

**THE RELATIONSHIP BETWEEN SOCIAL NETWORK,  
FAMILY PSYCHOSOCIAL CLIMATE, AND  
ADOLESCENT ALCOHOL USE**

by



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requirements for the degree of  
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in  
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Department of Psychology  
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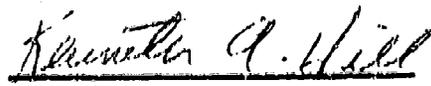
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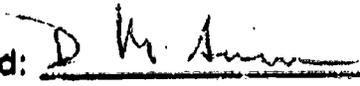
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A thesis submitted to the Department of Psychology  
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**ABSTRACT****The Relationship Between Social Network, Family  
Psychosocial Climate, and Adolescent Alcohol Use****Lynda E. McAllister****April 7, 1989**

The primary objective of the present study was to determine the relationship between social network, family psychosocial climate, and the extent of drinking, including alcohol-related negative events, among adolescents. Subjects were 450 students in grades 7 to 12 from secondary schools in the Halifax region (mean age = 15.3 years). These subjects completed a questionnaire battery which included items pertaining to the quantity and frequency of alcohol use (QF Index), the Straus-Bacon Problem Drinking Scale (SBPDS), the Social Relationship Questionnaire, and the Family Environment Scale (FES). The findings indicate that 73.6% of the students drink alcohol. Bivariate correlational and Multiple Regression analyses revealed that age and number of drinking friends in the network explained the majority of the variance of QF and SBPDS score. Control, Conflict, and Intellectual-Cultural Orientation subscale scores of the FES significantly increased the explained variance of both drinking measures. Some interesting gender differences emerged regarding the relationship of the FES subscales to drinking. Implications of this study include (1) developing intervention efforts to impact on the adolescents' alcohol use within the context

of their network, (2) teaching effective parenting skills with an emphasis on increasing parental control and decreasing familial conflict, and (3) exploring adult drinking behavior for its effect on youth alcohol use patterns.

Alcohol, which plays a central role in adult society, symbolically represents and affirms adult status in adolescent society. Some forms of adolescent drinking have become issues of intense and increasing concern. According to the U. S. National Institute on Alcohol Abuse and Alcoholism, "Alcohol abuse is the number one youth drug problem today" (Rachal et al., 1980, p. 3). Recent estimates suggest that there are 300,000 adolescent alcoholics in the United States (Kinney and Leaton, 1987). Problems associated with drinking have been linked to greater maladaptive social and personal consequences among adolescents than using any other drug. Some of these consequences include poor academic performance, truancy, high drop-out rates, and vandalism (Rosenblatt, 1981). Between 45 to 60% of fatal automobile accidents involving a young driver are alcohol related (Rosenblatt, 1981). The large number of alcohol-related fatal accidents, suicides, and homicides make alcohol the number one killer of youth (Wright, 1985). Although there is a large body of research which explores adult alcohol use and abuse, conclusions drawn from these studies are inadequate to understand adolescent drinking for several reasons. First, the extent of alcohol intake can have different effects on individuals at different developmental levels. Second, adolescents can encounter social and interpersonal problems simply due to their underage status. Third, adolescent drinking patterns have been shown to differ from those of adults (Harford and Mills, 1978).

The purpose of this study is to contribute to a greater understanding of the factors related to alcohol use among adolescents and hence to more a comprehensive and effective prevention effort.

### Prevalence of Adolescent Alcohol Use

#### American Statistics

Research over the past twenty years consistently indicates that adolescent alcohol use is prevalent throughout the United States. "Alcohol use is a socially structured and culturally defined pattern of behavior to which almost all adolescents in our society are exposed in the process of growing up and with which most of them sooner or later experiment" (Maddox and McCall, 1964, p. 99). The literature is replete with large- and small-scale reports on the prevalence of alcohol use suggesting that alcohol is an integral part of the social fabric of adolescent life. In a U.S. national telephone survey of adolescent drinking, Zucker and Harford (1983) report that 60% of 988 respondents aged 13 to 18 use alcohol. Six percent of these respondents were classified as heavy drinkers indicating they consume more than five drinks on one occasion at least once a week. Barnes and Welte (1986) found that 71% of 27,335 7th to 12th grade students sampled are drinkers, and 13% are heavy drinkers. Seventy-five percent of the 1014 adolescents surveyed by telephone in 1980 were drinkers (Downs and Robertson, 1982). The overall prevalence rate for consumption of beer, wine, and hard liquor by 1048 students in grade 7 to 12 was reported by Barnes (1981) to be 83%. Fourteen percent of the total sample were heavy drinkers. Coombs, Fawzy, and Gerber (1986) found that, of 400 9-17 year old

young persons interviewed, 41% were drinkers.

### Canadian Statistics

The majority of published research on Canadian adolescent drinking patterns originates from the Addiction Research Foundation in Ontario. Data from Saskatchewan, British Columbia, and Nova Scotia are also available.

The most recent statistics to originate from Ontario are based on the fifth wave of a series of Provincial drug-use surveys. In the latest study, 4151 subjects in grades 7,9,11, and 13 were surveyed. Data indicate that about 69.8 % of these Ontario students are drinkers (Smart, Adlaf, and Goodstadt, 1985). This rate represents a decline from 1983 (Smart, Goodstadt, Adlaf, Sheppard, and Chan, 1983), and is significantly lower than previous survey years beginning in 1977 when the rate of use was about 76.3 % (Smart and Goodstadt, 1977; Smart, Goodstadt, Sheppard, and Liban, 1979; Smart et al., 1981). Of the students surveyed in 1985, 3.8 % reported using alcohol at least 5 to 6 times per week during the four weeks prior to the survey and 9.1 % reported having 5 or more drinks on a single occasion at least 4 times during the 4 weeks prior to data collection.

The Saskatchewan Alcohol and Drug Addiction Council (SADAC, 1987) conducted a telephone interview of 1157 adolescents between the ages of 12-18 years. Results indicated that in 1986, 66% of the adolescents surveyed were drinkers. Of these, 24 % drank at least weekly, but not daily. One percent of teenagers interviewed reported

using alcohol daily during the 12 months preceding the survey.

The most recent survey on drug use among Halifax students indicates that 61 % of a sample of 1128 adolescents in secondary schools used alcohol in the 12 months prior to the survey (Neumann, Mitic, and McGuire, 1987). This figure represents a significant decline in percentage of drinkers since 1983 (Mitic and Neumann, 1983). The data indicated that 1.8 % of the males and 1.5 % of the females used alcohol at least 4 to 5 times per week during the preceding 12 months. Over 20 % of respondents who drink reported an average consumption of between 6-8 drinks per sitting.

### Sociodemographic Correlate

#### Age /Grade

A general consensus among researchers is that alcohol use signals an adolescent's transition from child to adult status (Rachal et al., 1975). In general, drinking is more common among older adolescents than younger adolescents. Increases in age and grade level are associated with greater proportions of adolescents who drink (Margulies, Kessler, and Kandel, 1977; Smart, Gray, and Bennett, 1978; Huba and Benfer, 1980; Downs and Robertson, 1982; Christiansen and Goldman, 1983; Zucker, and Harford, 1983; McLaughlin, Baer, Burnside, and Pokorny, 1984; Smart, Adlaf, and Goodstadt, 1985; Coombs et al., 1986; SADAC, 1987), as well as greater quantity and frequency of alcohol consumption (Smart et al., 1978; Downs and Robertson, 1982; Sarvela and McClendon, 1983; SADAC, 1987), greater proportion of heavy drinkers (Barnes and Welte, 1986; Zucker and Harford, 1983),

and greater proportions of problem drinkers (Donovan and Jessor, 1978). Results from the most recent study of Nova Scotia adolescent drinking practices indicate that age is positively correlated with greater quantity and frequency of consumption (Neumann et al. 1987) and with greater number of problems associated with drinking (Mitic, in press).

### Gender

As recently as a decade ago, prevalence rates of alcohol use among males were significantly higher than among females (eg. Margulies et al., 1977). There is evidence in recent years to suggest that gender differences in adolescent alcohol use may be decreasing. Weschler and McFadden (1976), in their study of grade 7 to 12 students, reported that there were no significant differences between the genders in proportion of drinkers, in the number of subjects who had been intoxicated, or in the frequency of intoxication.

In two separate studies, the first conducted in 1975 and the second in 1980, Downs and Robertson (1982) found no gender differences with regards to the proportion of respondents aged 13 to 18 years who drink. However, while the 1975 study had found a higher proportion of females than males classified as "occasional drinkers", study 2 reported no gender differences in amount of alcohol consumed. When age by gender interaction patterns were examined, there were no significant interaction effects in either the proportion of respondents who drank, or overall alcohol consumption as measured by quantity and frequency of use. The authors concluded that the

overall lack of gender differences among adolescents surveyed in both studies may indicate that gender differences in adolescent alcohol use are indeed disappearing.

Alcohol use by Canadian youth shows a similar pattern with regard to gender differences. Smart, Adlaf, and Goodstadt (1985) found no significant difference in the number of grade 7 to 12 males and females who use alcohol. Prevalence rates were 71.3% versus 68.3%, respectively. Similarly, Neumann et al. (1987) found no gender differences in the percentage of students who drink. Further, males and females have differed very little since 1976 in the percentage who report drinking. Prevalence of alcohol use by males and females at each grade level were similar. The one exception occurred in grade 7, where a significantly greater proportion of boys, as compared to girls, (35% versus 18%, respectively) drank in 1987.

