses. There are several comparisons among demographic variables, ten comparisons of dependent variables (SCS; task, avoidance and emotion scores x three situations) and several correlational analyses. All tests of significance were conducted at the .01 alpha level. The rationale for choosing this error rate was to protect against an inflated probability of a Type I error with multiple tests (compared with a conventional .05 alpha level). A second reason was to protect against an inflated probability of Type II error with the Bonferroni procedure (Kirk, 1982). The Bonferroni procedure, in which the alpha level is divided by the number of comparisons, would have resulted in a very low significance level. It was expected that unrealistically few comparisons would have been significant at such a level. Furthermore, power analysis, as will be presented below, revealed relatively low to moderate power in several analyses, even at the .01 level of significance. A lower level of significance would have resulted in even lower power and fewer significant comparisons.

4.2 Comparison of Subjects with Non-Participants

A total of 255 students who met the criteria for one of the four groups in this study did not complete the second series of questionnaires. As described in the Method section, some students

could not be reached or refused to participate and others agreed to participate but did not come to their appointment. In the case of FH- students, some were not called because the sample size was sufficient. These 255 students were compared with the 194 students who participated in the second series of questionnaires. The purpose of the comparison was to examine whether students who participated were biased towards less or more severe drinking problems than the eligible students who did not participate. For example, scores can vary between 0 and 56 on the MAST and between 0 and 33 on the F-SMAST. This comparison was done to evaluate the generalizability of the results.

Each of the four groups was studied individually. Table 1 presents the number of subjects in each group. Demographic data were not collected in the screening questionnaire so only alcohol-related variables could be used for the comparisons. Independent two-tailed t tests were conducted on primary independent variables (MAST and F-SMAST). The MAST scores were compared for subjects who scored five or more on the MAST. The F-SMAST scores were compared for subjects who scored five or more on the F-SMAST.

A homogeneity of variance test was used to determine whether pooled or separate variance estimates should be used. Four tests of significance were conducted using the MAST and F-SMAST. The F tests for homogeneity of variance were all non-significant, $p > .01$. Thus, the following independent t tests used pooled variance estimates.

First, FH- subjects meeting the criteria for drinking problems were examined. Participants ($n = 51$) and non-participants ($n = 50$) did not differ significantly on their MAST scores, $t(94) = 2.19$, $p > .01$. F-SMAST scores of FH+ subjects meeting the criteria for no drinking problems were then examined. Participants ($n = 43$) and non-participants ($n = 11$) did not differ significantly, $t(52) = 1.90$, $p > .01$. Finally, FH+ subjects meeting the criteria for drinking problems were examined. Participants ($n = 49$) and non-participants ($n = 12$) did not differ significantly on their MAST scores, $t(59) = -.69$, $p > .01$, or on their F-SMAST scores, $t(59) = -.85$, $p > .01$.

In summary, subjects who participated in the study did not differ significantly from those who met the criteria for participation but failed to complete the second series of questionnaires, on their own drinking problems or those reported for their father. Thus, the results of this study can be generalized to all students meeting study criteria for drinking problems or family history of drinking problems. Unfortunately, demographic data were not collected in the screening questionnaires and are not available to compare participants and non-participants. As will be described below, students who participated in the study were homogeneous in age, marital status, ethnic origin, years of education, area of study, and occupation of parents.

4.3 Comparisons of Subjects on Independent Variables

The independent variables for this study were (a) drinking problems (no drinking problems/ drinking problems) and (b) family history of drinking problems (FH-/ FH+).

4.3.1 Drinking Problems

The primary measure defining drinking problems was the MAST score. Other measures, such as number of drinking days per week, number of drinks per drinking day, number of drinks per week and maximum number of drinks per day, were also obtained. The MAST scores and the above measures of frequency and quantity of alcohol use are presented in Tables 2 and 3. These measures are expected to be higher in subjects with drinking problems than in those with no drinking problems because the measures were used to assign subjects to groups. For example, the total number of drinks per week was 2.6 (FH-) and 4.6 (FH+) for the no drinking problems groups and 23.4 (FH-) and 22.9 (FH+) for the drinking problems groups.

However, there is a possibility that the two drinking problems groups (FH+ and FH-) might differ in severity of drinking problems or alcohol consumption. If this is the case, there might be an interaction between drinking problems and family history of drinking problems.

A series of t tests were conducted on each measure to assess (a) whether there were differences between FH+ and FH- subjects with drinking problems and (b) whether there were differences

between FH+ and FH- subjects with no drinking problems (FH-/FH+). Ten t tests (five measures x two groups of drinking problems) were conducted. A homogeneity of variance test was used to determine whether pooled or separate variance estimates should be used.

Students with no drinking problems had averaged MAST scores of 1.0 (FH-) and 1.7 (FH+) whereas students with drinking problems scored 12.8 (FH-) and 9.9 (FH+). The latter two measures (12.8 and 9.9) differed significantly, $t(98) = 2.76$, $p < .01$ in the unexpected direction. Subjects with drinking problems (FH- compared to FH+) did not differ on any other alcohol measures: number of drinks per drinking day, number of drinking days per week, number of drinks per week or maximum number of drinks in one day, all $p < .01$. Subjects with no drinking problems differed on maximum number of drinks per day in the expected direction. FH- subjects reported 5.1 drinks while FH+ subjects reported 7.5 drinks, $t(60) = -2.88$, $p < .01$. Pearson correlations between these variables were all significant, $p < .01$, and ranged between .44 and .87 (see Table 4). These correlations indicate that the MAST was significantly correlated with all quantity and frequency measures of alcohol use.

Drug of Choice

Table 5 shows that between 84% and 94% of students reported alcohol as their drug of choice. There was no difference between groups, $X^2(3, N = 182) = 8.9$, $p > .01$. However, other drugs were

consumed during the past year and are presented in Table 3. The most frequent other drug used was cannabis. Twenty-nine percent (FH-) and 16% (FH+) of students with drinking problems reported using cannabis more than once a month, compared to 0% of students with no drinking problems. Other drugs were used more than once a month, but they were reported by less than 6% of students.

Age at Onset of Alcohol Use

Other measures were related to alcohol use but not directly to group assignment. One question concerned the age of onset of regular alcohol use. Table 6 shows the means and Table 7 the results of a 2 x 2 (Drinking Problems x Family History) ANOVA. Students with drinking problems began drinking earlier than students without drinking problems, $F(1, 183) = 39.69, p < .01$. There was also a significant two-way interaction (Drinking Problems x Family History), $F(1, 183) = 34.39, p < .01$. Scheffé's procedure was used to establish confidence intervals for contrasts among means. Students without drinking problems and without family history of drinking problems began to drink at a later age than any of the other groups, $t = 7.10, p < .01$.

Driving While Intoxicated

Students were asked to answer Yes or No to whether they had driven in the past 12 months after having 2 or more drinks during the previous hour. The percentages of students in each group reporting such behaviour are shown in Table 8. Sixty-four percent

of students with drinking problems answered affirmatively as opposed to 19% of students without drinking problems. A chi-square analysis revealed significant differences between groups, $X^2 (3, N = 194) = 42.9, p < .01$.

4.3.2 Family History of Drinking Problems

The variables defining family history of drinking problems were the F-SMAST, the M-SMAST, and the number of second degree relatives abusing alcohol. Means and standard deviations are presented in Table 2. These measures are expected to be higher for FH+ subjects than for FH- subjects because they were used to assign subjects to groups. For example, F-SMAST scores for FH- subjects were 0.7 and 1.0 (without and with drinking problems, respectively) and 14.0 and 12.4 for FH+ subjects. The F-SMAST scores correlated significantly with the M-SMAST scores, $r = .23, p < .01$, and the number of relatives who abused alcohol, $r = .49, p < .01$.

The M-SMAST scores and the number of relatives abusing alcohol were used only as exclusion criteria and were not significantly correlated, $r = .11, p > .01, N = 194$. It should be noted that there were only eight subjects in the sample with mothers who had drinking problems.

4.3.3 Correlations Between Drinking Problems and Family History of Drinking Problems

Pearson correlations between the variables describing family history of drinking problems (F-SMAST, M-SMAST and number of second degree relatives who abused alcohol) and the variables describing use of alcohol and drugs (MAST, frequency and quantity measures) were low, ranging from .00 to .23 (see Table 9). The primary measures, F-SMAST and MAST scores, were not significantly correlated, $p > .01$. This may be due to the bias introduced by selecting the same number of subjects with low and high MAST scores and the same number of subjects with low and high F-SMAST scores. For example, Table 1 shows that a large number of students with both low F-SMAST and low MAST ($n = 184$) were not included in the study because of the requirement of equal number of students in each cell. Including these subjects would have resulted in a higher correlation between MAST and F-SMAST scores.

Other correlations in Table 9 suggested that drinking problems and family history of drinking problems, although not totally independent, were not seriously confounded in the sample. For example, F-SMAST scores were not significantly correlated with the quantity of alcohol use and the frequency of alcohol/drug consumption measures. The correlations between MAST scores and the number of relatives with alcohol abuse was significant but low, $r = .23$, $p < .01$, as was the correlation between MAST and M-SMAST scores, $r = .21$, $p < .01$.

4.4 Demographic Variables

Analyses were conducted on age, ethnic origin, education, education of parents, and profession of parents. Chi-square analyses were used for frequencies, and 2 x 2 (Drinking Problems x Family History) ANOVAS were conducted on interval data.

Marital Status and Age

Almost all students (96%) were single (see Table 10). The mean age of students was 20.5 years with a standard deviation of 3.1 years. A 2 x 2 (Drinking Problems x Family History) ANOVA showed no main or interaction effects for age (see Table 11). Sixty-three percent of students described themselves as English-Canadian, 8% as French-Canadian and 29% from other ethnic origins. There was no significant differences among the four experimental groups on ethnic origin, $X^2 (6, N = 194) = 6.96, p > .01$.

Education

Seventy-one percent of students were registered in their first year and 29% of students had completed at least one year of university. These two groups did not differ significantly, $X^2 (3, N = 194) = 2.57, p > .01$ (see Table 12). Students were registered in the following programs: 24% in social sciences, 24% in sciences and engineering, 24% in other programs and 28% were not registered in any particular program, $X^2 (9, N = 194) = 20.4, p > .01$.

Socio-Economic Status

Socio-economic status was assessed by determining each parent's level of education and occupation using the categories described by Hollingshead (1957) and Hollingshead and Redlich (1967) (see Table 13). Forty-two students were excluded from this analysis because their mothers were described as "homemaker" which was not included in the list of occupations. A 2 x 2 (Drinking Problems x Family History) MANOVA was performed on education and occupation of father and mother. The family history, drinking problems and interaction effects were not significant at the .01 level (see Table 14).

4.5 Dependent Variables

4.5.1 Internal Reliability of Dependent Measures

Internal reliability coefficients were calculated for each questionnaire (see Table 15). The Cronbach alpha coefficient for internal reliability of the SCS was .71 ($N = 176$). This is lower than the coefficients obtained by Redden et al. (1983) and Rosenbaum (1980) but similar to those reported by Richards (1985).

The Cronbach alpha coefficients for the CISS for the three situations (negative emotion, interpersonal conflict and pressure to drink) were respectively .92, .91 and .89 for task coping; .75, .83 and .83 for avoidance coping and .87, .87 and .88 for emotion coping. The coefficients for task and emotion coping were similar to those reported by Endler and Parker (1990a) with

undergraduate students; however, the observed coefficients for avoidance coping were lower than those of Endler and Parker. The different situations did not seem to change the internal reliability coefficients of task coping and emotion coping. However, the internal reliability of avoidance coping was lower in the negative emotion situation. These results suggest that subjects responded in a consistent manner to the items of each subscale. Caution must be exercised, however, in generalizing these findings to other situations not assessed in this study.

4.5.2 Data Screening of Dependent Variables

There were three main dependent variables in this study: (a) self-control strategies, (b) task-oriented strategies and (c) avoidant strategies. There was also a research question on emotion-oriented coping. The task, avoidance and emotion coping scales (from the CISS) were repeated for three different situations: (a) negative emotion, (b) interpersonal conflict and (c) pressure to drink.

Prior to data analysis, coping variables were examined for assumptions of univariate and multivariate analysis. Normality and outliers were assessed separately for the four groups of subjects (FH+ with drinking problems, FH+ with no drinking problems, FH- with drinking problems, FH- with no drinking problems). The normality of distributions was assessed using z scores for skewness and kurtosis (Tabachnick & Fidell, 1989) and were generally satisfactory. Using z scores > 3 as the criterion,

five univariate outliers were identified, $p < .001$. These subjects were removed from the sample leaving a total of 189 subjects with 49, 43, 49 and 48 subjects in the various groups (see Appendix R). Homogeneity of variance was assessed with the Bartlett-Box F test for the univariate analysis (SCS scores), and Box's M was used to assess the homogeneity of variance in the MANOVA (CISS scores). In all cases, the homogeneity of variance was satisfactory.

4.5.3 Design

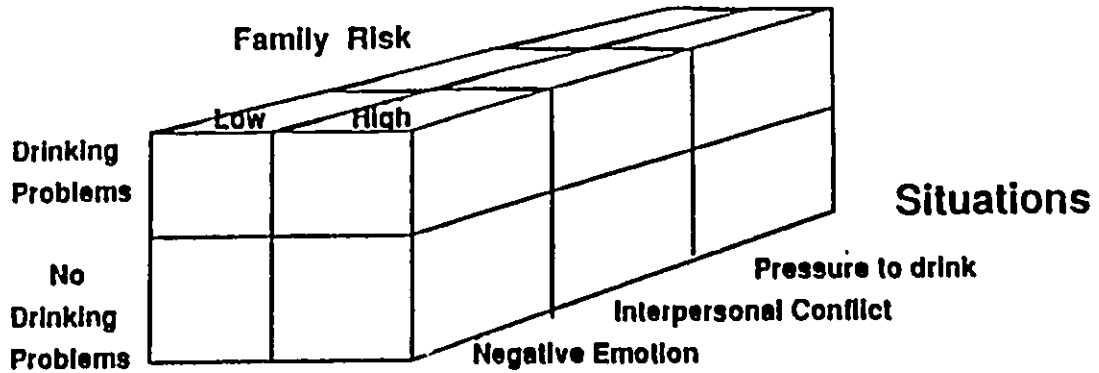
Three of the dependent variables (task, avoidance and emotion of the CISS) were repeated for three situations whereas another dependent variable (self-control strategies -- SCS) was used only once. The reason is that the SCS includes items that are already related to specific situations (e.g., When I am faced with a number of things to do, I usually plan my work). Thus, SCS scores were analysed with a 2 x 2 (Drinking Problems x Family History) ANOVA.