While there are no significant differences in the numbers of adolescent male and female drinkers, the data indicate that, of adolescents who drink, males are at increased risk for abuse. Males who drink are more likely than females to consume alcohol in greater amounts and in greater frequency (Smart et al., 1978; Gibbons, Wylie, Echterly, and French, 1986). Zucker and Harford (1983) report significantly greater frequency of drunkenness in their male subjects aged 16 to 18 than same aged female subjects. Compared with females, males begin drinking at an earlier age (Gibbons et al., 1986) and are more likely to be classified as heavy or problem drinkers (Smart and Gray, 1979; Barnes, 1981). Barnes and Welte (1986) found

that the rate of heavy drinking is twice as great among males as it is among females. More detailed analysis by age revealed that up to the age of 14, no significant differences in heavy drinking between males and females existed. However, the rate of heavy drinking among 15 year old males is double that of same age females, and differences in heavy drinking rates increased each year after the age of 15.

Smart, Adlaf, and Goodstadt (1985) identified a similar pattern. Males were significantly more likely to report higher frequency of alcohol use in comparison to females. Most notably, a greater proportion of males than females reported daily use (1.2% versus 0.1%). More males than females were heavy drinkers (based on the frequency of intoxication during the last four weeks, and consumption of at least five drinks on a single occasion), and more males than females reported the desire to drink less, and the experience of alcohol-related negative events.

Gender differences in quantity and frequency of alcohol use were evident in the results reported by Neumann et al. (1987). Forty-one percent of Nova Scotian adolescent males reported having more than six drinks in one sitting compared to 20% of females. Twenty-five percent of males drink at least six drinks more than once a week, compared to 14% of females.

Very little is known about the causal factors involved in male versus female drinking styles. Wilsnack and Wilsnack (1979) argue that the gender difference reflects the influence of learned gender

roles on alcohol consumption. Traditional beliefs about prescribed gender roles may influence how youth drink by creating different opportunities for males and females to drink, by reinforcing norms that obligate males to think and behave differently toward alcohol, and by attributing gender-role associated symbolic value to the use of alcohol.

### Other factors

In their comprehensive review of the relationship between religion and drinking behavior, Braucht, Brakarsh, Follingstad, and Berry (1973) concluded that the average drinker, of any age, will most likely be Jewish or Catholic. Zucker and Harford (1983) reported that teenagers from Catholic families are most likely to drink and to be heavy drinkers. Protestants are most likely to be abstainers and are under-represented in the "heavy drinking" category. These results have been reported consistently (Potvin and Lee, 1980; Burkett, 1980; Khavari and Harmon, 1982).

However, it should also be noted that religiosity, defined as a strong affiliation with any organized religion, is associated with lower rates of drinking and problem drinking (Maddox, 1970; Burkett, 1980; Selnow, 1985; Gibbons et al., 1986).

Drinking behavior has been reported to vary according to ethnicity. Research consistently shows that Caucasian adolescents are more likely to be drinkers, to drink to greater extents, and to be overrepresented in the heavier drinking categories than other ethnic

groups (Rachal et al., 1975; Wilsnack and Wilsnack, 1978; Zucker and Harford, 1983; and Barnes and Welte, 1986). Black adolescents, conversely, are among the least likely to drink, drink less, and show the smallest percentage in heavier drinking categories, according to these studies. In his review of drinking patterns among youth, Kandel (1980) reported that the use of alcohol, as well as tobacco and marihuana, is consistently more prevalent among Caucasian than among Black adolescents.

Socioeconomic status (SES) has been reported to be related to adolescent drinking. Teenagers from lower, versus higher, SES groups are more likely to drink and to drink more extensively (Weschler and Thum, 1973; Kelly and Pink, 1975; Albas, Albas, and McClusky, 1978; Levine and Kozak, 1979; Butler, 1982; Zucker and Harford, 1983; Gibbons et al., 1986; Barnes and Welte, 1986). Some studies have failed to find this relationship, however. Rachal et al. (1975), Wilsnack and Wilsnack (1978), and Coombs, Fawzy, and Gerber (1986) reported that extent of alcohol use among youth does not vary according to SES, and Donovan and Jessor (1978) found no differences in SES between problem and non-problem adolescent drinkers.

In summation, older White adolescent males in higher grades, who are not strongly religious, and who are Catholic or Jewish, are most likely to drink and/or to drink heavily. The relationship between SES and drinking is equivocal.

### **Peer Correlates**

The precise nature of peer influence on adolescent alcohol use is not clearly understood. However, throughout the literature there is a unanimous recognition of the importance of peer affiliations to adolescent drinking.

Barnes and Welte (1986), in their study of predictors of alcohol use among 27,335 junior and senior high school students reported that the variable with the greatest power to discriminate between drinkers and abstainers was the perceived proportion of peers who get drunk weekly. The more friends an adolescent has who regularly get drunk, the greater the likelihood of that adolescent being a drinker. A multiple regression analysis was performed to determine the predictors of level of alcohol consumption (measured in terms of a composite index of quantity and frequency). Among adolescents who drink, mean alcohol consumption per day can be predicted by the proportion of friends who become intoxicated weekly. A student who has no close friends who regularly get drunk has relatively low alcohol consumption; on the other hand, alcohol consumption is high in adolescents who report that most or all of their friends get drunk regularly.

A similar result was found in a sample of younger subjects from a rural area in the United States (Sarvela and McClendon, 1983). The responses of grade 6, 7, and 8 students revealed a strong positive correlation between quantity and frequency of personal use of alcohol and perceived quantity and frequency of peer alcohol consumption.

Smart, Gray, and Bennett (1978) reported that frequency of friends alcohol use accounted for most of the variance in alcohol use (e.g. in frequency of drinking and average amount of alcohol consumed per day) in a sample of rural and urban high school students in Ontario. Subsequent analysis (Smart and Gray, 1979) revealed no significant differences based on geographical location.

In their longitudinal study of high school students who, in the fall of the academic year reported never having used hard liquor, Margulies et al. (1977) found a positive relation between the onset of drinking hard liquor by the following spring and the perception of the number of friends who drink hard liquor. Further, involvement with peers in social activities, irrespective of peer drinking behavior, predicted onset of drinking. Adolescents who engage in a number of activities with friends, such as dating and going to parties, were most likely to begin drinking hard liquor during the academic year.

The results reported by Margulies et al. (1977) were based on a sample of adolescents who were nonusers of hard liquor at an age when the majority of their peers were already users. Therefore, the generalizability of the results may be limited. It is possible that the factors related to alcohol initiation among students who have been relatively resistant to alcohol use, may be different from those operating among adolescents who began drinking hard liquor earlier. As well, only factors which differentiated abstainers from users were examined. No attempt was made to assess the factors related

to different levels of consumption. Additionally, analyses were restricted to students who began drinking only hard liquor.

A more recent study examined patterns of adolescent alcohol use in terms of frequency of drinking, amount of alcohol usually consumed, and a composite heavy drinking index (Gibbons et al., 1986). Hours per week devoted to social activities (defined as spending time at parties and dances, on dates, and with friends) was a significant predictor of how often and how much adolescents drank, as well as the likelihood of being classified as a heavy drinker.

From a sociological perspective, Johnson (1986) proposed that alcohol use may reflect strong adolescent peer affiliations. Johnson measured peer attachment with a 6-item scale designed to indicate the degree of affectional/emotional bonds to friends. Peer involvement was assessed by the number of hours per week spent interacting with friends in nonstructured activity. Prevalence and frequency of alcohol use, and problem use were also measured. Contrary to expectation, peer attachment was not significantly correlated with use or problem use of alcohol, suggesting that drinking is unrelated to perceived emotional closeness to friends. On the other hand, the amount of time spent with peers was strongly and positively correlated with likelihood of alcohol use and abuse. Similar results were reported by Fondacaro and Heller (1983) who used social support measures to predict level of alcohol use. Neither satisfaction with the support received from friends nor from family was significantly related to consumption levels. The number of

drinking friends and amount of social contact with friends, however, had strong predictive power.

Despite the above limitations, the conclusions reached by Margulies et al. (1977) deserve further attention. In North American society, drinking is an integral part of general sociability. One might, therefore, expect an increased likelihood of drinking to accompany higher levels of social activity, regardless of the drinking behavior of the persons with whom one interacts. Support for this hypothesis comes from the work of Moos and his associates on the personality and social correlates of adolescent drinkers. Moos, Moos, and Kulik (1976) reported that the heavy drinkers in their study of first year college students were more extroverted than abstainers, and engaged in more social interaction than both moderate drinkers and abstainers. Drinkers interacted socially more frequently than non-drinkers (for example, went to a party, arranged a date for a student, picked up a date at a party). Heavy drinkers reported greater participation in cultural activities, especially those engaged in with others (for example, attending a concert, visiting an art exhibition). Abstainers were more likely than heavy drinkers to engage in solitary activities (for example, playing a musical instrument). Providing external validity for their findings, Moos, Moos, and Kulik (1977) reported that a reduction in the amount and frequency of alcohol consumption by subjects who were initially classified as heavy drinkers was accompanied by a decrease in social participation.