The design for the CISS was planned to be a doubly multivariate repeated measures design with two between factors: two levels of family history of drinking problems and two levels of drinking problems. The model was multivariate in two ways. First, students completed the CISS for three situations (negative emotion, interpersonal conflict and pressure to drink). Second, each situation provided three coping scores: task, avoidance and emotion.

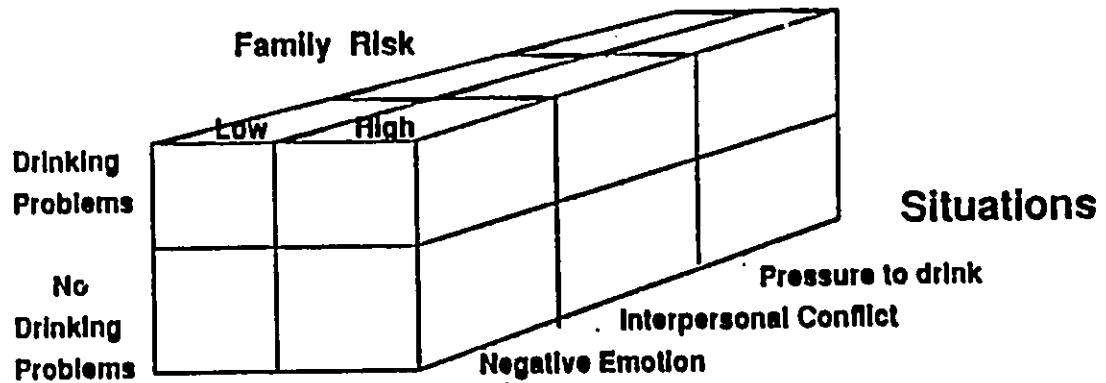
As will be presented below, task, avoidance and emotion scores were not highly correlated. CISS scores were therefore analysed separately for each coping score with a 2 x 2 x 3 (Drinking Problems x Family History x Situations) MANOVA. Figure 1 presents the 2 x 2 x 3 MANOVA design for each scale of the CISS.

In the 2 x 2 x 3 designs, cells were unequal because unequal numbers of subjects met the criteria for each group. There are several approaches to the calculation of sums of squares for unequal cells designs (Kirk, 1982; Overall & Spiegel, 1969). The method chosen was based on the goal of this study which was to determine the significance of the independent contribution of each factor --drinking problems and family history-- and their interaction, to arrive at a parsimonious model by eliminating factors which are not significant. This method is called the complete least squares or general linear model analysis and is a conventional least squares multiple regression solution in which each main effect and interaction effect is adjusted for the relationship to all other effects in the model.

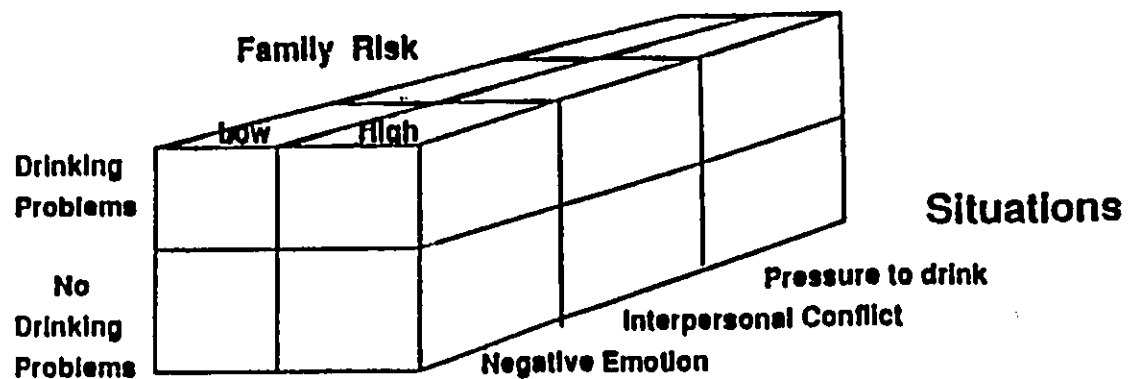
TASK ORIENTED COPING STRATEGIES



AVOIDANCE ORIENTED COPING STRATEGIES



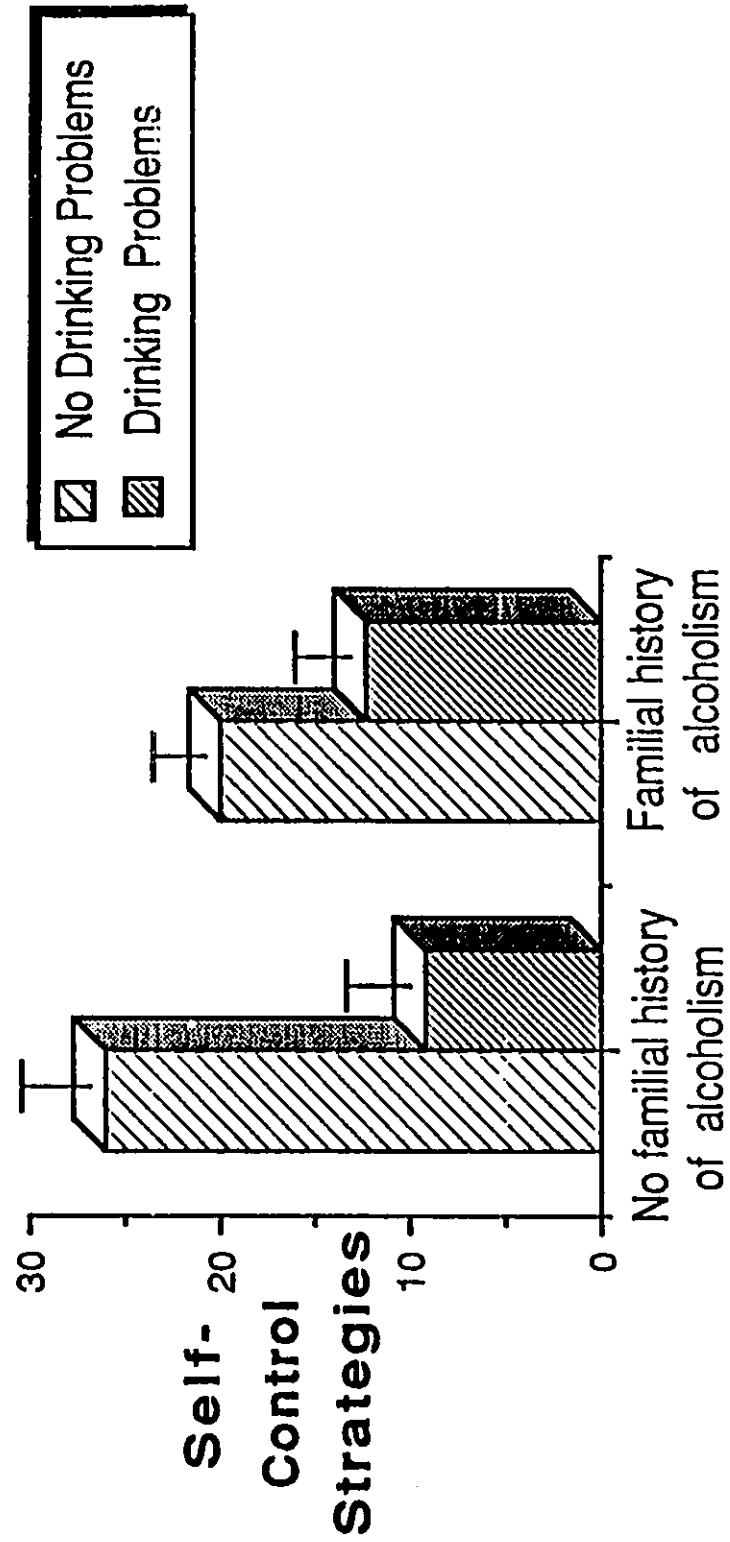
EMOTION ORIENTED COPING STRATEGIES



4.5.4 Self-Control Strategies

The first statistical analysis to test the study hypotheses was conducted on the self-control strategies scores obtained on the SCS. Table 16 shows the SCS group means and standard deviations. A 2 x 2 (Drinking Problems x Family History) ANOVA was conducted with self-control strategies as the dependent variable. The drinking problems main effect was significant, $F(1, 185) = 14.95, p < .01$ (see Table 17). As shown in Figure 2, students with no drinking problems reported more self-control strategies than did students with drinking problems. The family history effect and the interaction effect (Drinking Problems x Family History) were not significant ($p > .01$).

Figure 2. Use of self-control strategies in each group



4.5.5 Coping Inventory of Stressful Situations (CISS)

4.5.5.1 Correlations among CISS Scores

The Coping Inventory for Stressful Situations (CISS) provided three dependent variables (task, avoidance, emotion). The means and standard deviations of the CISS scales for each group are presented in Tables 18 to 20. To determine whether coping strategies should be examined separately or else together, in a multivariate design, Pearson correlation coefficients were calculated between task, avoidance, and emotion scores (see Table 21). All correlations between the same coping scores in different situations (e.g. task-oriented strategies in the negative emotion situation and task-oriented strategies in the interpersonal conflict situation) were significant and ranged between .22 and .76, $p < .01$. In contrast, only 4 of the 27 correlations between different coping strategies (e.g. task-oriented strategies in the negative emotion situation and avoidant strategies in the negative emotion situation) were significant at the .01 level, and ranged from .00 to .46.

Because of these low correlations, separate analyses were conducted on each CISS coping strategy. Three $2 \times 2 \times 3$ (Drinking Problems \times Family History \times Situations) MANOVAS were performed. The variable situation was treated as a repeated measure in a multivariate repeated measures design analysed by SPSS-X (1988). The first analysis was conducted with task-oriented coping strategies as the dependent variable.

4.5.5.2 MANOVA for Task-Oriented Strategies

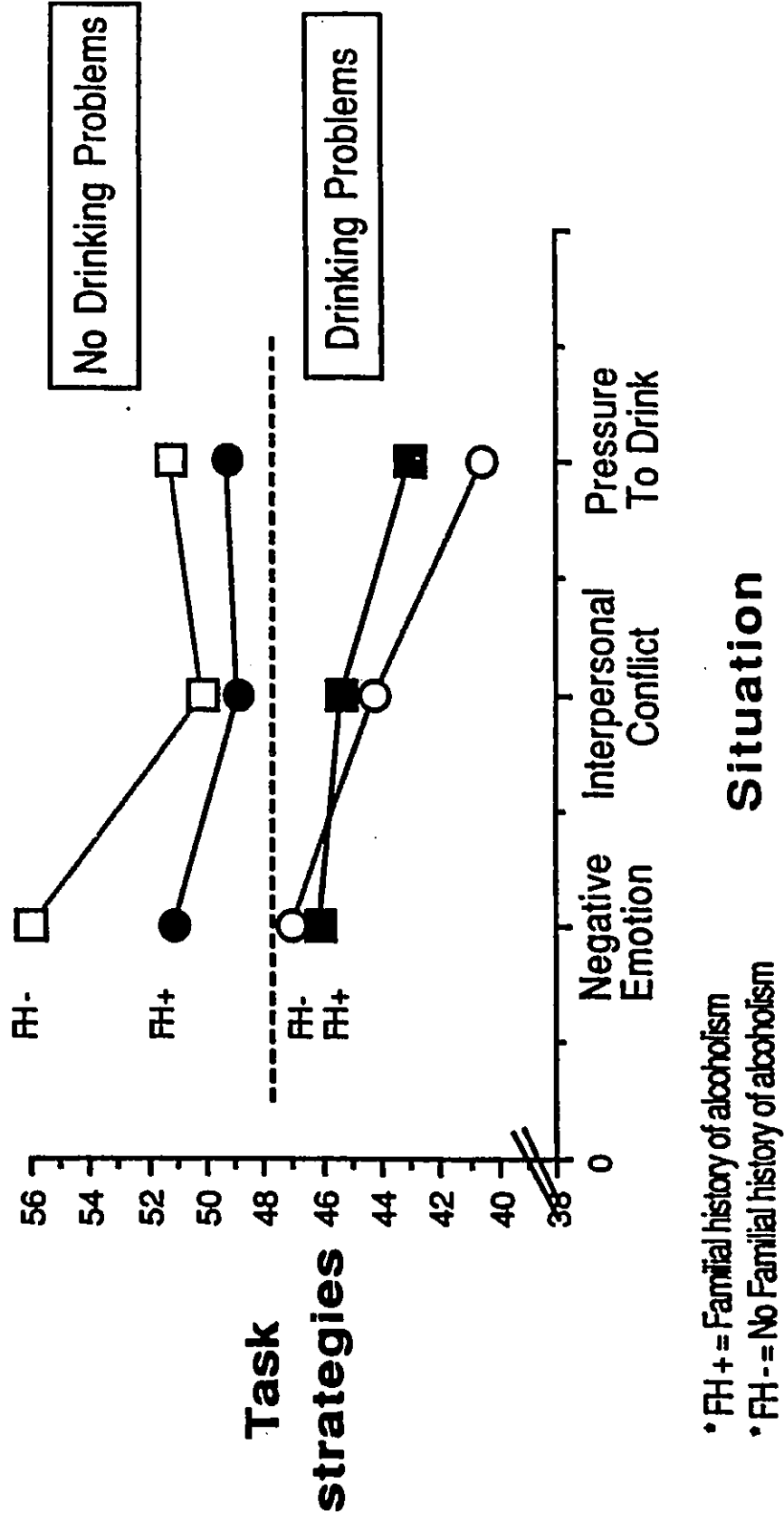
MANOVA of task-oriented coping revealed a situation main effect, Wilks' Lambda = .83, approximate $F(2, 184) = 19.00$, $p < .01$. However, task coping was not significantly affected by the interaction Situation x Drinking Problems, approximate $F(2, 184) = 3.71$, $p > .01$; the interaction Situation x Family History, approximate $F(2, 184) = 3.51$, $p > .01$; or the interaction Situation x Drinking Problems x Family History, approximate $F(2, 184) = 0.34$, $p > .01$ (see Table 22).