Johnson (1986) proposed a social control theory to explain the

importance of peer contact to adolescent alcohol use. Control theory asserts that social control is attained via a noncoercive process of socialization that leads to commitment and conformity. A commitment to the youth culture implies that the standards and regulations of this world will be adhered to so as not to jeopardize group membership. It follows that if a group explicitly or implicitly promotes the use of alcohol, then commitment to this group will foster internalization of the underlying group norms. As the amount of time spent with peers in unstructured social activities increases, the assumed commitment, and therefore, the likelihood of drinking, increases. It follows that if the group norms proscribe the use of alcohol, and if there is a certain amount of group cohesion, use of alcohol will be less likely. Support for this assertion was provided by Selnow and Crano (1986) who found that students affiliated with formal, structured, goal-oriented groups (eg. Boy/Girl Scouts, 4-H Clubs, etc.) reported lower levels of alcohol use than students without formal group affiliations.

There are many explanations for the potency of adolescent peer influences but all of them contend that family ties eventually loosen as the child struggles to become a self-sufficient, self-supporting adult (Muuss, 1988). Coleman (1961) proposed that adolescents experience a major shift from parental to peer reference group saliency primarily as a means to facilitate the task of attaining autonomy and independence. It is hardly surprising, therefore, that adolescent peer groups have been suggested to have a powerful influence on drinking behavior.

In summary, the following peer variables have been found to correlate positively with amount and frequency of alcohol use and likelihood of problem drinking: number of friends who drink, number of friends who regularly become intoxicated, and amount of time spent with peers in unstructured social activities. It appears that students who have extensive social networks are particularly vulnerable to heavy or problematic involvement with alcohol.

### Family Environment Correlates

Because of its contiguous nature, the family has been said to be one of the most powerful influential aspects of an adolescent's environment (Rees and Wilborn, 1983). There is considerable empirical evidence for the importance of parental influences in terms of the behavioral models of drinking they provide. The greater the frequency of parental alcohol use, the more likely the adolescent will drink as an imitative behavior (Bryam and Fly, 1984; Kandel, 1986). As well, parents can convey attitudes towards drinking that influence children's views about how they should drink (Jessor, Graves, Hanson, and Jessor, 1968).

In addition to its relationship to parental drinking practices and attitudes, adolescent drinking may also reflect the quality of the family relationship. The literature on the association between adolescent drug use and perceived parental/family relationships is extensive. Previous research has indicated that negative family perceptions are related to adolescent disturbances (Anolik, 1980; Croake, 1981). Adolescent drug users have been found to perceive

little closeness between themselves and their parents (Streit and Olivier, 1972; Barnes, 1977; Tolone and Dermott, 1975; Babst, Miren, and Koval, 1976; Tudor, Peterson, and Ellfson, 1980), a lack of love (Miller, 1974), little support (Jenson, 1972), and a lack of communication among family members (Babst and Brill, 1973; Jurich, Polson, Jurich, and Bates, 1985). Drug abusing adolescents are also more likely than non-abusers to perceive their parents as rejecting their behavior and lacking direction (Rees and Wilborne, 1983). Drug abusers perceive their parents as irritable and neglecting (Rees and Wilborne, 1983) and describe their relationships with their parents as either indifferent or conflicted (Greenwaid and Luetgert, 1971). Independence from parental authority is positively correlated with drug abuse (Tudor et al., 1980).

While there is considerable evidence that the quality of familial relationships is related to adolescent drug use and abuse, there are relatively few studies which focus on the association between family relationships and adolescent alcohol use specifically. Because of different legal and social issues, one should not assume a priori that the family factors related to the use of drugs like cocaine and heroin are identical to those related to the use of alcohol. One of the earliest studies to examine the relationship between perceptions of family environment and alcohol use (Globetti and Windham, 1966-67) classified students according to whether they were high or low in perceived "quality" of family relations and the degree of family "unity". Quality of family relationship was assessed with a 7-item scale which contained questions about how often the subjects felt

unwanted by their fathers and mothers, who they perceived to be the favored child by mother and father, how close they felt to mother and father, and how frequently they engaged in activities with their parents. Although there was a trend for more problem users than non-problem users, and more non-problem users than non-users to report poor family relations, the pattern was not statistically significant.

Family unity was assessed using an 8-item scale which measured the importance of the family to the student with true-false statements such as "nothing in life is worth the sacrifice of moving away from parents" and "When the time comes for a person to take a job, he should stay near his parents even if it means giving up a good job". More problem users than non-problem users and abstainers scored low in family unity. However, there were more abstainers than non-problem users in the low family unity category suggesting that abstainers may be more similar to problem users than they are to non-problem drinkers on this one aspect of perceived family environment. It should be noted that the subjects in this study departed from other samples on several factors. For example, only 30 % of the sample drank. Prevalence rates reported in other studies at that time were between 60-90 % (Maddox, 1962). As well, the sample was drawn from a rural community in which the vast majority of drinkers secured their alcohol from a bootlegger. Furthermore, no psychometric data was reported for the measures that were used to assess family relationships. It is possible, therefore, that a third unknown variable may have been mixed in with the family unity score.

Pandina and Schuele (1983) also found a complex relationship between perceived parental environment and level of drinking. Perceived parental environment was measured with the Streit-Schaefer Family Perception Inventory which yields perceptions of parental behavior on the dimensions of autonomy, love, control, and hostility. Alcohol and drug involvement was measured with the Substance Use Involvement (SUI) Scale which provides a single score based on the frequency with which beer, wine, distilled spirits, and seven additional substances are used. Problem drinkers were identified by responses to the Straus-Bacon problem drinking scale (Straus and Bacon, 1953). As predicted, a greater proportion of heavy substance users than midrange users described their parental environment as lacking in love and as hostile. However, abstainers reported somewhat lower levels of parental love than low and moderate level users. Moreover, abstainers and heavy users reported similarly high levels of hostility and control within their family environments. Additional analysis by gender revealed a stronger relationship for females than for males suggesting that parental control factors may play a more prominent role in adolescent female drinking than in male drinking.

In summary, adolescents who drink and/or drink heavily perceived their families as lacking in love, support, closeness, communication, and "family unity". They describe their parents as rejecting, neglecting and irritable. They reported more autonomy and greater levels of familial hostility than abstainers and/or non-problem users.

Surprisingly, abstainers and heavy drinkers reported similarly low levels of "family unity" and love, and similarly high levels of hostility and control, suggesting that non-drinkers and heavy/problem drinkers share similar family characteristics. If, in fact, abstainers and heavy/problem drinkers come from similar family backgrounds, more research is needed to determine the factors that interact with family characteristics to orient an adolescent towards abstinence or towards excessive or problematic drinking. Furthermore, a psychometrically sound measure of the qualitative aspects of family relationships is needed before any conclusions can be drawn regarding the effects of the family on adolescent drinking.

#### **Integrating Peer and Family Correlates**

One of the most serious deficiencies in the literature on socioenvironmental influences of drinking behavior is the absence of studies conducted across multiple environments (Garbino, 1985; Hirsch, 1985; Bronfenbrenner, 1977). While both peer variables and family characteristics have been found to predict alcohol use independently, there have been few attempts to determine the simultaneous influence of family and peer relationships on drinking. In his study on peer and parental affiliations, Johnson (1986) reported that parental attachment and involvement was negatively correlated with alcohol use, and peer involvement was strongly positively correlated with alcohol use and abuse. The data presented by Johnson suggest that while peer involvement may foster increased alcohol use, adolescents who attach importance to their families show a decreased probability of alcohol use.

Fondacaro and Heller (1983) investigated the relationship between social support variables and alcohol use among college students. Perceived social support and social network characteristics were used to predict average daily alcohol consumption (a composite index of quantity and frequency of alcohol use). Perceived social support was assessed with a scale that purports to measure the degree of satisfaction with support provided by family (PSSFa) and from friends (PSSFr) (Prociano and Heller, 1983). Social network variables included size and density of network, amount of social contact, proportion of family, and proportion of friends. Results indicated that neither perceived support from family or friends was related to alcohol consumption. On the other hand, network characteristics that reflect high levels of social interaction with peers were positively related to drinking. The variables most closely associated with alcohol use were the number of drinking and heavy drinking network members, network density, and the number of hours per week of social contact with network members.

The results reported by Fondacaro and Heller (1983) and by Johnson (1986) clearly implicate the importance of peer network variables to adolescent drinking. In contrast, the influence of family on drinking is less consistent: Johnson (1986) reported a significant correlation between family and drinking, while Fondacaro and Heller (1983) found no association between the two variables. This disparity may be due in large part to the general lack of specificity in the literature regarding "family variables".

**Methodological Problems in Adolescent Alcohol Research**  
**Problems Assessing Alcohol Use**

Interwoven throughout the studies reviewed above is a lack of consistency in the measurement of alcohol use. Clearly, there is much variability among the reports of alcohol use rates. Overall prevalence rates range from 41% to 83%, and from 61% to 70% within Canada. Rates of "heavy drinking" range from 6% to 14%. While sociodemographic factors explain some of this variability, they do not account for all of the inconsistent results across studies. Another reason for the inconsistency is the lack of consensus regarding valid measures of alcohol use. An examination of the numerous questionnaires reveals a lack of standardization of items. The differences are often so large as to preclude comparability of results across studies. Some studies defined drinking status on the basis of a simple "use-nonuse" dichotomy thereby ignoring the variety of patterns and levels of consumption subsumed under the rubric "use". Among studies which examined variations in consumption, some required that respondents estimate alcohol use in terms of frequency only, others required quantity estimates only, and still others used a composite quantity-frequency estimate.

Some studies failed to make a distinction between factors related to the use of alcohol and those related to the use of other drugs. A single-item composite index of overall drug use was used instead. Because of the inherent differences between alcohol and other substances (ie., in terms of legality, accessibility, and social mores),

researchers should not assume a priori that the factors related to use of the alcohol are similar to those related to use of other substances.