Contrasts between scores in each situation showed that, in decreasing order, students reported more task-oriented strategies in the negative emotion ($M = 49.9$, $SD = 11.5$), the interpersonal conflict ($M = 46.9$, $SD = 11.4$) and the pressure to drink situations ($M = 45.7$, $SD = 12.2$). Task-oriented coping scores were higher in the negative emotion situation than in the interpersonal conflict situation, $F(1, 185) = 23.41$, $p < .01$. In comparison to the average of these two situations, students reported less task-oriented coping in the pressure to drink situation, $F(1, 185) = 15.41$, $p < .01$.

In terms of between subjects effect, students with drinking problems reported engaging less in task-oriented strategies than did students with no drinking problems, $F(1, 185) = 20.1$, $p < .01$. The family history and the interaction (Drinking Problems x Family History) effects were not significant at the .01 level (see Table 23). Even if the interaction effect was not significant, the effect of drinking problems on task-oriented

coping strategies was analysed for each situation by 2 x 2 (Drinking Problems x Family History) ANOVAS (see Table 24). Students with drinking problems, compared to students without drinking problems, reported fewer task-oriented strategies in all three situations: the negative emotion situation, $F(1, 185) = 16.79, p < .01$; the interpersonal conflict situation, $F(1, 185) = 7.12, p < .01$; and the pressure to drink situation, $F(1, 185) = 24.16, p < .01$. The means and standard deviations of task coping in each situation appear in Table 18 and are shown in Figure 3.

Figure 3. Self-Report of Task Coping Strategies



4.5.5.3 MANOVA on Avoidant Strategies

A second 2 x 2 x 3 (Drinking Problems x Family History x Situations) MANOVA was conducted with avoidance as the dependent variable. The means and standard deviations of avoidant strategies in each situation appear in Table 19. The situation effect was significant, with Wilks'lambda = .46, approximate $F(2, 185) = 112.0$, $p < .01$. However, avoidance coping was not significantly affected by the Situation x Drinking Problems interaction, approximate $F(2, 184) = 1.4$, $p > .01$; the Situation x Family History interaction, approximate $F(2, 184) = 3.2$, $p > .01$; or the Situation x Drinking Problems x Family History interaction, approximate $F(2, 184) = 1.1$, $p > .01$ (see Table 25).

Contrasts between scores in each situation showed that in decreasing order, students reported more avoidance coping strategies in the negative emotion ($M = 44.4$, $SD = 8.9$), the interpersonal conflict ($M = 41.9$, $SD = 10.5$) and the pressure to drink situations ($M = 32.8$, $SD = 10.0$). Students reported more avoidant strategies in the negative emotion situation than in the interpersonal conflict situation, $F(1, 185) = 24.4$, $p < .01$. In comparison to the average of these two situations, students reported less avoidant strategies in the pressure to drink situation, $F(1, 185) = 208.2$, $p < .01$.

The drinking problems main effect was not significant, $F(1, 185) = 2.88$, $p > .01$. The family history effect and the two-way

interaction effect (Drinking Problems x Family History) were not significant at the .01 level of significance (see Table 26).

4.5.5.4 MANOVA on Emotion-Oriented Coping

A third 2 x 2 x 3 (Drinking Problems x Family History x Situations) MANOVA was conducted with emotion coping (CISS) as the dependent variable. The means and standard deviations for emotion coping in each situation appear in Table 20. The situation effect was significant, with Wilks' lambda = .40, approximate $F(2, 189) = 139.1$, $p < .01$. However, emotion coping was not significantly affected by the Situation x Drinking Problems interaction, approximate $F(2, 184) = 0.1$, $p > .01$, the Situation x Family History interaction, approximate $F(2, 184) = 0.0$, $p > .01$, or the Situation x Drinking Problems x Family History interaction, approximate $F(2, 184) = 2.46$, $p > .01$ (Table 27).

Contrasts between scores in each situation showed that in decreasing order, students reported more emotion coping in the negative emotion ($M = 43.6$, $SD = 10.6$), the interpersonal conflict ($M = 40.9$, $SD = 11.4$) and the pressure to drink situations ($M = 28.5$, $SD = 9.7$). Univariate F tests showed more emotion-oriented coping in the negative emotion situation than in the interpersonal conflict situation, $F(1, 185) = 18.83$, $p < .01$. On the other hand, less emotion-oriented coping strategies were reported in the pressure to drink situation in comparison to

the average of the other two situations, $F(1, 185) = 269.26, p < .01$.

The drinking problems main effect was not significant, $F(1, 185) = 3.26, p > .01$. Students with drinking problems did not report more emotion-oriented coping strategies than students with no drinking problems. The family history and the interaction effects (Drinking Problems x Family History) were not significant at the .01 level of significance (see Table 28).

4.5.6 Correlations Between CISS Scores and SCS Scores

Correlations were calculated between CISS and SCS scores. SCS scores were positively correlated with task-oriented coping strategies in all three situations, $r = .51$ to $.67$, all $p < .01$. Correlations were also significant when calculated separately for students with drinking problems and students with no drinking problems, $r = .37$ to $.70$, all $p < .01$ (see Table 29).

SCS scores correlated significantly with emotion-oriented coping only in the negative emotion situation, $r = -.31, p < .01$ and the interpersonal conflict situation, $r = -.22, p < .01$. However, correlations between SCS and emotion-oriented coping strategies were not significant for students with drinking problems. Finally, SCS scores did not correlate significantly with avoidant strategies at the .01 level.

4.5.7 Correlations Between Coping Strategies and Alcohol

Consumption

Self-Control Strategies

Correlations between alcohol-related variables and coping strategies are presented in Table 30. Self-control strategies were negatively correlated with the MAST, $r = -.31$, $p < .01$, the number of drinks per drinking day, $r = -.28$, $p < .01$, and the number of drinks per week, $r = -.18$, $p < .01$, but not with the number of drinking days per week.

When correlations were calculated separately for students with no drinking problems and students with drinking problems, self-control strategies were negatively correlated with the MAST, $r = -.26$, $p < .01$ and $r = -.15$, $p < .01$, respectively (see Tables 31 and 32). Correlations between SCS scores and the number of drinking days per week, the number of drinks per drinking day and the number of drinks per week were not significant. This suggests that the relationship between SCS scores and alcohol-related variables is stronger when there are important differences in alcohol-related variables, such as when both students with drinking problems and students with no drinking problems are included.

CISS Coping Strategies

Task-oriented coping strategies were negatively correlated with the four previous alcohol-related variables in the three situations (negative emotion, interpersonal conflict and pressure

to drink), $r = -.19$ to $-.41$, $p < .01$. There were two exceptions where the correlation was not significant: task-oriented coping in the interpersonal conflict situation with the number of drinking days per week and with the number of drinks per week, both at the .01 alpha level. When correlations were calculated separately for students with no drinking problems and students with drinking problems, there was fewer significant correlations (see Tables 31 and 32).

There were only a few significant correlations between avoidant strategies, emotion-oriented coping strategies and the alcohol-related variables. For avoidant strategies, only four of the 12 correlations (three situations x four alcohol-related variables) were significant at the .01 level. For emotion-oriented coping strategies, only two of the 12 correlations were significant at the .01 level.

5. DISCUSSION

5.1 Hypotheses on Drinking Problems and Coping Strategies

The primary hypothesis was that individuals with drinking problems would report different coping strategies compared with individuals with no drinking problems. This hypothesis was supported for self-control and task-oriented strategies, but not for avoidant strategies.

5.1.1 Self-Control Strategies

Students with drinking problems reported using significantly fewer self-control strategies than did students without drinking problems, in situations not related to drinking. This finding is consistent with the relationship between self-control strategies and alcohol consumption found by Carey et al. (1990). This suggests that not only do individuals with drinking problems use fewer self-control strategies to control their alcohol use (Werch & Gorman, 1986; 1989) but also that they use fewer self-control strategies in a variety of other situations. This confirms the social learning theory assumption that both alcohol-related and general self-regulation skills are related to alcohol use.

Correlations between self-control and other coping strategies were consistent with those reported by Gintner et al. (1989) for a normal student population. This replication supports the concept of learned resourcefulness proposed by Rosenbaum

(1980). First, self-control strategies were positively correlated with task-oriented coping. This is consistent with Gintner et al. (1989) who found that "high resourceful individuals" --those scoring high on the SCS-- reported more problem-focused strategies than did "low resourceful individuals". This correlation is not surprising because task-oriented strategies are one of the dimensions of self-control assessed by the SCS. Second, self-control strategies were negatively correlated with emotion-oriented coping in the negative emotion and the interpersonal conflict situations. This is also consistent with Gintner et al. (1989) who found that highly resourceful individuals employed fewer wishful thinking and self-blame strategies, two emotion-focused strategies assessed by the Ways of Coping Checklist (Folkman & Lazarus, 1985).

On the other hand, the high correlations between self-control strategies and task-oriented coping strategies of the CISS suggest a possible lack of discriminant validity between these measures. Such high correlations have not been reported between the self-control schedule (SCS) and other measures or between the CISS scales and other measures. These correlations are even higher than the correlations between task-coping and the problem-focused scale of the Ways of Coping Questionnaire reported by Endler and Parker (1990a).

5.1.2 Task-Oriented Coping Strategies

Task-oriented strategies were negatively correlated with frequency and quantity of alcohol use and with MAST scores. Results of the MANOVA showed that students with drinking problems, compared to students without drinking problems, reported engaging less in task-oriented strategies. The replication of these findings across three situations --negative emotion, interpersonal conflict, and pressure to drink-- builds confidence in the reliability of the results. The results also support the assumption of social learning theory (Abrams & Niaura, 1987) that the role of coping in alcohol abuse depends on coping strategies in both drinking and non-drinking situations.

It is interesting to note that task-oriented coping scores were lower in the pressure to drink situation than in both the negative emotion and the interpersonal conflict situations. One explanation would be that the items of the questionnaire were not appropriate to the pressure to drink situation. This possibility is consistent with the finding that both avoidant and emotion-oriented strategies were also significantly less reported in the pressure to drink situation, in comparison to the other two situations. However, even if the coping strategies might have been less relevant to the pressure to drink situation, students with drinking problems, compared to those without drinking problems, still reported engaging less in task-oriented coping strategies in this situation.

Not only were task-oriented strategies negatively correlated with drinking problems, they were also negatively correlated with quantity and frequency of alcohol use. This is consistent with other studies reporting a negative relationship between alcohol use and problem-focused strategies (Finney & Moos, 1992; Slavkin et al., 1992; Wells, Catalano, Plotnick, Hawkins, & Brattesani, 1989). Some studies, however, have failed to report such a correlation (Cooper et al., 1992; Moos et al., 1981). It is possible that the results of this study are specific to a student population (i.e., higher educational level). University students may have greater potential for coping strategies, and students with drinking problems may use task-oriented strategies below their potential level of functioning.

Another possibility that deserves attention is the consideration of situational factors in the assessment of coping strategies. Studies where no relationship was found between coping strategies and alcohol use or alcohol abuse have not assessed specific high risk situations for drinking (Conte et al., 1991; Cooper et al., 1988; Moos et al., 1981; Stone et al., 1985). Two studies of social skills have shown the specificity of alcohol-related skills. Abrams et al. (1991) compared alcohol abusers to social drinkers and found no difference on behavioral measures of social competence. However, alcohol abusers were rated as less skillful in alcohol-specific situations. Twentyman et al. (1982) found that alcoholics did not have different ratings of general social competence. However, alcoholics were

rated as more impaired than controls in some alcohol-related situations.

It remains unknown whether students with drinking problems actually possess fewer coping strategies or are simply not using these skills. There is evidence for both possibilities. For example, impulsivity and attentional problems have been associated with alcohol abuse in adolescents (Tarter & Edwards, 1988). These problems can interfere with learning coping strategies. On the other hand, there is some evidence that alcohol abusers know adequate strategies but do not typically use them (Patterson, Parsons, Schaeffer, & Errico, 1988). Studies have also reported that training in coping strategies was related to lower alcohol consumption in recovering alcoholics (Chaney et al., 1978; Jones, Kanfer, & Lanyon 1982).

5.1.3 Avoidant Strategies

Avoidant strategies were positively correlated with frequency and quantity of alcohol use. Contrary to expectation, however, avoidant strategies were not correlated with MAST scores. The MAST scores were the primary measure used to differentiate students with and without drinking problems. The MANOVA showed no difference between these two groups in avoidant coping strategies. One reason why avoidant strategies were correlated with frequency and quantity of alcohol use but not with MAST scores could be that frequency and quantity of alcohol use reflected the past 12 months as opposed to the MAST scores

which may have reflected more remote behaviors. Another possible explanation is that avoidant strategies correlated more with frequency and quantity of alcohol use because they are behaviors whereas the MAST measures consequences of heavy drinking. The consequences may be partly dependent on external factors such as being caught by the police for drunk driving, responses of friends or family members to excessive drinking, etc. However, neither explanation seems to apply to this particular sample because other coping strategies (task-oriented coping and self-control) were not less correlated with MAST scores than with frequency and quantity of alcohol use.

Another possible explanation is that avoidant strategies would be related to alcohol use, but not necessarily associated with drinking problems in university students. These results should not be generalized to clinical populations of alcohol abusers. Several studies have supported the link between avoidance and alcohol abuse in clinical samples (Billings & Moos, 1983; Conte et al., 1991; Moos et al., 1990). It may be that avoidant behaviors are exacerbated as a consequence of very heavy drinking or that they manifest themselves after many years of heavy drinking.