There is also variability in the periods for which estimates were required. Specified periods included "within the last week", "within the last 4 weeks", "during the preceding 6 months", and "during the preceding 12 months". Some studies did not specify a prevalence period and simply asked respondents to estimate "usual" use of alcohol (ie. "how often do you usually drink beer?"). Bryam and Fly (1984) required subjects to indicate on an ordinal scale the number of times, in their lifetime, they had drunk alcoholic beverages.

Multiple choice response classifications are sometimes ill-defined and require guesswork on the part of the subject. In Moos, Moos, and Kulik (1976), for example, frequency estimates ranged from never, once or twice, sometimes, or often. The terms "sometimes" and "often" were not operationally defined.

There is currently no consensus on classification of an adolescent as a "heavy" drinker or "problem" drinker. The criteria used to measure adult alcohol misuse/abuse (ie. physical, familial, and work disruptions) are of limited utility in defining adolescent alcohol related problems. Adolescents have not been drinking long enough for chronic medical or physiological ailments to develop. As well, their youthful status insulates them from the role performance difficulties that adults experience at work and within the family (Donovan and Jessor, 1978). As a result of the absence of direction, some

researchers have defined "heavy" drinking on the basis of frequency or quantity of alcohol consumed, while others use a composite index. Frequency of drunkenness has also been used as a criterion. The term "drunk" is often left up to the subjective interpretation of the questionnaire respondent. "Problem" drinking has been defined in terms of quantity and frequency of drinking, frequency of drunkenness (usually not operationally defined), as well as in terms of various negative consequences associated with drinking. The terms "heavy drinker", "problem drinker", and "alcohol abuser" have been used synonymously.

Clearly, one of the most serious limitations in alcohol use survey research is the lack of consistency in methodology and definitions. To help reduce the inconsistency and promote comparability across Canadian research, Smart (1985) published a set of guidelines for surveys of student populations. Most Canadian researchers since 1985 (eg., Mitic, McGuire, and Neumann, in press) have adhered to these guidelines. One of Smart's recommendations is to inquire about the frequency of use of alcohol during the preceding four weeks, with responses ranging from "never" to "more than once a day". He also recommended that type of alcoholic beverage be specified when requesting frequency and quantity estimates. With respect to problems stemming from alcohol, Smart discussed the usage of the Straus-Bacon Problem Drinking Scale (1953) or some variant of this scale to assess potential problem drinkers. The present study attempted to adhere as closely as possible to Smart's guidelines, partially to reduce the methodological and definition inconsistencies

of previous research, and partially to enhance comparability of this study's findings with those of similar studies conducted within Nova Scotia.

### Issues in Assessing Social Network

The social support concept has been "operationalized in a somewhat bewildering assortment of ways" (Wilcox, 1981, p. 98). All too often the conceptual and definitional differences go unnoticed contributing to the inaccuracies and misunderstandings in the literature. Terms such as "social support", "support network", and "social support system" are used synonymously when, in fact, they may be unique and independent elements of the support construct. Tardy (1985) discussed five distinct aspects of social support; they are: direction, disposition, descriptive/evaluative, content, and network. The solution, urges Tardy, is not to reach consensus on a single definition, but rather for individual researchers to recognize and clarify the different ways of defining the concept at a theoretical and operational level. The present investigation was concerned with the social network aspect of social support, and how peer network is related to adolescent drinking.

A social network is defined as the set of all significant others with whom one has social interactions (Hirsch, 1979). According to Marsella and Snyder (1981) a social network is comprised of four distinct elements: (1) interaction, which refers to variables that describe the relationship between network members, (2) quality, which describes affective qualities of the relationships between

members, (3) function, which describes specific functions served by network members, and (4) structure, which describes the morphology of the network. Included in a structural network analysis would be variables such as network size, network density, and amount of social contact with network members. The present investigation restricted its focus to an analysis of the structural variables of the peer network, partially for clarity and simplicity, and partially because structural variables of peer networks have most often been reported to be related to adolescent drinking (eg. Fondacaro and Heller, 1983).

#### Problems Assessing the Family

The inconsistencies regarding the importance of family factors in adolescent drinking may be due, at least in part, to the problems of measuring the family construct. The psychometric properties of the measures used to assess family environment were discussed in few of the above mentioned studies on family factors. Conclusions were based on unstandardized and sometimes crude assessments of family environment. Babst et al. (1976), for example, dichotomized family cohesion into "present" or "not present" on the basis of the subjects' response to the following forced-choice item: "I feel very close to my parents" or "I do not feel very close to my parents". Johnson (1986) conceptualized family involvement as a 2-dimensional construct comprised of the emotional bond between parent and child and the amount of time spent with the family in social and recreational activities. Fondacaro and Heller (1983) assessed family factors with the PSSFa Scale. Although the PSS is purported to identify the extent to which an individual perceives his/her needs for

emotional, informational, and feedback supports are fulfilled by the family, Tardy (1985) contends that, since the majority of items assess the provision of emotional support, the PSS scale should be considered primarily a unidimensional measure of such support.

Given the importance of the family as a major element in understanding behavior (eg. Laing, 1971), it is surprising that there have been so few attempts to objectively describe it. Clearly, a measure providing operational definitions of the many aspects of an individual's perception of his/her family would contribute significantly to a better understanding of the influence of the family on adolescent drinking behavior.

One method of doing this is to assess and classify families according to their psychosocial climate. The concept of psychosocial climate stems from the work of Murray (1938) and has been developed by Stern (1970) and, most recently, by Moos (1976). The psychosocial climate perspective assumes that each environment has a unique personality that gives it unity and coherence. Individuals within a particular setting form global impressions of their environment from their perception of a number of specific aspects of it. Perceived psychosocial climate can have a strong impact on one's behavior, feelings, and growth (Moos, 1987); therefore, an understanding of psychosocial climate within the family may provide insight into the drinking behavior of adolescents.

In translating the concept of psychosocial climate into operational

terms, Moos and his colleagues (see Moos, 1987 for a review) have developed nine psychosocial climate scales, one of which is the Family Environment Scale (FES) (Moos, 1974). The FES is a 90-item scale that assesses an individual's perception of specific aspects of family functioning. Items cover 10 dimensions of family life that are conceptually organized around three domains: (1) interpersonal familial relationships, (2) direction of personal growth within the family, and (3) the basic organizational structure within the family.

There is a considerable amount of research relating FES variables to adult alcohol use. Previous research indicates that higher levels of cohesion, lower levels of conflict (Bromet and Moos, 1977; Moos, Bromet, Tsu, and Moos, 1979), and greater emphasis on active use of leisure time (Moos et. al, 1979) are associated with prolonged abstinence among adult alcoholics. Comparing families of recovered and relapsed adult alcoholic patients two years after discharge from residential treatment, Moos and Moos (1984) reported that relapsed patients and their spouses perceived less familial cohesion, less expressiveness, and less recreational orientation than recovered alcoholics and their spouses. The families of alcoholics in active treatment have been found to be less cohesive and expressive, and to place less emphasis on independence, intellectual-cultural activities, active-recreational concerns, and organizational tasks than control-group families (Filstead, McElfresh, and Anderson, 1980). Family members of alcoholics in the latter study also perceived higher levels of conflict than family members of non-alcoholics.

Clearly, the family environment plays a significant role in the development of, and recovery from, alcoholism. While the FES has not been used to study correlates of adolescent drinking, it has nonetheless been used to describe the psychosocial climates of adolescents' families from diverse backgrounds (eg., Kagal, White, and Coyne, 1978; Dancy and Handal, 1981; McMillan and Hiltonsmith, 1982; Hirsch, 1985; Hirsch, Moos, and Reischl, 1985). The FES was administered to subjects in the present study. The advantage of using the FES over other measures is that it has demonstrated validly and reliably the measures of perceived family functioning described in previous studies.

#### Summary

The sociodemographic variables most consistently purported to be related to adolescent alcohol use are age/grade and gender of respondent. Older adolescents and males are more likely than younger adolescents and females to drink in greater quantities, in greater frequencies, and to be classified as heavy or problem drinkers. A fundamental problem in alcohol use surveys is the pervasive lack of methodological and definitional clarity. The present study attempted to reduce this confusion by operationally defining all terms and by following Smart's (1985) recommendations with respect to collecting information on quantity and frequency of consumption of specific types of alcohol, as well as on problems associated with alcohol use.

Adolescents who have large social networks and who interact frequently with peers in unstructured social activity are most likely

to report large quantity and frequency estimates and heavy or problem drinking. It is crucial when conducting research on social networks to clearly define the specific aspects of the network one intends to study. Marsella and Snyder (1981) discussed four unique elements of social networks and urged researchers to conceptually and operationally recognize the distinctions between them. In keeping with their recommendations, the present study focused exclusively on the structural qualities of peer networks and how these qualities relate to adolescent drinking.

Adolescents who perceive their families as lacking in love, support, communication, and closeness, who describe their parents as rejecting and neglecting, and who report greater perceived autonomy and hostility within the family environment are more likely to drink and to drink heavily. Abstainers and heavy or problem drinkers share some of the same family characteristics and further research is needed to explore the interactive effect of other social network variables with family variables to understand adolescent drinking behavior. While both peer and family variables have been explored independently, thus far fewer studies have explored the issue of adolescent drinking across multiple social environments concomitantly.