There is another possible explanation why avoidance was related to frequency and quantity of alcohol use but not to drinking problems (MAST scores). Sadava and Pak (1993) have presented evidence to support a two-dimensional model of problem drinking. They proposed that certain components of stress-related

drinking may predict drinking behaviors while other components of the model may predict drinking problems. In the literature on avoidant coping strategies, avoidant strategies have been shown to predict alcohol use and relapse (Billings & Moos, 1983; Finney & Moos, 1992) but not problem drinking status (Cooper et al., 1988). When avoidant strategies have been related to problem drinking, large samples of 1100 subjects (Moos et al., 1991) and 838 subjects (Brennan & Moos, 1991) have been used. It would be helpful for future studies on coping strategies to use measures of both alcohol consumption and drinking problems.

One limitation of this study is that it used only one measure of avoidance coping. Measures of avoidance in the literature appear to be heterogeneous. At least two dimensions can be distinguished: a cognitive component and a behavioral component. For example, avoidance defined as "ignoring or avoiding thinking about a problem" has received support in differentiating recovered from relapsed alcoholics (Billings & Moos, 1983) and problem drinkers from non problem drinkers (Brennan & Moos, 1991). However, distraction by doing activities (e.g., watch T.V.) did not receive support either in this study or in that of Moos et al. (1990). Another component of avoidance coping measured in the present study, social diversion (e.g. phone a friend), could be related to social support which has been found to be inversely related to alcohol use during early adolescence (Wills, 1986). Some components of coping may be positively correlated (e.g., distraction) with alcohol use and

others negatively correlated with alcohol use (e.g., social diversion). Given the limited number of studies on avoidance coping and alcohol abuse, it is difficult to make conclusions about the relationship between avoidance coping and alcohol abuse. In future studies on coping and alcohol use, it would be useful to include more than one measure of avoidance.

Not only were avoidant strategies not significantly correlated with MAST scores, they were also not correlated with self-control and task-oriented strategies, except for the pressure to drink situation. This suggests that self-control and task-oriented strategies are not mutually exclusive vis-à-vis avoidant strategies, but rather represent complementary approaches to coping. It is interesting to note that task-coping strategies were positively correlated with avoidant strategies in only one situation--the pressure to drink situation. This suggests that avoidant strategies may be appropriate in a pressure to drink situation, even for someone who is task-oriented. This confirms the assumption of Lazarus and Folkman (1984) concerning the importance of defining situations when assessing coping skills.

5.1.4 Emotion-Oriented Coping Strategies

Results of the MANOVA on emotion-oriented coping strategies also showed no difference between students with and without drinking problems. The correlations between emotion-oriented

coping and alcohol variables (MAST, quantity and frequency of alcohol use) were also non-significant, with two exceptions in the pressure to drink situation. These low correlations and the non-significance of the MANOVA on avoidant strategies suggest that emotion-oriented coping strategies are less related to drinking problems than are task-oriented and self-control strategies.

5.2 Hypotheses on Family History of Drinking Problems and Coping Strategies

The possibility of transmission of coping characteristics by family members who abused alcohol is interesting because it suggests a risk factor for drinking problems that has not been examined. The hypothesis that FH+ students would report engaging less in self-control, less in task-oriented strategies and more in avoidant strategies, compared to FH- students, however, was not supported, either in an additive model or in an interaction model with drinking problems.

Although some research suggests that FH+ students are at risk for alcohol abuse, the results of the present study do not suggest that this risk is related to coping strategies. It appears that coping strategies are more related to current alcohol consumption and drinking problems than they are to family history of drinking problems. These results can be discussed in reference to the sample size calculation prior to the data

collection.

Based on the literature on children of alcoholics (Sher, 1991a), it was assessed that a possible difference of half a standard deviation could be obtained between individuals with and without a family history of drinking problems. Using the calculation method of Cohen (1977), it was estimated that this difference would represent .25 effect size and that about 50 individuals per group would be necessary for the tests of main and interaction effects. Results from the sample in this study showed that effect sizes for the drinking problems effect on task-oriented strategies and self-control schedule were, respectively, .32 and .35. However, the effect sizes calculated for family history of drinking problems were very small, ranging from .02 to .09. Comparison of effect sizes showed that the effect sizes for family history of drinking problems for task coping strategies and self-control strategies were at least five times smaller than the effect sizes for these same measures for drinking problems.

The power for the family history of drinking problem effect was also low, ranging from .00 to .10. To estimate how many subjects would be needed to obtain a power of .80 at an alpha level of .01, Cohen's (1977) calculation method suggests that more than five hundred subjects would be required in each of the four groups to find significant differences between FH- and FH+ subjects. This suggests that the questionnaires used in this study were not sensitive enough to detect a difference between

students with and without drinking problems.

These results do not corroborate the findings of Brown et al. (1989) and Clair and Genest (1987), who reported differences in coping strategies according to positive or negative family history of alcoholism. These studies used different populations and assessment procedures than the present study. For example, Brown et al. found that FH+ adolescents, in comparison to FH- adolescents, reported more participation in alternative activity than drinking. However, only tempting situations for drinking were assessed. Clair and Genest (1987) found differences in avoidance coping by assessing smoking, eating and sleeping patterns in female subjects only. Because these studies and the present one differ in methodology, there is no clear answer as to whether or not there is a relationship between family history of alcohol abuse and coping strategies in children of alcoholics.

Research on psychological characteristics of children of alcoholics suggests that there is a cluster of behavior patterns and personality traits, called "behavioral undercontrol", described by characteristics such as impulsivity, aggressiveness, risk taking and sensation seeking (Sher, 1991a). These traits appear to be related to alcohol abuse as well as to family history of alcoholism. Such characteristics are theoretically similar to Rosenbaum's concept of self-control strategies (Rosenbaum, 1990).

Sher et al. (1991) studied a sample of 490 college students and found that the association between family history of

alcoholism and alcohol use could be accounted for by mediation through via behavioral undercontrol and alcohol expectancy. In another study, Rogosch et al. (1990) assessed 979 high school students and found that behavioral undercontrol was found to play a moderator role between family history of alcoholism and alcohol use. They found that for subjects who were high on behavioral undercontrol, those with FH+ drank more and showed more adverse social consequences of alcohol use. However, for subjects who were low on behavioral undercontrol, there were no significant effects of family history on quantity or frequency of alcohol use or on adverse social consequences.

The finding that FH+ students did not report significantly less self-control strategies than FH- students is not consistent with the majority of the literature on behavioral undercontrol. One possible explanation is that self-control strategies, as measured by the Self-Control Schedule, assess cognitive as well as behavioral strategies, while typical measures of behavioral undercontrol have measured behavior patterns. Because of the similarities between the concepts of self-control and behavioral undercontrol, it may be worthwhile to pursue research in self-control strategies.

Because the present study supports the link between coping strategies and drinking problems in male university students, it is possible that similar coping characteristics might characterize subgroups of children of alcoholics before they begin drinking. However, the current state of the literature does

permit yet to define which variables are the most significant for identifying subgroups of children of alcoholics (Sher, 1991b).

5.3 Limitations of the study

The non-significant effect of family history of drinking problems can also be discussed in the context of the limitations of this study. The current results may not generalize to adolescents and adults who are not university students. For example, it may be that FH+ individuals with inadequate coping skills may be more likely than FH+ individuals with good coping skills to drop out of school and not attend university. In addition, students were not recruited from a clinical population where the severity of parental alcoholism may be higher. Finally, the results cannot be generalized to female students. Indeed, one study found that a father's alcoholism had a negative effect on his daughter's emotional well-being but not on his son's well-being (Berkowitz & Perkins, 1988). Further studies could examine female subjects and also look at the influence of alcoholic mothers. A structured interview rather than a screening instrument like the MAST might also increase the specificity of the drinking problems assessed both in students and in their parents.

Other limitations of the study are relevant also for the comparison of students with and without drinking problems. One limitation of most studies of coping strategies and alcohol use, including the present study, is that the assessment of

coping strategies is based on retrospective self-reports and may not reflect actual behaviors. There are different ways to increase the validity of these results, such as completing self-reports of coping strategies immediately after a stressful situation or using collateral or observational measures for behavioral coping strategies. The self-report questionnaires used in this study are valid and reliable as measures of self-perceived coping strategies. Further studies using observational measures and prospective measures could provide other useful information.

Another limitation of the study is the small number of stressful situations assessed. It would be interesting to expand the study of coping strategies to other situations to assess how students with drinking problems respond to stressful situations such as school-related stress (e.g., studying for an exam) and problems caused by their drinking (e.g., relationship difficulties).

5.3 Implications of the Findings

In this study, self-control skills and task-oriented coping strategies were found to be associated with drinking problems in male university students. The results support the relevance of studying specific coping strategies for understanding alcohol use. The theoretical implications for models of alcohol abuse and for their practical applications in interventions with students who have drinking problems will be discussed.

Results obtained with self-control and task-oriented strategies suggested that both general and specific skills related to a drinking situation (pressure to drink) correlated with alcohol use. This is consistent with findings that both specific skills related to alcohol situations (Jones et al., 1982; Wells et al., 1989) and general social and stress coping skills (Finney and Moos, 1992) are related to alcohol consumption in alcohol abusers.

It cannot be concluded that the association between coping strategies and alcohol use is causal; however, the present findings do provide a preliminary test that suggest that longitudinal studies would be worthwhile. There are several possible relationships between alcohol use and coping. Students who engaged less in self-control and task-oriented coping strategies may use more alcohol as an escape from unpleasant situations. In this case, deficits in task-oriented coping skills may predispose the individual to vulnerability to alcohol abuse. Longitudinal studies could examine whether differences in coping strategies antedate drinking (that is, are reported in young adolescents) or whether differences in coping develop after the onset of drinking. It is interesting that students with drinking problems began drinking at an earlier age, which suggests they had less time to learn appropriate coping strategies before they began using alcohol.

On the other hand, alcohol use may interfere with the use of coping strategies. For example, when the person is intoxicated,

he or she may not be able to use appropriate coping strategies. Second, the expectations of the effect of alcohol may be sufficient to prevent the person from using and learning coping strategies in stressful situations. This would represent a risk of a vicious cycle of alcohol use and less engagement in other coping strategies. Other possibly unmeasured variables may also be responsible for the association between coping and drinking problems. However, it is noteworthy that there was no significant difference between students with drinking problems and students without drinking problems in terms of age, education, ethnic origin and socio-economic status.

Further studies could examine whether coping strategies predict the maintenance of drinking problems after students have left university. Correlations between coping strategies and alcohol use were not perfect and not every student who drank heavily had a problem with coping strategies. Coping strategies may act as a moderating or protective factor in preventing individuals from continuing their alcohol abuse or becoming dependent on alcohol. On the other hand, inadequate coping strategies may increase the risk of developing alcohol dependence.

Further studies could assess whether training in coping strategies can increase the effectiveness of interventions to reduce alcohol use in students with drinking problems. The findings that students with drinking problems reported less self-control and fewer task-oriented strategies in non-drinking

situations reinforces the potential usefulness of broad spectrum approaches to the treatment of alcohol abuse. Broad spectrum approaches include strategies to reduce or eliminate drinking as well as strategies for the enhancement of coping skills (Hester & Miller, 1989; Platt & Hermalin, 1989). These approaches have been developed on the assumption that if individuals with drinking problems learn various social and coping skills they will be better prepared to handle difficult situations that may lead to drinking. Studies have shown that the use of problem-solving strategies in non-drinking situations has been associated with less alcohol consumption in recovering alcoholics (Chaney et al., 1978); Cronkite & Moos, 1984; Jones et al., 1982; Sjoberg & Samsonowitz, 1985).

Interventions for students abusing alcohol could be aimed at balancing the overemphasis on drinking as a coping strategy by using more task-oriented coping and self-control strategies. The high-risk situations for drinking reported by several authors (Brown et al., 1989; Marlatt and Gordon, 1985) appear to have been supported in this sample of students as relevant situations for studying coping strategies and drinking problems. Further research could examine self-control, task-oriented coping strategies and avoidant strategies in a variety of other high-risk situations. This could provide more specific and useful recommendations for prevention and intervention with students with drinking problems.

6. REFERENCES

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Appendix A

Michigan Alcoholism Screening Test

Answer Yes or No:

1. Do you feel you are a normal drinker? (No = 2)*
2. Have you ever awakened the morning after some drinking the night before and found that you could not remember a part of the evening before? (Yes = 2)
3. Does your spouse (or parents) ever worry or complain about your drinking? (Yes = 1)
4. Can you stop drinking without a struggle after one or two drinks? (No = 2)
5. Do you ever feel bad about your drinking? (Yes = 1)
6. Do friends or relatives think you are a normal drinker? (No = 2)
7. Are you always able to stop drinking when you want to? (No = 2)
8. Have you ever attended a meeting of Alcoholics Anonymous (AA) because of your drinking? (Yes = 5)
9. Have you gotten into fights when drinking? (Yes = 1)
10. Has drinking ever created problems with you and your spouse (or girlfriend, or other family members)? (Yes = 2)
11. Has your spouse (or other family member) ever gone to anyone for help about your drinking? (Yes = 2)
12. Have you ever lost friends or girlfriend/ boyfriend because of drinking? (Yes = 2)
13. Have you ever gotten into trouble at work because of drinking? (Yes = 2)
14. Have you ever lost a job because of drinking? (Yes = 2)
15. Have you ever neglected your obligations, your family or your work for two or more days in a row because of drinking? (Yes = 2)
16. Do you ever drink before noon? (Yes = 1)

(appendix continues)

17. Have you ever been told you have liver trouble, cirrhosis?
(Yes = 2)
18. Have you ever had delirium tremens (DTs), severe shaking, heard voices, or seen things that weren't there after heavy drinking? (Yes = 5)
19. Have you ever gone to anyone for help about your drinking?
(Yes = 5)
20. Have you ever been in a hospital because of drinking? (Yes = 5)
21. Have you ever been a patient in a psychiatric hospital or on a psychiatric ward of general hospital where drinking was part of the problem? (Yes = 2)
22. Have you ever been seen at a psychiatric or mental health clinic, or gone to a doctor, social worker, or clergyman for help with an emotional problem in which drinking had played a part? (Yes = 2)
23. Have you ever been arrested, even for a few hours, because of drunk behavior? (Yes = 2)
24. Have you ever been arrested for drunk driving or driving after drinking? (Yes = 2)

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*Scores were not presented to the person completing the questionnaire.

Appendix B

Questionnaire on Alcohol Use

1. During the past 12 months, what was your usual pattern of alcohol use? Circle one:

	(scoring)
1) Never drank alcohol. Is there a specific reason? _____	0
2) Drank less than once a month	1
3) Drank one to three times a month	2
4) Drank one to three times a week	3
5) Drank four or more days per week	4
6) Drank almost daily	5

The following questions concern the past 12 months:

2. In a typical week (7-day period) how many days do you usually consume alcohol? _____ days.
3. On a typical drinking day, how many drinks do you usually have? (Use the quantities below) _____ drinks.
- ONE DRINK = 1 1/2 oz (43 ml) Whisky, Rum, etc,
 or 5 oz (142ml) table wine (one glass),
 or 12 oz (341 ml) beer (one small beer)
4. What is the most number of drinks that you would drink in one day? _____ drinks.
5. How many times a month would you drink this most number of drinks? _____ times.

Appendix C

Questionnaire on Drug Use

Have you consumed any of the following in the past year?

Mark (X) those that apply:

	Never	Less than once a month	Once a month	Several times a month
	0	1	2	3
<u>Licit drugs</u>				
Tranquilizers/Sedatives (e.g. sleeping pills, Valium)	—	—	—	—
<u>Illicit drugs</u>				
Cannabis (hashish, marijuana)	—	—	—	—
Cocaine.....	—	—	—	—
Crack.....	—	—	—	—
Amphetamines/Speed.....	—	—	—	—
Narcotic Analgesics (e.g. heroin)	—	—	—	—
Hallucinogens (e.g. LSD, PCP)	—	—	—	—
Other drugs _____	—	—	—	—

Appendix D

Questionnaire on Father's Drinking Practices (F-SMAST)

The following questions are about your biological father.
Answer Yes or No.

Scores^a (N = no; Y = yes)

- N=2 1. Do you feel your father has been a normal drinker?
- Y=1 2. Did your mother, grandparent, or other near relative ever complained about your father's drinking?
- Y=1 3. Did your father ever felt guilty about his drinking?
- N=2 4. Did friends and relatives think your father was a normal drinker?
- N=2 5. Was your father able to stop drinking when he wanted to?
- Y=5 6. Has your father ever attended a meeting of Alcoholics Anonymous (AA)?
- Y=2 7. Has your father's drinking ever created problems between him and your mother or another near relative?
- Y=2 8. Has your father ever gotten into trouble at work because of drinking?
- Y=2 9. Has your father ever neglected his obligations, his family, or his work for 2 or more days in a row because of his drinking?
- Y=5 10. Has your father ever gone to anyone for help about his drinking?
- Y=5 11. Has your father ever been in a hospital because of drinking?
- Y=2 12. Has your father ever been arrested for drunken driving, driving while intoxicated, or driving under the influence of alcoholic beverages?
- Y=2 13. Has your father ever been arrested, even for a few hours, because of other drunken behavior?

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^a scores were not presented for completion of the questionnaire.

Appendix E

Questionnaire on Mother's Drinking Practices (M-SMAST)

The following questions are about your biological mother.
Answer Yes or No.^a

1. Do you feel your mother has been a normal drinker?
2. Did your father, grandparent, or other near relative ever complained about your mother's drinking?
3. Did your mother ever felt guilty about her drinking?
4. Did friends and relatives think your mother was a normal drinker?
5. Was your mother able to stop drinking when she wanted to?
6. Has your mother ever attended a meeting of Alcoholics Anonymous (AA)?
7. Has your mother's drinking ever created problems between her and your father or another near relative?
8. Has your mother ever gotten into trouble at work because of drinking?
9. Has your mother ever neglected her obligations, her family, or her work for 2 or more days in a row because of her drinking?
10. Has your mother ever gone to anyone for help about her drinking?
11. Has your mother ever been in a hospital because of drinking?
12. Has your mother ever been arrested for drunken driving, driving while intoxicated, or driving under the influence of alcoholic beverages?
13. Has your mother ever been arrested, even for a few hours, because of other drunken behavior?

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aScores are the same as for the F-SMAST (Appendix D).

Appendix F

Questionnaire on Drinking Practices of Family Members

The following questions concern the use of alcohol by your BIOLOGICAL family members. The term "alcohol abuse" refers to a pattern of drinking which significantly affects an individual's health, relationships, or job, etc. In other words, drinking that causes problems.

Please indicate the number of BIOLOGICAL brothers, sisters, uncles, aunts and grandparents you have (living or deceased) that are/have been alcohol abusers (as far as you know). Please DO NOT include half brothers, half sisters and relatives who are not biologically related to you.

How many of your brothers are/have been alcohol abusers: _____

How many of your sisters are/have been alcohol abusers: _____

On the side of your FATHER (include only BIOLOGICAL Relatives):

How many of your uncles are/have been alcohol abusers: _____

How many of your aunts are/have been alcohol abusers: _____

Has your paternal grandfather is/has been alcohol abuser: _____

Has your paternal grandmother is/has been alcohol abuser: _____

On the side of your MOTHER (include only BIOLOGICAL Relatives):

How many of your uncles are/have been alcohol abusers: _____

How many of your aunts are/have been alcohol abusers: _____

Has your maternal grandfather is/has been alcohol abuser: _____

Has your maternal grandmother is/has been alcohol abuser: _____

Appendix G

Questionnaire on Personal and Family Information

1. How old are you?
2. What is your present marital status? Circle one:
 - 1) Single (never married)
 - 2) Married
 - 3) Divorced / separated
 - 4) Widowed
 - 5) Cohabiting
3. What program are you studying?
4. What is the highest year of education you have completed?
5. What is the highest year of education that your father has completed?
 - 1) Some or all elementary school
 - 2) Some high school
 - 3) Completed high school (Grade 12 or 13)
 - 4) High school + some college/ university
 - 5) Completed college / university
 - 6) Completed a post graduate university degree
6. What is/was the profession of your father?
7. How many years did you have regular contact with your father?
8. What is the highest year of education that your mother has completed?
 - 1) Some or all elementary school
 - 2) Some high school
 - 3) Completed high school (Grade 12 or 13)
 - 4) High school + some college/ university
 - 5) Completed college / university
 - 6) Completed a post graduate university degree
9. What is/was the profession of your mother?

(appendix continues)

10. What is your ethnic origin?

- | | |
|---------------------|---------------------------|
| 1) English Canadian | 4) Italian |
| 2) French Canadian | 5) Chinese |
| 3) Spanish | 6) Other (Specify: _____) |

11. How old were you when you first began to drink?
Do not refer to an occasional experimentation
with alcohol but to a pattern of use (e.g. parties,
weekends, celebrations): _____ years old.

12. If you could choose only one substance, would you
prefer alcohol or any drug (if drug, please
specify which one)? _____

13. Have you driven in the past 12 months after having
2 or more drinks in the previous hour? 1) Yes 2) No

Appendix H

Self-Control Schedule

This questionnaire is designed to find out how different people view their thinking and their behavior. A statement may range from very characteristic of you to very uncharacteristic of you. There are no right or wrong answers. We simply want to know how you feel each statement applies to you. Please answer every item, and give only one answer for each item. Use the following code to indicate whether a statement describes your thinking or behavior.

- 3 Very uncharacteristic of me, extremely un-descriptive.
- 2 Rather uncharacteristic of me, quite un-descriptive.
- 1 Somewhat uncharacteristic of me, slightly un-descriptive.
- +1 Somewhat characteristic of me, slightly descriptive.
- +2 Rather characteristic of me, quite descriptive.
- +3 Very characteristic of me, extremely descriptive.

1. When I do a boring job, I think about the less boring parts of the job and about the reward I will receive when I finish.
2. When I have to do something that makes me anxious, I try to visualize how I will overcome my anxiety while doing it.
3. By changing my way of thinking, I am often able to change my feelings about almost anything.
4. I often find it difficult to overcome my feelings of nervousness and tension without outside help.^a
5. When I am feeling depressed, I try to think about pleasant events.
6. I cannot help thinking about mistakes I made.^a
7. When I am faced with a difficult problem, I try to approach it in a systematic way.
8. I usually do what I'm supposed to do more quickly when someone is pressuring me.^a
9. When I am faced with a difficult decision, I prefer to postpone it even if I have all the facts.^a
10. When I have difficulty concentrating on my reading, I look for ways to increase my concentration.

(appendix continues)

11. When I plan to work, I remove everything that is not relevant to my work.
12. When I try to get rid of a bad habit, I first try to find out all the reason why I have the habit.
13. When an unpleasant thought is bothering me, I try to think about something pleasant.
14. If I smoked two packs of cigarettes a day, I would need outside help to stop smoking.^a
15. When I feel down, I try to act cheerful so that my mood will change.
16. If I carried the pills with me, I would take a tranquilizer whenever I felt tense and nervous.^a
17. When I am depressed, I try to keep myself busy with things I like.
18. I tend to postpone unpleasant tasks even if I could perform them immediately.^a
19. I need outside help to get rid of some of my bad habits.^a
20. When I find it difficult to settle down and do a task, I look for ways to help me settle down.
21. Although it makes me feel bad, I cannot help thinking about all sorts of possible catastrophes.^a
22. I prefer to finish a job that I have to do before I start doing things I really like.
23. When I feel physical pain, I try not to think about it.
24. My self-esteem increases when I am able to overcome a bad habit.
25. To overcome bad feelings that accompany failure, I often tell myself that it is not catastrophic and I can do something about it.
26. When I feel that I am too impulsive, I tell myself to stop and think before I do anything.
27. Even when I am terribly angry at someone, I consider my actions very carefully.

(appendix continues)

28. Facing the need to make a decision, I usually find out all the alternatives instead of deciding quickly and spontaneously.
29. Usually, I first do the things I really like to do even if there are more urgent things to do.*
30. When I realize that I am going to be unavoidably late for an important meeting, I tell myself to keep calm.
31. When I feel pain in my body, I try to divert my thoughts from it.
32. When I am faced with a number of things to do, I usually plan my work.
33. When I am short of money, I decide to record all my expenses in order to budget more carefully in the future.
34. If I find it difficult to concentrate on a task, I divide it into smaller segments.
35. Quite often, I cannot overcome unpleasant thoughts that bother me.*
36. When I am hungry and have no opportunity to eat, I try to divert my thoughts from my stomach or try to imagine that I am satisfied.

Note. From Rosenbaum, M. (1980). A schedule for assessing self-control behaviors: Preliminary findings. *Behavior Therapy*, 11, 109-121. Copyright 1980 by the Association for Advancement of Behavior Therapy. Reprinted by permission of the author and publisher. (See letter of permission in Appendix S.)

*Reverse items.

Appendix I

The Coping Inventory for Stressful Situations

Adapted to High Risk Situations for Drinking (CISS-HR)

Situation 1

Remember when you experience the following stressful situation:

"You are not in a good mood. You've had a bad day and you have a negative feeling or unpleasant emotion."

On the following pages, you will find different ways people react to various difficult, stressful or upsetting situations. For each item, please choose a number from 1 (not at all) to 5 (very much)

NOT AT ALL 1 2 3 4 5 VERY MUCH

to indicate how much you engage in each activity when you experience the above stressful situation.

Note. The following items are reproduced from Endler, N. S. & Parker, J. D. A., Coping Inventory for Stressful Situations Manual. Copyright (1990) by Multi-Health Systems Inc. Reprinted by permission of the publisher. (see letter of permission in Appendix S).

(appendix continues)

1. Schedule my time better.
2. Focus on the problem and see how I can solve it.
3. Think about the good times I have had.
4. Try to be with other people.
5. Blame myself for procrastinating.
6. Do what I think is best.
7. Am preoccupied with aches and pains.
8. Blame myself for having gotten into this situation.
9. Window shop.
10. Outline my priorities.
11. Try to go to sleep.
12. Treat myself to a favorite food or snack.
13. Feel anxious and not being able to cope.
14. Become very tense.
15. Think about how I have solved similar problems.
16. Tell myself that it is really not happening to me.
17. Blame myself for being too emotional about the situation.
18. Go out for a snack or meal.
19. Become very upset.
20. Buy myself something.
21. Determine a course of action and follow it.
22. Blame myself for not knowing what to do.
23. Go to a party.
24. Work to understand the situation.
25. "Freeze" and do not know what to do.
26. Take corrective action immediately.
27. Think about the event and learn from my mistake.
28. Wish that I could change what had happened or how I feel.
29. Visit a friend.
30. Worry about what I am going to do.
31. Spend time with a special person.
32. Go for a walk.
33. Tell myself that it will never happen again.
34. Focus on my general inadequacies.
35. Talk to someone whose advice I value.
36. Analyse the problem before reacting.
37. Phone a friend.
38. Get angry.
39. Adjust my priorities.
40. See a movie.
41. Get control of the situation.
42. Make an extra effort to get things done.
43. Come up with several different solutions to the problem
44. Take time off and get away from the situation.
45. Take it out on other people.
46. Use the situation to prove that I can do it.
47. Try to be organized so I can be on top of the situation.
48. Watch TV.

(appendix continues)

Situation 2

Take your time to remember your feelings and behaviors when you have experienced the following stressful situation:

" You have had an argument or you are not getting along well with a member of your family."

If you have had such negative experiences, think about what your reactions have been. If this does not sound familiar, think about situations where you have been in conflict with other persons important to you such as a girlfriend, an employer, etc.

On the following pages, you will find different ways people react to various difficult, stressful or upsetting situations. For each item, please choose a number from 1 (NOT AT ALL) to 5 (VERY MUCH) to indicate how much you engage in each activity when you experience the above stressful situation. Do not use 0.

Note. The items of the CISS were presented here a second time.

(appendix continues)

Situation 3

In some circumstances, you may feel that you are invited or pressured by some people to drink more alcohol than you wish or intend.

In some cases, this can become a difficult and stressful situation. If you have had such experiences, think about what your reactions have been. If this does not sound familiar to you, think about what would be your most likely reactions if you were confronted often with people who would invite you to drink more than you want.

Please choose a number from 1 (NOT AT ALL) to 5 (VERY MUCH) to indicate how much you engage in each activity when you experience the above stressful situation. You will find that some of the following activities do not directly apply to this situation. When this is the case, answer NOT AT ALL (1).

Note. The items of the CISS were presented here a third time.