One of the underlying weaknesses of research on families of adolescents is the failure to use valid and reliable measures to assess family characteristics. The rudimentary and unstandardized assessment measures that have been employed in past research may

have contributed to the inconsistencies in the literature. An alternative is to assess the family in terms of its psychosocial climate using the Family Environment Scale (FES). Although the FES has not been used directly to study adolescent drinking, it has been used in research with adolescents and in the area of adult addictions. The present study employed the FES to determine the family characteristics that may influence adolescent drinking.

### Statement of Purpose

There are three purposes for the present study. First, this study intended to describe the rates and levels of alcohol consumption and potential problem drinking among adolescent students in a Nova Scotia sample with regard to age and gender. The rates and levels of alcohol consumption among this sample were to be compared to those reported in Neumann et al. (1987), who also used a Nova Scotia sample. Drinking level classifications were operationally defined using a rating system which takes into account indices of both quantity and frequency of consumption of the three types of alcoholic beverage. The extent to which subjects had experienced alcohol-related negative events was assessed using the Straus Bacon Problem Drinking Scale (1953). This scale was discussed in Smart's (1985) recommendations for alcohol survey research and has been used in other Nova Scotia surveys. In this way, comparability with other studies within Nova Scotia was enhanced.

Second, this study intended to investigate the influence of peer network and of perceived family psychosocial climate on drinking.

Peer network was analyzed from a structural perspective using measures of size, density, number of drinking network members, and amount of time spent with network members. Family psychosocial climate was assessed with the FES which yielded descriptions of the families on 10 dimensions. Peer network and family environment were used independently to predict the average daily alcohol consumption and problem drinking scores.

Finally, the present study intended to explore the relative ability of peer network and family psychosocial climate to predict average daily alcohol consumption and to predict potential problem drinking among adolescents.

## Hypotheses

### Demographic Variables

It was hypothesized that age would correlate positively with average amount of alcohol consumed daily and that males would consume significantly more alcohol than females.

It was hypothesized that age would correlate positively with the number of alcohol-related negative events experienced and that males would have experienced significantly more alcohol-related negative events than females.

### Social Network Variables

It was hypothesized that peer network size, number of peer network members who drink, and amount of time spent with peers per

week would correlate positively with average amount of alcohol consumed daily.

It was hypothesized that peer network size, number of peer network members who drink, and amount of time spent with peers per week would correlate positively with the number of alcohol-related negative events experienced.

### Family Psychosocial Climate Variables

The correlation between the ten family environment characteristics and alcohol use, and between family environment and potential problem alcohol use was investigated. Based on previous research, the following hypotheses were made:

Scores on the Cohesion, Expressiveness, Active-Recreational, and Moral Religious subscales would correlate negatively with average daily alcohol consumption.

Scores on the Cohesion, Expressiveness, Active-Recreational, and Moral Religious subscales would correlate negatively with the number of alcohol-related negative events experienced.

Scores on the Conflict and Independence subscales would be positively correlated with average daily alcohol consumption.

Scores on the Conflict and Independence subscales would be positively correlated with the number of alcohol-related negative

events experienced.

The relationship between perceived control and drug and alcohol use in previous research is equivocal. Therefore, no prediction was made regarding the relationship of the Control subscale score to the two drinking measures. There was relatively little empirical or theoretical basis on which to predict the relationship of the remaining FES subscales to alcohol consumption or to alcohol-related negative events. No hypotheses were made, therefore, with regard to the Achievement, Intellectual-Cultural, and Organization subscales.

#### Social Network and Family Psychosocial Climate Variables

It was hypothesized that multiple regression analyses would reveal that both sets of variables would contribute significantly to the prediction of level of alcohol consumption and number of alcohol-related negative events experienced.

## **METHOD**

### **Subjects**

Subjects were 450 students in grades 7 through 12 from one junior-high and one high school in the Halifax area. Table 1 contains a summary of the demographic characteristics for all subjects who participated. For additional information, see Appendix A, which contains census characteristics for the population from which the sample was drawn. Respondents' ages ranged from 12 to 19 years with the mean age being 15.3 years. The genders were represented approximately equally, with 51.6% of the sample being male, and 48.4% being female. A question on present living situation revealed that 74.2% of the adolescents lived in families where both mother and father were present in the home. When step-parents are included, this figure increases to 88.8%. Nine percent of the students live with mother only, or father only, and the remaining 2.1% live with other relatives, friends, or alone.

### **Instruments**

Subjects were required to complete an anonymous, self-administered questionnaire battery. The battery included the following instruments:

#### **Personal Information Sheet**

Items from this instrument included personal and demographic information such as age, grade, gender, and present living situation. As well, extensive information on alcohol use was requested (see Appendix B). Alcohol consumption measures were comprised of

Table 1

Description of Sample (N =446)

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Age	<i>M</i>	15.3
	<i>SD</i>	1.9
Gender	Male	51.6%
	Female	48.4%
Living Situation	Mother and Father	74.2%
	Mother and Stepfather	11.9%
	Father and Stepmother	2.7%
	Mother only	6.5%
	Father only	2.5%
	Other	2.1%

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questions on the frequency and quantity of drinking beer, wine, and hard liquor. More specifically, subjects were asked how often they usually drink beer, wine, and hard liquor. Response choices ranged from never to daily. Subjects were also questioned on how many drinks of each of the three alcoholic beverages they usually have in one sitting. Response choices ranged from 0 to 12 drinks or more. Reliability in high-school drug use surveys has generally been reported to be high (Single, Kandel, and Johnson, 1975; Smart and Blair, 1978; Smart and Jarvis, 1981; O'Malley, Bachman, and Johnston, 1983; Smart, 1985). Where there are departures from good validity, the majority of studies suggest the main problem is under-reporting rather than over-reporting (Cox and Longwell, 1974; Single et al., 1975; Smart, 1985).

Responses to the frequency and quantity items were used to derive a drinking level classification that has been used extensively in other surveys of adolescent drinking (Rachal et al., 1975; Rachal et al., 1980; Zucker and Harford, 1983; Barnes, 1984; Barnes and Welte, 1986). The method for determining classification level is presented in Appendix C. The classification scheme was used for descriptive purposes and is as follows:

**Abstainers.** don't drink or drink less than once a year.

**Infrequent Drinkers.** drink once a month at most and drink small amounts (one drink or less) per typical drinking occasion.

**Light Drinkers.** drink once a month at most and drink medium amounts (2 to 4 drinks) per typical drinking occasion, or drink no more than 3 to 4 times per month and drink small amounts per typical drinking

occasion.

**Moderate Drinkers.** drink at least once a week and small amounts per typical drinking occasion, or 3 to 4 times per month and medium amounts per typical drinking occasion, or no more than once a month and large amounts (5 to 12 drinks) per typical drinking occasion.

**Moderate-heavier Drinkers.** drink at least once a week and medium amounts per typical drinking occasion, or 3 to 4 times per month and large amounts per typical drinking occasion.

**Heavier Drinkers.** drink at least once a week and large amounts per typical drinking occasion.

On the basis of the frequency and quantity data, a continuous drinking variable was also calculated to represent the average daily consumption, in ounces, of alcohol consumed by the subject (see Appendix D for derivation of scores). This variable is referred to as the Quantity-Frequency Index (QF Index). The QF Index was first used by Cahalan and Cisin (1968) and has been used extensively in other alcohol use and abuse research (Jessor et al., 1968; Maddox and Williams, 1968; Rachal et al., 1975; Wilsnack and Wilsnack, 1978; Barnes, 1981; Fondacaro and Heller, 1983; Zucker and Harford, 1983; Downs, 1985; Thompson and Wilsnack, 1987). The QF Index has a lower limit of zero (no alcohol consumed), and high scores indicate a high amount of alcohol consumed. Test-retest reliability over an average 6 week period was 0.85 (Downs, 1985).

#### **The Straus-Bacon Problem Drinking Scale (SBPDS)**

The extent to which subjects had experienced alcohol-related

negative events was determined on the basis of responses to a series of questions first used by Straus and Bacon in their study of college students (Straus and Bacon, 1953). The SBPDS consists of 11 questions that describe various symptoms and problems incurred by drinking (see Appendix E). The items in the questionnaire represent one of three domains. The first group consists of social consequences and are defined as problems with school or exams, tension with family or friends, trouble with the police, trouble with teachers or school authorities, or problems relating to money. The second group comprises the early dependency symptoms and is represented by items concerning drinking before parties, drinking alone, drinking before or instead of breakfast, and experiencing blackouts. The third group includes items related to vandalism or violence towards others or personal injury as a result of one's own drinking.

Straus and Bacon classified potential problem drinkers as those who respond affirmatively to at least one of the eleven items. Their decision was based on the assumption that experiencing any one of the 11 difficulties is indicative of a predisposition to future preoccupation with, or inability to control, the use of alcohol. Psychometric data are not available to support this assumption. Nevertheless, the SBPDS has been used extensively as an indication of potential problem drinking. As well, Smart (1985) recommended the SBPDS (or some variant of it) as one of the measures of choice to include in adolescent alcohol surveys. For the purpose of the present study, no attempt was made to dichotomize subjects as "problem" versus "non-problem" drinkers. Instead, the SBPDS was used as an

additive index to indicate how many of the 11 negative events had been experienced by the subject as a result of alcohol use. For every item answered affirmatively, the subject received a score of 1. Total score, therefore, could range from 0 to 11.