(appendix continues)

Instruction for Scoring the CISS

For TASK Coping, the following 16 items are summed: 1, 2, 6, 10, 15, 21, 24, 26, 27, 36, 39, 41, 42, 43, 46, 47.

For EMOTION Coping, the following 16 items are summed: 5, 7, 8, 13, 14, 16, 17, 19, 22, 25, 28, 30, 33, 34, 38, 45.

For AVOIDANCE Coping, the following 16 items were summed: 3, 4, 9, 11, 12, 18, 20, 23, 29, 31, 32, 35, 37, 40, 44, 48.

Appendix J

Procedure

Screening Questionnaires (1013 students)	Minutes
Information and consent forms	5
Questionnaire on alcohol and drug use and family history of drinking problems	5
Michigan Alcoholism Screening Test (MAST)	5
Father SMAST	3
Mother SMAST	3
	Total = 20

Second Series of Questionnaires (194 students)	Minutes
Information and consent form	5
Questionnaire on personal and family information	5
Self-Control Schedule	10
Coping Inventory for Stressful Situations	20
Debriefing Information Sheet	
	Total = 40

Appendix K

Verbal Script for the Recruitment of Subjects

My name is Christiane Fradet. I am a graduate student at the school of psychology at the University of Ottawa. I would like to give you some information on my study and ask you to participate if you are interested.

This is a study on alcohol use and reactions to stress. The purpose of the research is to compare different groups of students, those who drink very little and those who drink regularly alcohol, in terms of their reactions to stress in their life.

We are looking for male students who want to complete a brief 20 minutes screening questionnaire today. The questions concern your use of alcohol and drugs and your immediate relatives' use of alcohol. All information provided will be treated in the strictest confidentiality and will only be used for research purposes and presented in group format. The list of names and the questionnaires will be kept locked and will be accessible only to myself and a research assistant.

Based on your responses on these questionnaires, we will call students who would be eligible for the next phase of the study. If you are not present when we call, the research assistant would leave a name and number where you can call back and we would not mention your participation in the study to anyone to keep your participation confidential. If you want to participate in the second phase of the study, you would be asked to choose a 40 minute testing period. Questionnaires would be given in a classroom with other students. These questionnaires would ask about your typical reactions in different stressful situations and would ask about demographic information such as age, marital status, etc. The procedure would not involve direct exposure to stressful situations.

You may refuse to participate, withdraw from the study at anytime, or you may refuse to answer some questions. Your decision will not affect your marks in this class. Even if you complete the questionnaire today, you may still refuse to complete the second series of questionnaires. However, if you are sure that you will not be interested in completing the second series of questionnaires, please do not complete the screening questionnaire today. If you complete the questionnaire, you will be providing useful information which will help us understand and deal with alcohol problems. We appreciate your cooperation should you decide to participate.

(appendix continues)

You can find more information on the study in the blue pages you have received. If you want to complete the questionnaire, you can keep the blue pages for your information and we will collect the white pages when you are finished.

Do you have any questions on this study?

To respect your decision to volunteer or to refuse to participate, we are asking your signature on the consent form. If you are willing to complete the screening questionnaire for this study, sign the consent form and complete the questionnaire attached now.

Appendix L

Written Information on the Study

A study of the relationship between risk for alcohol
abuse and reactions to stressful situations

Investigators: Christiane Fradet, M.Ps., Allan Wilson, M.D. Ph.D.
School of Psychology, University of Ottawa.

What is the purpose of the study?

Prevention and treatment of drinking problems are currently of great concern in our society. A question of particular importance is why some people develop problems with alcohol and others do not. We are conducting a study to determine if persons who are at different risks for the development of alcohol abuse have different reactions to stress.

Who can participate?

- Male students who:
- have a good comprehension of written English,
- would agree to complete a screening questionnaire today and to be eligible to complete the second series of questionnaires (30-40 minutes) within the next month, and
- have not received treatment for problems related to alcohol or drugs.

What would I be asked to do if I agree to participate?

1) First series of questionnaires (today)

You would complete the attached screening questionnaire which requires approximately 15 minutes. The questions concern your use of alcohol and drugs and your immediate relatives' use of alcohol.

Based on your responses on this questionnaire, approximately 20 percent of students would be eligible to a second series of questionnaires on their typical reactions to stress. Eligible students would be contacted by phone by a research assistant. We would not mention your participation in the study to anyone else to keep your participation confidential.

(appendix continues)

2) Second series of questionnaires (within the next few weeks)

If you accept to complete the second series of questionnaires, you would be asked to choose a 40-minute period to complete questionnaires in a classroom. You would be mixed with other students who could be either at lower or at higher risk for drinking problems. Nobody would be identified as having drinking problems. However, if you prefer to complete the questionnaires individually, you could also choose to do so.

These questionnaires would consist of demographic information (age, marital status, etc.) and two questionnaires on your typical reactions in stressful situations or daily situations. The procedure does not involve direct exposure to stressful situations.

Who would have access to my answers?

All information provided would be treated in the strictest confidence and would only be used for research purpose. Results would be presented in group format. The list of names and the questionnaires would be kept locked and would be accessible only to the researchers.

Do I have a choice to participate?

Yes. You may refuse to participate or you may withdraw from the study at anytime, or you may refuse to answer individual questions. Your decision will not affect your marks in this class. If you do agree to take part, you will be providing useful information which will help us understand and deal with alcohol problems. We appreciate your cooperation should you decide to participate.

How can I be informed of the results of this study and how can I get more information?

If you are interested in receiving a summary of the research or if you have any questions on this study, write to Christiane Fradet, School of Psychology, University of Ottawa, 145 Jean-Jacques Lussier, Ottawa, Ont., K1N 6N5.

Why do I have to sign a consent form?

To assure and respect the decision of students to accept or to refuse to participate, we ask you to sign a consent form. If you are willing to complete the questionnaire for this study, please sign the consent form and complete the questionnaire attached.

Appendix M

Consent Form for the Screening Questionnaires

A study of the relationship between risk for alcohol
abuse and reactions to stressful situations

Investigators: Christiane Fradet, M.Ps., Allan Wilson, M.D. Ph.D.
School of Psychology, University of Ottawa.

I, _____(PRINT NAME), agree to complete the screening questionnaires for the study described to me by Christiane Fradet. I may refuse to answer some questions or withdraw from the study at anytime. I understand that I might be called by a research assistant if I am eligible to complete the second series of questionnaires but I may refuse to participate in the second series of questionnaires.

All information provided will be treated in the strictest confidence and will only be used for research purposes and presented in group format. The consent form will be separated from the questionnaires after which only a code number will identify the questionnaires. The list of names and the questionnaires will be kept locked and will be accessible only to the researchers.

INVESTIGATOR'S SIGNATURE: _____

PARTICIPANT'S SIGNATURE: _____

DATE: _____

IMPORTANT: I CAN BE REACHED AT THE FOLLOWING NUMBERS:

PHONE NUMBER(S):

BEST TIME TO BE REACHED:

Note. Both participant and investigator keep one copy of the consent form.

Appendix N

Information on AlcoholAlcohol and other drugs

Alcohol produces physical and psychological addiction exactly like other drugs and is the most commonly abused drug in our society. Alcohol abuse is the continued use of alcohol causing emotional, interpersonal, familial, job, financial, legal, health or other problems.

Information on Alcohol and Drugs

The Addiction Research Foundation has a toll-free confidential information line in Ontario: 1-800-387-2916. More than 60 audiotapes are available on alcohol and other drug topics. Call 9:00 am to 9:00 pm and simply give the tape reference number. The operator will connect you directly to one of the 4-6 minute audiotapes. You can also request a complete list of topics. Examples of those tapes include:

- 101 Alcohol and Its Effect.
- 102 Short-term Harmful Effects.
- 103 Long-term Effects.
- 104 Identifying Alcoholism.
- 105 Drinking and Driving.
- 106 Facts and Fallacies About Alcoholism.
- 109 Can Alcoholics Recover? Research on Treatment of Alcoholics.
- 201 Cocaine.
- 203 Marijuana and Hashish.
- 204 Sex, Marijuana and Alcohol.
- 305 Alcohol, Drugs and Violence.

Assessment

Any person wishing to have an assessment as to whether or not they have an addiction problem to alcohol or drugs may be assessed at the Addiction Services at the Royal Ottawa Hospital (724-6508). A physician will evaluate you through an interview. A variety of individual and group services are also available.

Support Groups

Several meetings are held in Ottawa for persons wishing to stay abstinent from alcohol or drugs, or for family members:

- | | |
|---|----------|
| Alcoholics Anonymous: | 523-9977 |
| Narcotics Anonymous: | 236-4674 |
| Cocaine Anonymous : | 739-0509 |
| Al-Anon (for family members of person abusing drug or alcohol): | 725-3431 |
| Adult Children of Alcoholics : | 725-6131 |

Appendix O

Telephone Conversation Script

to Students Eligible for the Second Series of Questionnaires

My name is Christiane Fradet (or name of research assistant) from the University of Ottawa. I am calling concerning the questionnaires on use of alcohol that you have completed in class last week.

Based on your responses to these questionnaires, we have found that you are eligible to participate to the second questionnaire. Would you like to know what this would involve?

If you agree to participate, you would complete a series of short questionnaires for a total of approximately 40 minutes. These questionnaires would consist of questions on your typical reactions in stressful situations. There would be also a few questions on your familial background and questions such as your age, the program you are studying, etc. All information provided would be treated in the strictest confidence. The questionnaires would be accessible only to the investigators for research purposes.

The questionnaires would be given in a classroom with other students. There would be different people in the room, some students who drink very little and other students who drink alcohol regularly. Nobody in the class would necessarily have or could be identified as having a drinking problem. However, if you prefer, you could choose to complete the questionnaires individually.^a

(For students at Carleton University) If you choose to participate, you would receive one experimental credit toward your introductory psychology final grade.

Are you interested to participate?

Do you accept to complete the questionnaires in group?^a

Before I give you the dates and time available, do you have any questions?

The following dates and periods are available, tell me which one is good for you...

^aAll students chose testing in group rather than individually.

Appendix P

Consent Form for the Second Questionnaire

A study of the relationship between risk for alcohol
abuse and reactions to stressful situations

Investigators: Christiane Fradet, M.Ps., Allan Wilson, M.D. Ph.D.
School of Psychology, University of Ottawa.

I, _____ (PRINT NAME), agree to complete a series of questionnaires for a total of approximately 40 minutes. These questionnaires will consist of demographic information and questions on my typical reactions in stressful situations.

I may withdraw from the study at anytime, or I may refuse to answer individual questions. All information provided will be treated in the strictest confidence and will only be used for research purposes and presented in group format. The consent form will be separated from the questionnaires after which only a code number will identify your questionnaires. The list of names and the questionnaires will be kept locked and will be accessible only to the researchers.

INVESTIGATOR'S SIGNATURE: _____

PARTICIPANT'S SIGNATURE: _____

DATE: _____

P.S. If you are interested in receiving a summary of the research results, write your address where you could be reached next summer: (you can also contact the researcher as indicated on the blue information sheet) _____

Note. Both participant and investigator keep one copy of the consent form.

Appendix Q

Debriefing

A study of the relationship between risk for alcohol
abuse and reactions to stressful situations

Principal investigator: Christiane Fradet, M.Ps. School of Psychology, University of Ottawa.

Thank you for your participation in our study. You have been eligible to participate on the basis of your responses to our screening questionnaire regarding your use of alcohol and the use of alcohol in your family. We have selected students with a wide range of alcohol consumption; some students who drink very little and some students who drink alcohol regularly. If you have any concerns regarding alcohol and drugs, consult the list of resources provided.

Some of the questionnaires that you have completed had various questions on your typical reactions to stress in your life. We will compare the reactions of different groups of students, depending on 1) whether or not they report alcohol problems in their family and 2) whether or not they report negative consequences of their drinking.

If you have questions on this study or are interested to receive a summary of the results, you can contact Christiane Fradet, School of Psychology, University of Ottawa, 145 Jean-Jacques Lussier, Ottawa, Ontario, K1N 6N5, 564-4224.

Students at Carleton University (as required by the Ethics Committee): If you have any concerns regarding this study, you can also contact the following persons: Dr. Allan Wilson, thesis advisor, 724-6508; Dr. Chris Hurdman, Chairman of the Ethics Committee, Department of Psychology, 788-2689; and Dr. William Jones, Chairman of the Department of Psychology, 788-2648.

Appendix R

Exclusion and Inclusion Criteria

Family History of Drinking problems

FH-	FH+
Family history negative	Family history positive
F-SMAST and M-SMAST < 5 Men reporting no biological parents with drinking problems	F-SMAST > OR = 5 Men reporting that their biological father had drinking problems

Exclusion:

More than two second degree relatives with possible drinking problems.

No Drinking problems	1	2
MAST < 5		
<u>Exclusion:</u> More than 14 drinks per week in the past 12 months OR Use of illegal drugs more than once a month in the past 12 months	$\underline{n} = 49^a$	$\underline{n} = 43$
Drinking problems	3	4
MAST > or = 5		
<u>Exclusion:</u> Drinking less than once a month in the past 12 months	$\underline{n} = 49^b$	$\underline{n} = 48^c$

^aNumber of subjects after 2 outliers have been removed.

^bNumber of subjects after 2 outliers have been removed.

^cNumber of subjects after 1 outlier has been removed.

Appendix S

Letters of Permission

1. APA Periodicals Services Division.
2. Pergamon Press.
3. Association for Advancement of Behavior Therapy.
4. M. Rosenbaum, Ph.D.
5. Multi-Health Systems Inc.



UNIVERSITÉ D'OTTAWA
UNIVERSITY OF OTTAWA

ÉCOLE DE PSYCHOLOGIE
SCHOOL OF PSYCHOLOGY

Ottawa, May 8 1992

APA Periodicals Services Division
1400 K Street, N.W.
Washington, DC 20005

Sir/Madam,

I would like to obtain permission to reproduce a table that appeared in The American Journal of Psychiatry, 127, 1971, p. 1655. The article was written by M. L. Selzer and was entitled "The Michigan Alcoholism Screening Test: The quest for a New Diagnostic Instrument" I would like to reproduce the table in my doctoral thesis which will be entitled "Reactions to high risk situations for drinking in young men at risk for alcoholism".