#### Social Relationship Questionnaire (SRQ)

The SRQ (Fondacaro and Heller, 1983) was used to assess the structural characteristics of subjects' social networks (see Appendix F). Network variables originally included in the present investigation were as follows:

Size of network. Subjects were asked to list the first names or initials of up to 15 individuals with whom they interacted at least once during a two-three week period. Subjects were also instructed to indicate whether the network member was a peer, family member, or other associate. Peer network size (SIZEPeer) was calculated by summing the number of people listed as peers. Family network size (SIZEFam) was calculated by summing the number of people listed as family members.

Number of peer network members who drink (SIZEPeer-D)

Number of family network members who drink (SIZEFam-D).

Amount of social contact (ASC). For each network member, subjects estimated the number of hours, rounded to the nearest half-hour, that they spent with that person over the last seven days. ASCPeer was computed as the sum of these ratings across all peer network members. ASCPeer-D was computed as the sum of the ratings across only those peer network members who drink. ASCFam was computed as the sum of the ratings across all family network members.

A density matrix was also included in the original questionnaire. Density is a variable used to indicate the number of network members who interact with other individuals in the network. A preliminary study suggested that the density matrix would be difficult for the younger subjects to understand, and would require more time to complete than could be allotted. The density variable was thus deleted from the questionnaire.

#### The Family Environment Scale (FES) (Moos, 1974)

To assess perceived psychosocial climate within the family, the FES (see Appendix G) was used. The FES is a 90-item true-false questionnaire which yields scores on 10 subscales. Each of the subscales has an approximately equal number of items scored true and scored false to control for acquiescence response set. Scores are derived using the template provided with the FES form. Items on the answer sheet are arranged so that each column of response constitutes one subscale. The number of X's showing through the template are tallied to arrive at the score for each subscale. Scores can range from 0-9. The 10 subscales are divided into 3 dimensions as illustrated in Table 2.

The norms for the FES were derived from 1125 "normal" and 500 distressed families. The "normal" families included families from all areas of the United States, single parent and multigenerational families, families drawn from ethnic minority groups, and families of all age groups. The distressed families were from psychiatric clinics, probation and parole departments, and included alcohol

Table 2.

**FES Subscale and Dimension Descriptions****Relationship Dimension**

1. Cohesion                    The extent to which family members are concerned and committed to the family and the degree to which family members are helpful and supportive of one another.
2. Expressiveness    The extent to which family members are allowed  
(Express)                    and encouraged to act openly and to express their feelings directly.
3. Conflict                    The extent to which open expression of anger and aggression and generally conflictual interactions are characteristic of the family.

**Personal Growth Dimension**

4. Independence        The extent to which family members are  
(Independ)                    encouraged to be assertive, self-sufficient, to make their own decisions, and to think things out for themselves.
5. Achievement         The extent to which different types of activities  
(Achieve)                    (i.e., school and work) are cast into an achievement-oriented or competitive framework.
6. Intellectual-         The extent to which the family is concerned about  
Cultural                    political, social, intellectual, and cultural  
Orientation                activities.  
(ICO)
7. Active-                 The extent to which the family participates  
Recreational             actively in various kinds of social,  
Orientation                recreational, and sporting activities.  
(ARO)
8. Moral-Religious     The extent to which the family actively discusses  
Emphasis                    and emphasized ethical and religious issues and  
(MRE)                        values.

**System Maintenance Dimension**

9. Organization (Organiz'n)      Measure how important order and organization is in the family in terms of structuring the family activities, financial planning, and explicitness and clarity in regard to family rules and responsibilities.
10. Control                      The extent to which the family is organized in a hierarchical manner, the rigidity of family rules and procedures, and the extent to which family members order each other around.
-

abusers, general psychiatric patients, and families in which an adolescent or child was a runaway, a delinquent, or a foster child.

Moos and Moos (1981) reported moderate to high internal consistencies (Chronbach's Alpha) for each of the 10 subscales (ranging from .61 for Independence to .78 for Cohesion and Intellectual-cultural Orientation) and acceptable eight-week test-retest reliabilities (ranging from .68 for Expressiveness to .86 for Cohesion). Mean 4-month and 12-month profile stability coefficients were .78 and .71, respectively. Average item-to-subscale correlations ranged from .27 to .44, and subscale intercorrelations indicate that the subscales measure distinct, though somewhat related, dimensions of family environment.

Support for the construct validity of the FES has been established by over 100 studies that have used the scale in a variety of ways (see Moos and Spinrad, 1984). For example, scores on the FES have been found to discriminate alcohol treatment outcomes in predictable ways (Bromet and Moos, 1977; Finney, Moos, and Mewborn, 1980; Moos et al., 1979; Moos and Moos, 1984)

#### Experimental Design and Statistical Analyses

Age, gender, network size, number of network members who drink, number of hours per week spent with network members, and the 10 FES scores were the predictor (independent) variables. Criterion (dependent) variables were the average amount (in ounces) of alcohol consumed daily and the number of alcohol-related negative events

experienced by the subject.

Pearson product-moment correlations were employed to conduct preliminary analyses of the relationship among age, gender, network, and family environment variables to the two dependent variables.

Age differences in average daily amount of alcohol consumed and in the number of alcohol-related negative events experienced were tested for significance using single-classification ANOVAs. Gender differences in average daily amount of alcohol consumed and in the number of alcohol-related negative events experienced were analyzed using independent t-tests.

Multiple regression analyses were employed to examine the simultaneous effects of social network and family psychosocial climate on the two criterion variables. Multiple regression procedures allow the prediction of a criterion variable on the basis of its relationship with two or more predictor variables. The goal of any regression is to arrive at a set of regression coefficients for the predictor variables that minimize the difference between the values obtained from measurement and the values predicted by the equation. The multiple regression coefficient is simply a correlation coefficient between the obtained and predicted values (Tabachnik and Fidel, 1983).

Several multiple regression techniques are available. They include standard, hierarchical, stepwise, and setwise, the latter of which is a

combination of hierarchical and stepwise. In standard regression, all predictor variables are entered simultaneously. Each predictor is then assessed as if it had entered the regression after all other variables had been entered. In hierarchical regression, the researcher controls the order of entry of the variables. This decision is based on theoretical grounds. Each predictor variable is assessed in terms of what it adds to the equation at its own point of entry. Stepwise regression is similar to hierarchical in that it orders the entry of the predictor variables. However, stepwise regression is used when there is no theory to guide the order in which the predictors are entered into the equation. The order of entry is based instead on statistical consideration. At each step in the procedure, the predictor variable that adds most to the prediction equation in terms of increasing the multiple correlation coefficient is entered. The process continues until no more useful information is provided by the addition of variables, with the researcher setting the statistical criteria for entry (probability of  $F$  to enter - or PIN) and deletion (probability of  $F$  for removal - or POUT) of variables.

The chief problem of stepwise multiple regression analysis is its tendency to capitilize on chance, especially if the number of predictor variables is large (Myers, 1979). Further, trivial differences in sums of squares will determine the weight assigned to particular variables and therefore produce a misleading set of significant predictors. In view of these comments, Myers (1979) suggests that sample sizes should be large. Suggested sample sizes have ranged from 50 or more than the value of  $p$  (Harris, 1975) through several hundred subjects

(Kerlinger and Pedhazur, 1973). The sample size in the present study met both criteria.

The present study used a stepwise multiple regression procedure to analyze the relationships between the predictor variables and both QF and SBPDS scores. The predictor variables entered into the equation included the demographic, network, and family psychosocial environment values that were significantly correlated, according to the Pearson product-moment correlations, QF and SBPDS scores.

### Procedure

A pilot study was conducted to determine whether the questionnaire content was of appropriate clarity and simplicity for even the youngest age groups in the proposed sample. Five 11 to 12 year old children served as pilot subjects. Four of these children had difficulty understanding and/or completing the density matrix of the SRQ. It was decided, therefore, to eliminate the matrix from the questionnaire battery.

With the cooperation of the Halifax County School Board, two schools were selected for study. The principals, and subsequently the parents of students in both schools, were contacted to obtain permission to administer the questionnaire (see Appendix H for description of parental permission form). The experimenter and two graduate students administered the questionnaires to subjects during class time. Respondents were given the following standard explanation of the general purpose and design of the study:

My name is \_\_\_\_\_. I am (or I am working with) a student working on my (her) Master's degree in Psychology at Saint Mary's University. I am here today, with the permission of your principle (Ms./Mr. \_\_\_\_\_) and your teacher (Ms./Mr. \_\_\_\_\_) to ask your help in collecting the information I (she) need(s) for my (her) research. I am interested in finding out about the drinking patterns of junior-high and high school students. I have with me today a questionnaire that I will ask you to fill out. In it, you will find some questions on your alcohol use, as well as some questions about your family and other people you spend time with. Filling out this questionnaire is completely voluntary. You do not have to fill it out if you choose not to. Let me assure you, however, that if you do choose to answer the questions, your answers are completely anonymous and confidential. In other words, please do not write your names anywhere on the questionnaire. As soon as you are finished, I will collect your questionnaire personally. Neither your teacher, principal, nor parents will see these questionnaires. Although Ms./Mr. \_\_\_\_\_ (teacher) will be remaining in the classroom with us, she/he will not be circulating around the room. It is very important that you answer the questions honestly. Does anyone have any questions?

Teachers were invited to remain in the classroom but were asked not to circulate. Subjects were encouraged to direct questions to the administrator of the survey and not to their teachers. Communication among the students was not permitted until all questionnaires had

been completed and returned. Questionnaires were distributed only to those students who were present in class on the day of administration and who had returned signed parental permission forms were requested to participate in the study. No attempt was made to arrange for the administration of the questionnaire to students who were absent from class on that day. It should be noted that the results of the present study may not apply to those students who may have been "skipping" class, involved with another teacher or principal, or absent from school for disciplinary, health, legal, or family-related reasons. Completion time for the questionnaires ranged between 20 to 40 minutes.

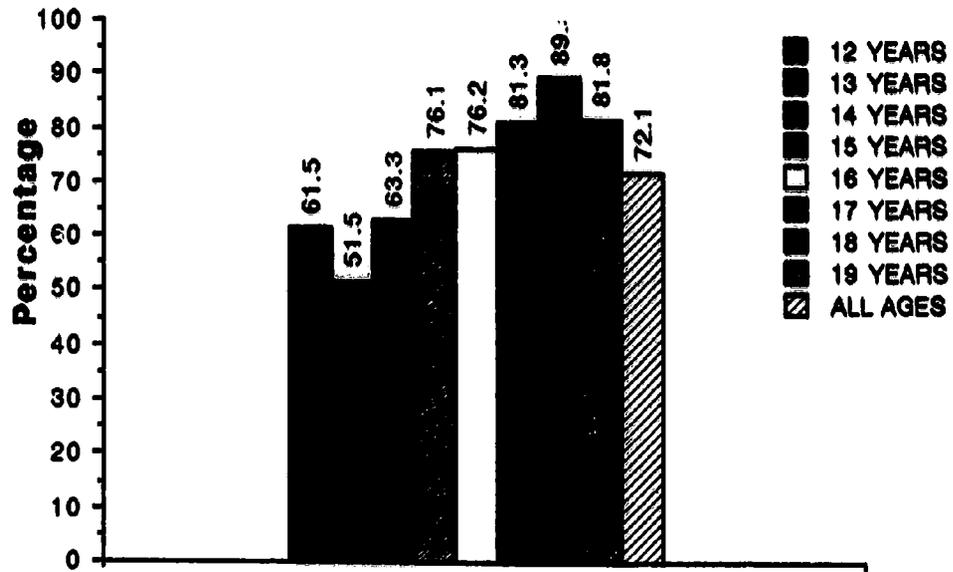
## RESULTS

Questionnaires were distributed to the 450 students who had returned parental permission forms. Of the 450 questionnaires distributed, 4 were not completed and 92 had missing data on either the demographic, alcohol use, social network, or psychosocial environment questionnaires. A frequency analysis of the questions on which data were missing failed to reveal a discernible pattern. The total sample ranged between 354 and 446 for the different analyses.

### Description of Drinking Patterns

Frequency distributions were calculated to determine the distribution of drinkers versus non-drinkers, as well as the extent of alcohol consumption among males and females for each age level. Figures 1 and 2 display the percentages of drinkers by age, for males and females respectively. These data show that 72.1% of males and 75.2% of females are drinkers. The overall prevalence rate is 73.6%.

As might be expected, the number of drinkers increased with age for both males ( $\chi^2 (7, N = 226) = 14.24, p < .05$ ) and females ( $\chi^2 (7, N = 214) = 23.35, p < .01$ ). For males, the proportion of 12 year old drinkers was 61.5 %. With the exception of a slight decrease at age 13, this percentage increased steadily to 89.5 at the age of 18, and then decreases to 81.8 at age 19. In sharp contrast to 12 year old



**Figure 1.** Percentage of Male Drinkers by Age

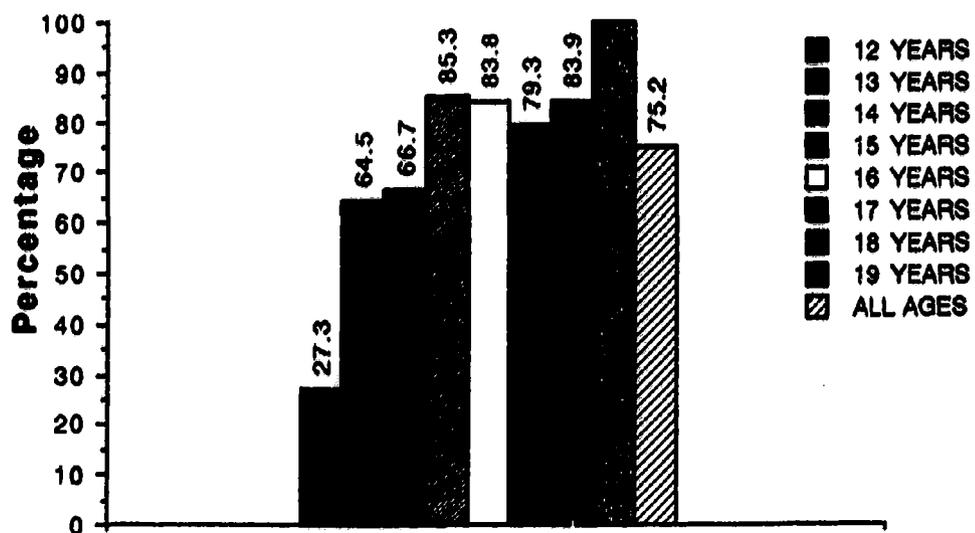


Figure 2. Percentage of Female Drinkers by Age

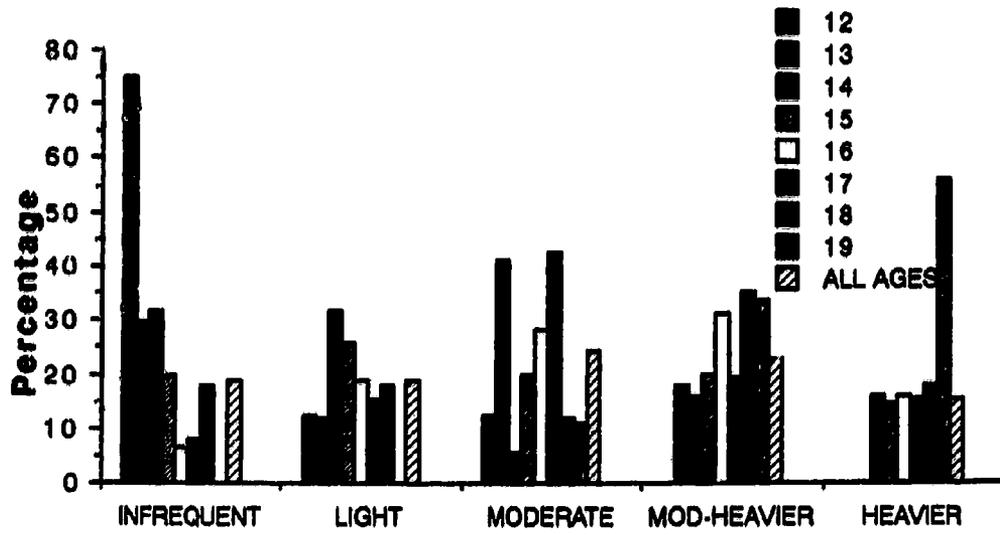
males, the percentage of 12 year old females who drink was 27.3. This figure more than doubles for 13 year olds and, with the exception of a slight drop at ages 16 and 17, increases to 100% at age 19.

To determine the extent of alcohol use, subjects were required to indicate the quantity and frequency with which they drank beer, wine, and liquor. Drinking levels were derived on the basis of responses to these items. The drinking classification categories were as follows: Infrequent, Light, Moderate, Moderate-Heavier, and Heavier Drinker. Figure 3 presents the percentage of drinking male respondents in each of drinking category for each age level. Examination of the figure reveals that the majority of the males aged 12 through 14 years fall into the Infrequent Drinker category, whereas the majority of 18 and 19 year olds fall into the Moderate-Heavier and Heavier categories. The percentages of 15, 16, and 17 year old males appears to be more evenly dispersed across all categories.

The percentage of drinking females in each of the drinking categories is summarized in Figure 4. For females, there is a clustering of 12 through 14 year olds at the Infrequent Drinker category, whereas the majority of 19 year olds fall into either the Moderate-Heavier or Heavier Drinker categories. Females aged 15 through 18 appear to be more evenly distributed across categories than other age groups.

#### Variables Related to QF Score (Correlations)

To determine the degree of association between the demographic



**Figure 3.** Percentage of Male Drinkers by Category and Age

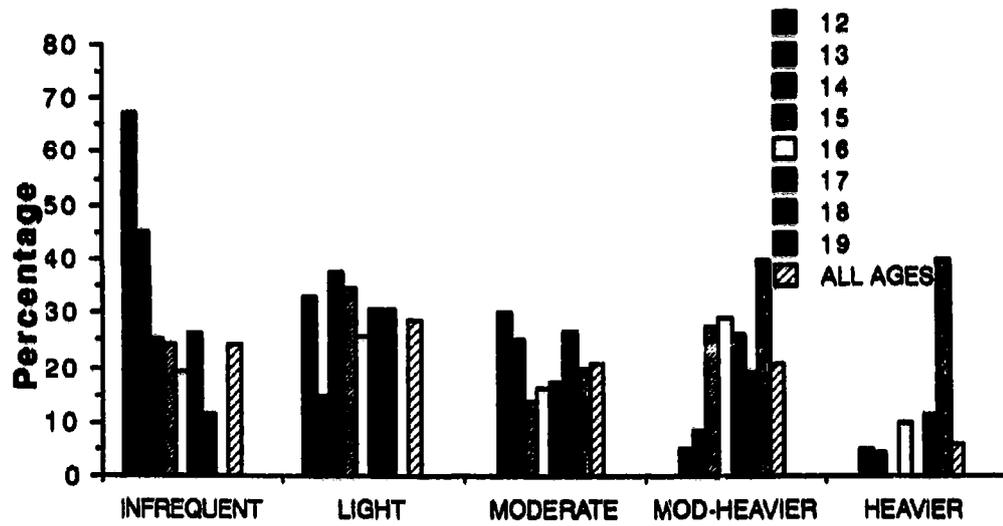


Figure 4. Percentage of Female Drinkers by Category and Age

network, and psychosocial climate variables, and the extent of alcohol use, Pearson Product-Moment correlations were calculated. Preliminary analyses indicated that there was a significant gender difference in QF scores ( $t(438) = 3.06, p < .01$ ) with the males showing greater alcohol use. Therefore, correlation coefficients were conducted separately for males and females. Previous research has shown that males have larger peer networks than females. T-tests failed to demonstrate the presence of gender differences in the peer network variable means (see Appendix I).