Thank you for your attention regarding this matter. I would appreciate to receive an answer at your earliest convenience.

Sincerely,

Christiane Fradet

Christiane Fradet, M.Ps.,
School of Psychology
University of Ottawa

PERMISSION GRANTED

MAY 28 1992

AMERICAN JOURNAL OF PSYCHIATRY
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145 JEAN-JACQUES LUSSIER, OTTAWA, ONTARIO, CANADA K1N 6N5
(613) 564-4242

M. L. Selzer



PERGAMON PRESS

Registered Office Headington Hill Hall, Oxford OX3 0BW, UK
Telephone (+44)865 794141 Fax (+44)865 60285

Ms Christiane Fradet
School of Psychology
University of Ottawa
145 Jean-Jacques Lussier
Ottawa
Ontario
CANADA K1N 6N5

Our Ref: AIJ/ACJ/P
Date: 3 June, 1992

Dear Ms Fradet,

Re. Addictive Behaviors, Vol. 11, table on p. 28, 1986

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Yours sincerely

PP Mrs Anne-Cecile Junger
Deputy Subsidiary Rights Manager



Association for Advancement of Behavior Therapy
 15 West 36th Street • New York, NY 10018 • 212-279-7970

July 8, 1992

Christine Fradet, M.Ps
 University of Ottawa
 School of Psychology
 145 Jeans Jacques Lussier
 Ottawa, Ontario
 CANADA K1N 6N6

Dear Ms. Fradet,

SOURCE: Michael Rosenbaum. A Schedule for Assessing Self-control Behaviors: Preliminary Findings. Behavior Therapy, Volume 11, (1988) Pages 113-114.

MATERIAL: Table 1.

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Department of Psychology

Fax: 972-3-640-9547
E-MAIL: ROSEN@VE.TAU.AC.IL


August 1, 1992

Christiane Fradet, M. Ps.
School of Psychology
University of Ottawa
Ontario, Canada K1N 6N5

Dear Ms. Fradet:

Thank you for your interest in my work. You have my permission to reproduce the SCS in your doctoral dissertation. I would also appreciate if you share with me any findings on the SCS that you have found in your research.

Sincerely yours,



Michael Rosenbaum, Ph.D.
Associate Professor of Psychology

July 23, 1992

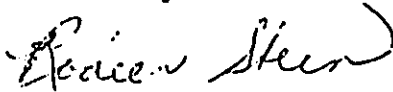
Christine Fradet, M.Ps.
School of Psychology
University of Ottawa
145 Jean-Jacques Lussier
Ottawa, ON
K1N 6N5

Dear Ms. Fradet:

Permission is granted to reproduce the items of the CISS in your dissertation.

We would appreciate receiving an abstract of your research findings.

Sincerely



Rodeen Stein
Permissions Dept.

Table 1
Distribution of Eligible Subjects

	Groups	
	FH- ^a	FH+ ^b
Eligible subjects who participated in the study		
No drinking problems	$\underline{n} = 51$	$\underline{n} = 43$
Drinking problems	$\underline{n} = 51$	$\underline{n} = 49$
Eligible subjects who did not participate ^c		
No drinking problems	$\underline{n} = 182$	$\underline{n} = 11$
Drinking problems	$\underline{n} = 50$	$\underline{n} = 12$

^aFH- = no family history of drinking problems.

^bFH+ = family history of drinking problems.

^cReasons for non-participation are described in the Method section.

Table 2

Means and Standard Deviations of Variables Used in Assignment to Groups

Alcohol variable	Groups			
	No drinking problems		Drinking problems	
	FH-- ^a	FH+ ^b	FH-	FH+
MAST				
<u>M</u>	1.0	1.7	12.8 ^c	9.9
<u>SD</u>	1.5	1.5	4.7	4.4
Drinking days/ week^d				
<u>M</u>	1.0	1.0	2.7	2.7
<u>SD</u>	0.8	1.0	1.3	1.6
Drinks/drinking days^d				
<u>M</u>	2.7	4.0	9.1	7.7
<u>SD</u>	1.7	3.3	4.0	4.0
Total drinks/ week^d				
<u>M</u>	2.6	4.6	23.4	22.9
<u>SD</u>	2.4	4.5	15.0	19.4
Most no. of drinks/ day^d				
<u>M</u>	5.1 ^e	7.5	17.5	15.2
<u>SD</u>	2.5	5.0	7.0	6.0

(table continues)

Table 2 (continues)

Alcohol variable	Groups			
	No drinking problems		Drinking problems	
	FH- ^a	FH+ ^b	FH-	FH+
F-SMAST				
<u>M</u>	0.7	14.0	1.0	12.4
<u>SD</u>	1.4	7.9	1.5	7.9
M-SMAST				
<u>M</u>	0.4	1.2	0.7	1.5
<u>SD</u>	1.2	2.8	1.3	2.1
No. of relatives who abused alcohol				
<u>M</u>	0.2	2.2	0.6	2.8
<u>SD</u>	0.6	2.7	0.8	2.6

^aFH- = no family history of drinking problems.

^bFH+ = family history of drinking problems.

^c12.8 was significantly higher than 9.9, $t(98) = 2.76$, $p < .01$.

^dduring the past 12 months.

^e5.1 was significantly lower than 7.5, $t(60) = -2.88$, $p < .01$.

Table 3

Percentages of Students who Used Alcohol/ Drugs in Past 12 Months

Frequency of use	Groups			
	No drinking problems		Drinking problems	
	FH- ^a	FH+ ^b	FH-	FH+
Alcohol				
0 Never drank alcohol	2%	12%	0	0
1 Drank less than 1/ month	37%	21%	0	6
2 Drank 1 to 3 /month	37%	37%	14%	31%
3 Drank 1 to 3 /week	24%	30%	67%	47%
4 Drank 4 or more /week	0	0	12%	18%
5 Drank almost daily	0	0	8%	4%
Total:	100%	100%	100%	100%
Drugs^c				
0 Never	90%	79%	28%	33%
1 Less than 1/month	6%	19%	31%	43%
2 Once a month	4%	2%	8%	8%
3 More than 1/month	0	0	33%	16%
Total:	100%	100%	100%	100%

(table continues)

^aFH- = no family history of drinking problems. ^bFH+ = family history of drinking problems. ^cScore for the most frequently used drug presented in the next pages.

Table 3 (continues)

Frequency of use	Groups			
	No drinking problems		Drinking problems	
	FH-	FH+	FH-	FH+
Cannabis				
Never	94%	83%	33%	39%
Less than 1/month	6%	14%	29%	39%
Once per month	0	2%	6%	6%
More than 1/month	0	0	29%	16%
(No answer)	0	2%	2%	0
Total:	100%	100%	100%	100%
Hallucinogens				
Never	98%	95%	61%	86%
Less than 1/month	0	2%	20%	10%
Once per month	0	0	4%	4%
More than 1/month	0	0	6%	0
(No answer)	2%	2%	10%	0
Total:	100%	100%	100%	100%

(table continues)

Table 3 (continues)

Frequency of use	Groups			
	No drinking problems		Drinking problems	
	FH-	FH+	FH-	FH+
Tranquilisers / Sedatives				
Never	92%	91%	75%	74%
Less than 1/month	4%	9%	16%	16%
Once per month	4%	0	6%	6%
More than 1/month	0	0	4%	4%
(No answer)	0	0	0	0
Total:	100%	100%	100%	100%
Narcotics / Analgesics				
Never	98%	98%	82%	100%
Less than 1/month	0	0	4%	0
Once per month	0	0	4%	0
More than 1/month	0	0	0	0
(No answer)	2%	2%	10%	0
Total	100%	100%	100%	100%

(table continues)

Table 3 (continues)

Frequency of use	Groups			
	No drinking problems		Drinking problems	
	FH-	FH+	FH-	FH+
Amphetamines				
Never	98%	98%	84%	84%
Less than 1/month	0	0	2%	12%
Once per month	0	0	4%	2%
More than 1/month	0	0	2%	2%
(No answer)	2%	2%	8%	0
Total	100%	100%	100%	100%
Cocaine				
Never	98%	96%	80%	90%
Less than 1/month	0	2%	10%	8%
Once per month	0	0	2%	0
More than 1/month	0	0	0	2%
(No answer)	2%	2%	8%	0
Total	100%	100%	100%	100%

Table 4
Pearson Correlation Coefficients Between Variables Describing
 Alcohol and Drug Use

	Frequency ^a	Days ^b	Drinks ^c	Drinks /week ^d	Most ^e	Drug ^f
MAST	.51	.56	.60	.70	.68	.52
Frequency ^a	-	.87	.48	.77	.61	.48
Days ^b		-	.44	.82	.59	.48
Drinks ^c			-	.82	.87	.46
Drinks/week ^d				-	.85	.57
Most drinks ^e					-	.52

Note. All correlations are significant, $p < .001$, $N = 194$.

^aFrequency of alcohol use (see definitions in Table 3).

^bNumber of drinking days per week.

^cUsual number of drinks per drinking day.

^dTotal number of drinks per week.

^eMost number of drinks per day.

^fFrequency of drug use (see definitions in Table 3).

Table 5
Substance of Choice for Each Group

Substance of choice	Groups			
	No drinking problems		Drinking problems	
	FH- ^a	FH+ ^b	FH-	FH+
Alcohol	94%	86%	84%	84%
Cannabis	2%	0%	12%	12%
Other	0	2%	4%	4%
None	4%	12%	0%	0%
Total	100%	100%	100%	100%

Note. $X^2 (3, N = 182) = 8.9, p > .01.$

^aFH- = no family history of drinking problems.

^bFH+ = family history of drinking problems.

Table 6

Age at Onset of Alcohol Use

	Groups			
	No drinking problems		Drinking problems	
	FH- ^a	FH+ ^b	FH-	FH+
Age				
<u>M</u>	17.4	16.1	15.1	15.5
<u>SD</u>	1.4	2.0	1.2	1.5

^aFH- = no family history of drinking problems. ^bFH+ = family history of drinking problems.

Table 7

Analysis of Variance with Age at Onset of Alcohol Use as
Dependent Variable

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	F	p
Within cells	422	183	2.31		
Drinking Problems ^a	91	1	91.59	39.69	.00
Family History ^b	10	1	10.15	4.40	.04
Drinking x Family	34	1	34.39	14.90	.00

^aStudents with drinking problems in comparison to students without drinking problems. ^bStudents with family history of drinking problems in comparison to students without family history of drinking problems.

Table 8

Percentages of Students who Drove a Car After Having Two or More
Drinks in the Previous Hour

Driving while intoxicated	Groups			
	No drinking problems		Drinking problems	
	FH- ^a	FH+ ^b	FH-	FH+
Yes	14%	23%	65%	63%
No	86%	77%	35%	37%
Total	100%	100%	100%	100%

Note. $X^2 (3, N = 194) = 42.9, p < .01.$

^aFH- = no family history of drinking problems.

^bFH+ = family history of drinking problems.

Table 9

Pearson Correlation Coefficients Between Variables Related to Alcohol/Drug Use and Family History of Drinking Problems

Alcohol and drugs related variable	Family history of drinking problems		
	F-SMAST ^a	M-SMAST ^b	Number of relatives with alcohol abuse
MAST	.05	.21*	.23*
Pattern ^c	-.02	.02	.20*
Days ^d	-.01	.07	.20*
Drinks ^e	.00	-.02	.14
Drinks/week ^f	.01	.06	.21*
Most ^g	.04	.06	.23*
Drug ^h	-.01	.18*	.05

Note. N = 194.

^aFather's Short Michigan Alcoholism Screening Test.

^bMother's Short Michigan Alcoholism Screening Test.

^cFrequency of alcohol use (see definitions in Table 3).

^dNumber of drinking days per week. ^eUsual number of drinks per drinking day. ^fTotal number of drinks per week.

^gMost number of drinks per day. ^hFrequency of drug use (see definitions in Table 3).

*p < .01.

Table 10

Age, Marital Status and Ethnic Origin

Demographic variable	Total	Groups			
		No drinking prob.		Drinking prob.	
		FH- ^a	FH+ ^b	FH-	FH+
Age^c					
<u>M</u>	20.5	21.0	19.7	20.5	20.8
<u>SD</u>	3.1	3.8	3.7	1.2	3.0
Marital status					
Single	96%	96%	98%	98%	94%
Married	3%	4%	2%	2%	4%
Divorced	1%	0	0	0	2%
Total	100%	100%	100%	100%	100%
Ethnic Origin^d					
English Canadian	63%	54%	58%	65%	76%
French Canadian	8%	10%	7%	8%	8%
Other	29%	36%	35%	28%	16%
Total	100%	100%	100%	100%	100%

^aFH- = no family history of drinking problems. ^bFH+ = family history of drinking problems. ^c2 x 2 ANOVA showed no significant main or interaction effects, $p > .01$. (see Table 11).

^d $\chi^2 (6, N = 194) = 6.96, p > .01$.

Table 11

Analysis of Variance with Age as Dependent Variable

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Within cells	1809	190	9.52		
Drinking Problems ^a	13	1	13.57	1.40	0.24
Family History ^b	5	1	5.01	0.53	0.47
Drinking x Family	30	1	29.92	3.14	0.08

Note. Cochran's test of homogeneity of variance was not significant, $C(48,4) = .37, p > .01$.

^aStudents with drinking problems in comparison to students without drinking problems. ^bStudents with family history of drinking problems in comparison to students without family history of drinking problems.

Table 12

Level of Education and Percentages of Students in Areas of Study

Demographic variable	Total	Groups			
		No drinking prob.		Drinking prob.	
		FH- ^a	FH+ ^b	FH-	FH+
Highest year of education^c					
High school	71%	50%	77%	78%	80%
University	29%	50%	23%	22%	20%
Total	100%	100%	100%	100%	100%
Area of study^d					
Social sciences	24%	24%	23%	20%	31%
Sciences & engineering	24%	41%	23%	22%	8%
Other	24%	17%	29%	28%	20%
General (undeclared)	28%	18%	23%	31%	41%
Total	100%	100%	100%	100%	100%

^aFH- = no family history of drinking problems.

^bFH+ = family history of drinking problems.

^c $\chi^2 (3, N = 194) = 2.6, p > .01.$

^d $\chi^2 (9, N = 194) = 20.4, p > .01.$

Table 13

Education and Occupation of Parents

Demographic variable	Groups			
	No drinking prob.		Drinking prob.	
	FH- ^a	FH+ ^b	FH-	FH+
Father's education				
<u>M</u>	4.0	3.4	4.4	3.3
<u>SD</u>	1.8	1.7	1.5	1.6
Father's occupation				
<u>M</u>	4.9	4.4	5.1	4.9
<u>SD</u>	1.7	1.8	1.7	1.5
Mother's education				
<u>M</u>	3.6	3.1	4.0	3.5
<u>SD</u>	1.4	1.3	1.3	1.4
Mother's occupation				
<u>M</u>	4.4	4.4	5.1	4.8
<u>SD</u>	1.7	1.3	1.1	1.2

Note. Education and occupation levels are classified from 1 to 7 according to the classification of Hollingshead (1957) and Hollingshead and Redlich (1967). These education and occupation levels are presented here with 1 (lowest) to 7 (highest).

^aFH- = no family history of drinking problems.

^bFH+ = family history of drinking problems.

Table 14

Tests of Significance for 2 x 2 MANOVA with Education and Occupation of Mother and Father as Dependent Variables

Source	Wilks' Lambda	df	F	p
Error		152		
Drinking Problems	.95	4	2.12	.08
Family History	.93	4	2.89	.02
Drinking x Family	.98	4	0.97	.43

Table 15

Alpha Coefficients for the Assessment of Internal Reliability

CISS scale	Number of items	Situation		
		1 ^a n=180	2 ^b n=183	3 ^c n=181
Task	16	.92	.91	.89
Emotion	16	.87	.87	.88
Avoidance	16	.75	.83	.83

Note. Internal reliability of the SCS (36 items) = .71;

^aSituation 1 = negative emotion. ^bSituation 2 = interpersonal conflict. ^cSituation 3 = pressure to drink.

Table 16

Means and Standard Deviations of Self-Control Strategies

	Groups			
	No drinking problems		Drinking problems	
	FH- ^a	FH+ ^b	FH-	FH+
<u>n</u>	49	43	49	48
<u>M</u>	25.0	19.9	8.3	12.4
<u>SD</u>	21.4	23.2	20.5	21.3

Note. See Figure 2.

^aFH- = no family history of drinking problems. ^bFH+ = family history of drinking problems.

Table 17

Tests of Significance for 2 x 2 ANOVA with Self-Control
Strategies as a Dependent Variable

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>	Power ^a
Within cells	86140	185	465			
Drinking Problems ^b	6959	1	6959	14.95	.00	.89
Family History ^c	14	1	14	.03	.87	.00
Drinking x Family	997	1	997	2.14	.14	.13

^aalpha = .01.

^bStudents with drinking problems in comparison to students without drinking problems.

^cStudents with family history of drinking problems in comparison to students without family history of drinking problems.

Table 18

Means and Standard Deviations of Task-Oriented Coping

Situation	Groups				Total N=189
	No drinking problems		Drinking problems		
	FH- ^a n=49	FH+ ^b n=43	FH- n=49	FH+ n=48	
Negative emotion					
<u>M</u>	55.3	51.1	46.6	46.7	49.9
<u>SD</u>	11.7	11.9	9.4	11.0	11.5
Interpersonal conflict					
<u>M</u>	49.4	48.9	43.7	45.8	46.9
<u>SD</u>	13.1	11.0	10.2	10.6	11.4
Pressure to drink					
<u>M</u>	50.5	49.3	39.9	43.4	45.7
<u>SD</u>	13.2	12.9	9.6	9.9	12.2

Note. See Figure 3.

^aFH- = no family history of drinking problems. ^bFH+ = family history of drinking problems.

Table 19

Means and Standard Deviations of Avoidance Coping

Situation	Groups				Total N=189
	No drinking problems		Drinking problems		
	FH- ^a n=49	FH+ ^b n=43	FH- n=49	FH+ n=48	
Negative emotion					
<u>M</u>	43.6	42.8	47.5	43.6	44.4
<u>SD</u>	8.4	8.2	9.3	9.2	8.9
Interpersonal conflict					
<u>M</u>	39.8	40.9	45.0	41.8	41.9
<u>SD</u>	10.3	10.5	11.3	9.3	10.5
Pressure to drink					
<u>M</u>	31.8	33.3	32.4	33.9	32.8
<u>SD</u>	9.8	11.4	10.1	9.0	10.0

^aFH- = no family history of drinking problems. ^bFH+ = family history of drinking problems.

Table 20

Means and Standard Deviations of Emotion Coping

CISS Scale Situation	Groups				Total N=189
	No drinking problems FH- ^a		Drinking problems FH- ^b		
	n=49	n=43	n=49	n=48	
Negative emotion					
<u>M</u>	40.9	44.2	44.9	44.3	43.6
<u>SD</u>	10.7	11.6	9.6	10.2	10.6
Interpersonal conflict					
<u>M</u>	38.8	41.3	41.6	42.1	40.9
<u>SD</u>	9.6	11.2	11.7	10.7	11.4
Pressure to drink					
<u>M</u>	27.4	27.0	27.8	31.6	28.5
<u>SD</u>	9.7	8.5	8.0	11.6	9.7

^aFH- = no family history of drinking problems. ^bFH+ = family history of drinking problems.

Table 21

Pearson Correlations For Task, Avoidance and Emotion Coping

Situation	Coping strategy								
	Task			Avoidance			Emotion		
	1 ^a	2 ^b	3 ^c	1	2	3	1	2	3
Task									
1. ^a	-	.72**	.62**	.03	-.00	.16	-.21*	-.12	-.02
2. ^b	-	-	.63**	.15	.15	.18*	-.07	.03	-.01
3. ^c	-	-	-	-.02	.03	.35*	-.09	-.01	-.02
Avoidance									
1.				-	.76**	.37**	.13	.12	.11
2.				-	-	.49**	.04	.06	.13
3.				-	-	-	.02	.07	.46**
Emotion									
1.							-	.70**	.22*
2.								-	.32**

Note. N = 189.

^aSituation 1 = negative emotion. ^bSituation 2 = interpersonal conflict. ^cSituation 3 = pressure to drink.

*p < .01. **p < .001.

Table 22

Tests of Significance for Repeated Measures 2 x 2 x 3 MANOVA with Task Coping as Dependent Variable: Within Subjects Effects

Source	Wilks' Lambda	df	F	p	Power ^a
Error		184			
Situation ^b	.83	2	19.00	.00	1.00
Situation x Drinking	.96	2	3.71	.03	.43
Situation x Family	.96	2	3.51	.03	.41
Situation x Drinking x Family	1.00	2	0.34	.71	.03

^aalpha = .01. ^bTask coping scores in situation 1 were higher than in situation 2, $F(1, 185) = 23.41$, $p < .01$; task coping scores in situations 1 and 2 were higher than in situation 3, $F(1, 185) = 15.49$, $p < .01$.

Table 23

Tests of Significance for Repeated Measures 2 x 2 x 3 MANOVA with Task Coping as Dependent Variable: Between Subjects Effects

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>	Power ^a
Within cells	53222	185	288			
Drinking Problems	5786	1	5786	20.10	.00	.97
Family History	0	1	0	0.00	.99	.00
Drinking x Family	529	1	529	1.84	.18	.11

Table 24

Effects of Drinking Problems and Family History on Task Coping in Each Situation

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>	Power ^a
Situation 1 = Negative emotion						
Within cells	22431	185	121			
Drinking Problems	2035	1	2035	16.79	.00	.93
Family History	193	1	193	1.59	.21	.09
Drinking by Family	212	1	212	1.75	.19	.10
Situation 2 = Interpersonal conflict						
Within cells	23536	185	127			
Drinking Problems	905	1	905	7.12	.01	.53
Family History	34	1	34	0.27	.61	.00
Drinking by Family	81	1	81	0.64	.43	.00
Situation 3 = Pressure to drink						
Within cells	24482	185	132			
Drinking Problems	3197	1	3197	24.16	.00	.99
Family History	66	1	66	0.50	.48	.00
Drinking x Family	265	1	265	2.01	.16	.12

^aalpha = .01.

Table 25

Tests of Significance for 2 x 2 x 3 MANOVA with Avoidance Coping as Dependent Variable: Within Subjects Effects

Source	Wilks' Lambda	df	F	p	Power ^a
Error		184			
Situation ^b	.46	2	112.0	.00	1.00
Drinking x Situation	.98	2	1.4	.24	.24
Family x Situation	.97	2	3.2	.04	.36
Drinking x Family x Situation	.99	2	1.1	.34	.09

^aalpha = .01. ^bAvoidance coping scores in situation 1 were higher than in situation 2, $F(1, 185) = 24.4$, $p < .01$; avoidance coping scores in situations 1 and 2 were higher than in situation 3, $F(1, 185) = 208.2$, $p < .01$.

Table 26

Tests of Significance for 2 x 2 x 3 MANOVA with Avoidance Coping
as Dependent Variable: Between Subjects Effects

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>	Power ^a
Within cells	36773	185	199			
Drinking Problems	573	1	573	2.88	.09	.19
Family History	58	1	58	0.29	.59	.00
Drinking x Family	210	1	210	1.06	.31	.06

Table 27

Tests of Significance for 2 x 2 x 3 MANOVA with Emotion Coping as
Dependent Variable: Within Subjects Effects

Source	Wilks' Lambda	df	F	p	Power ^a
Error		189			
Situation ^b	.40	2	139.06	.00	1.00
Situation x Drinking	1.00	2	0.09	.92	.01
Situation x Family	1.00	2	0.02	.98	.01
Situation x Drinking x Family	.97	2	2.46	.09	.26

^aalpha = .01. ^bEmotion coping scores in situation 1 were higher than in situation 2, $F(1, 185) = 18.83$, $p < .01$; emotion coping scores in situations 1 and 2 were higher than in situation 3, $F(1, 185) = 269.26$, $p < .01$.

Table 28

Tests of Significance for 2 x 2 x 3 MANOVA with Emotion Coping as
Dependent Variable: Between Subjects Effects

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>	Power ^a
Within cells	36159	185	195			
Drinking Problems	637	1	637	3.26	.07	.22
Family History	325	1	325	1.66	.20	.10
Drinking x Family	10	1	10	0.05	.82	.00

Table 29

Pearson Correlations Between Emotion, Task, Avoidance Coping^a and Self-Control Strategies^b

Coping Strategy ^a	Self-control strategies ^b in each group			
	Situation	No Drinking Problems	Drinking Problems	Total (N = 189)
Task coping^a				
	Negative emotion	.70**	.58**	.67**
	Interpersonal conflict	.60**	.42**	.54**
	Pressure to drink	.52**	.37**	.51**
Avoidance coping^a				
	Negative emotion	.03	.06	.01
	Interpersonal conflict	-.03	.04	-.04
	Pressure to drink	.13	-.00	.06
Emotion coping^a				
	Negative emotion	-.37**	-.22	-.31**
	Interpersonal conflict	-.26*	-.14	-.22*
	Pressure to drink	-.04	-.01	-.06

^aFrom the CISS. ^bFrom the SCS.

* $p < .01$. ** $p < .001$.

Table 30

Pearson Correlations Between Coping Strategies and Alcohol-Related Variables

Coping strategy Situation	Alcohol variable			
	MAST	days ^a	drinks ^b	dr/week ^c
Self-control	-.31*	-.11	-.28**	-.18*
Task coping				
Negative emotion	-.41**	-.19*	-.25**	-.24*
Interpersonal conflict	-.26**	-.12	-.22*	-.17
Pressure to drink	-.41**	-.32**	-.34**	-.33**
Avoidance coping				
Negative emotion	.15	.23**	.12	.19*
Interpersonal conflict	.16	.21*	.13*	.17
Pressure to drink	-.05	.07	.03	.10
Emotion coping				
Negative emotion	.14	.01	.10	.03
Interpersonal conflict	.12	.09	.02	.05
Pressure to drink	.07	.21*	.10	.18*

Note. N = 189.

^aNumber of drinking days per week. ^bNumber of drinks per drinking day. ^cNumber of drinks per week.

*p < .01. **p < .001.

Table 31

Pearson Correlations Between Coping Strategies and Alcohol-Related Variables for Students with No Drinking Problems (n = 92)

Coping strategy Situation	Alcohol variable			
	MAST	days ^a	drinks ^b	dr/week ^c
Self-control	-.26*	-.09	-.06	-.20
Task coping				
Negative emotion	-.36**	-.17	-.07	-.13
Interpersonal conflict	-.20	-.08	-.02	-.03
Pressure to drink	-.19	-.31**	-.13	-.29*
Avoidance coping				
Negative emotion	.10	.27*	.16	.30*
Interpersonal conflict	.09	.10	.24*	.32*
Pressure to drink	-.05	-.11	.06	.06
Emotion coping				
Negative emotion	.24	.12	.16	.22
Interpersonal conflict	.15	.17	.10	.20
Pressure to drink	-.10	.10	.04	.09

^aNumber of drinking days per week. ^bNumber of drinks per drinking day. ^cNumber of drinks per week.

* $p < .01$. ** $p < .001$.

Table 32

Pearson Correlations Between Coping Strategies and Alcohol-Related Variables for Students with Drinking Problems (n = 97)

Coping strategy Situation	Alcohol variable			
	MAST	days ^a	drinks ^b	dr/week ^c
Self-control	-.15*	.17	-.22	.04
Task coping				
Negative emotion	-.36**	-.07	-.22	-.07
Interpersonal conflict	-.21	-.04	-.22	-.08
Pressure to drink	-.33**	-.07	-.24*	-.18
Avoidance coping				
Negative emotion	.09	.16	.00	.12
Interpersonal conflict	.07	.18	-.06	.07
Pressure to drink	-.20	.19	-.02	.14
Emotion coping				
Negative emotion	.08	-.18	-.03	-.13
Interpersonal conflict	.07	-.01	-.11	-.05
Pressure to drink	-.06	.21	.03	.16

^aNumber of drinking days per week. ^bNumber of drinks per drinking day. ^cNumber of drinks per week.

* $p < .01$. ** $p < .001$.