### Males

#### Demographic Variables (see Table 3)

As hypothesized, QF score was positively correlated with age ( $r = .23, p < .0001$ ).

#### Social Network Variables (see Table 3)

Size of the total social network was unrelated to the QF score. This result may not accurately reflect the degree of association between these two variables since over 52% of male subjects listed the maximum number of network members allowed for, i.e., 15. Thus, the restricted range of the size variable may have been responsible for the absence of a demonstrated relationship. To clarify this issue, total network size was divided into its component parts of SIZEFam, SIZEPeer, and number of other members listed. Neither SIZEFam, SIZEPeer, or size of other members were correlated with QF score. There was however, a significant positive association between QF score and SIZEPeer-D ( $r = .25, p < .0001$ ), as

Table 3

Intercorrelation Matrix for Criterion, Demographic, Network, and FES  
Subscale Variables, for Males

Variables	1	2	3	4	5	6	7
1.QF Score	-						
2.SBPDS	.51 <sup>a</sup>	-					
3.Age	.23 <sup>a</sup>	.33 <sup>a</sup>	-				
4.SIZE	-.04	.05	.14 <sup>c</sup>	-			
5.SIZEFam	-.11	-.18 <sup>b</sup>	-.08	.25 <sup>a</sup>	-		
6.SIZEPeer	.05	.19 <sup>b</sup>	.19 <sup>b</sup>	.74 <sup>a</sup>	-.42 <sup>a</sup>	-	
7.SIZEPeer-D	.25 <sup>a</sup>	.44 <sup>a</sup>	.36 <sup>a</sup>	.46 <sup>a</sup>	-.42 <sup>a</sup>	.73 <sup>a</sup>	-
8.ASCFam	-.17 <sup>b</sup>	-.25 <sup>a</sup>	-.14 <sup>c</sup>	.16 <sup>c</sup>	.51 <sup>a</sup>	-.19 <sup>b</sup>	-.28 <sup>a</sup>
9.ASCPeer	.02	.00	-.14 <sup>c</sup>	.25 <sup>a</sup>	-.09	.30 <sup>a</sup>	.24 <sup>a</sup>
10.ASCPeer-D	.17 <sup>b</sup>	.21 <sup>a</sup>	.16 <sup>c</sup>	.24 <sup>a</sup>	-.20 <sup>b</sup>	.37 <sup>a</sup>	.56 <sup>a</sup>
11.Cohesion	-.16 <sup>c</sup>	-.20 <sup>b</sup>	-.09	.14 <sup>c</sup>	.22 <sup>a</sup>	-.02	-.12 <sup>c</sup>
12.Express	.03	.02	.07	.18 <sup>b</sup>	.09	.10	.02
13.Conflict	.12 <sup>c</sup>	.16 <sup>b</sup>	-.12 <sup>c</sup>	-.09	-.08	-.01	-.03
14.Independ	.05	.15 <sup>c</sup>	.33 <sup>a</sup>	.03	-.02	.03	.11
15.Achieve	-.03	-.02	.13 <sup>c</sup>	.02	-.01	-.01	-.01
16.ICO	-.08	-.05	-.05	.07	.12 <sup>c</sup>	-.01	-.04
17.ARO	-.11	-.03	-.01	.17 <sup>b</sup>	.00	.17 <sup>b</sup>	.14 <sup>c</sup>
18.MRE	-.16 <sup>c</sup>	-.25 <sup>a</sup>	-.06	-.01	.22 <sup>a</sup>	-.15 <sup>c</sup>	-.24 <sup>a</sup>
19.Organiz'n	.01	-.08	.17 <sup>b</sup>	.03	-.07	.06	.12 <sup>c</sup>
20.Control	-.08	-.14 <sup>c</sup>	-.04	.05	-.03	.10	-.01

Table 3 (continued)

Variables	8	9	10	11	12	13	14
8. ASCFam	-						
9.ASCPeer	.41 <sup>a</sup>	-					
10.ASCPeer-D	.14 <sup>c</sup>	.77 <sup>a</sup>	-				
11.Cohesion	.19 <sup>b</sup>	.10	-.01	-			
12.Express	-.04	.00	.03	.31 <sup>a</sup>	-		
13.Confllct	-.22 <sup>b</sup>	-.14 <sup>c</sup>	-.14 <sup>c</sup>	-.49 <sup>a</sup>	-.12 <sup>c</sup>	-	
14.Independ	-.02	-.01	.12	.12 <sup>c</sup>	.10	-.08	-
15.Achieve	-.00	.03	.02	.05	-.12 <sup>c</sup>	-.03	.12 <sup>c</sup>
16.ICO	.15 <sup>c</sup>	.12	.05	.38 <sup>a</sup>	.25 <sup>a</sup>	-.21 <sup>a</sup>	.08
17.ARO	-.07	.15 <sup>c</sup>	.12	.44 <sup>a</sup>	.11	-.18 <sup>b</sup>	.10
18.MRE	.12	-.03	-.12	.26 <sup>a</sup>	.03	-.17 <sup>b</sup>	-.09
19.Organiz'n	.03	.10	.16 <sup>c</sup>	.32 <sup>a</sup>	-.05	-.35 <sup>a</sup>	.13 <sup>c</sup>
20.Control	.09	.09	-.01	-.25 <sup>a</sup>	-.29 <sup>a</sup>	.21 <sup>a</sup>	-.25 <sup>a</sup>

Variables	15	16	17	18	19	20
15.Achieve	-					
16.ICO	.10	-				
17.ARO	.09	.34 <sup>a</sup>	-			
18.MRE	.08	.25 <sup>a</sup>	.25 <sup>a</sup>	-		
19.Organiz'n	.36 <sup>a</sup>	.22 <sup>a</sup>	.30 <sup>a</sup>	.10	-	
20.Control	.20 <sup>b</sup>	-.13 <sup>c</sup>	-.07	.05	.17 <sup>b</sup>	-

<sup>a</sup> p < .001  
<sup>b</sup> p < .01  
<sup>c</sup> p < .05

well as with ASCPeer-D ( $r = .17, p < .01$ ), as predicted. As anticipated, ASCFam was negatively correlated with QF score ( $r = -.17, p < .01$ ).

#### FES Variables (see Table 3)

As predicted, QF score was negatively related to scores on the Cohesion ( $r = -.16, p < .05$ ) and MRE ( $r = -.16, p < .05$ ) subscales, and positively related to the Conflict subscale score ( $r = .12, p < .05$ ). Contrary to expectation, neither the Express, ARO, Independ, nor Control subscales were significantly correlated with QF scores. Additionally, no significant correlation was found between QF score and Achieve, ICO, or Organiz'n subscale scores.

To determine the relative importance of each FES subscale in predicting QF, a Stepwise multiple correlation was performed (see Table 4). Only subscales that were significantly correlated to QF were examined. Results show that, of Cohesion, Conflict, and MRE, only the  $F$ -value for Cohesion was significantly greater than 0 using .05 as the admission criterion for probability levels associated with  $F$ -values. Once Cohesion was entered, the partial correlation between QF and the two remaining subscales adjusted for Cohesion failed to meet the entry criterion. Cohesion yielded a multiple correlation of .16 and explained 2.7% of the variance of QF scores for males.

#### Females

#### Demographic Variables (see Table 5)

Age was significantly correlated with QF score ( $r = .27, p < .0001$ ).

Table 4

Multiple Regression to Predict QF Score from FES Subscales for Males.

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Variable Entered	Mult <i>R</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> Change	Overall <i>F</i>
Cohesion	0.16	0.03	0.03	5.50 <sup>a</sup>

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<sup>a</sup>  $p < .05$ 

Note: Only those variables that were associated with a significant *F* -value are included in the table.

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**Table 5**  
**Intercorrelation Matrix for Criterion, Demographic, Network, and FES**  
**Subscale Variables for Females.**

Variables	1	2	3	4	5	6	7
1.QF Score	-						
2.SBPDS	.61 <sup>a</sup>	-					
3.Age	.27 <sup>a</sup>	.21 <sup>a</sup>	-				
4.SIZE	.05	.05	.07	-			
5.SIZEFam	-.12 <sup>c</sup>	-.17 <sup>b</sup>	-.13 <sup>c</sup>	.29 <sup>a</sup>	-		
6.SIZEPeer	.14 <sup>c</sup>	.18 <sup>b</sup>	.14 <sup>c</sup>	.74 <sup>a</sup>	-.38 <sup>a</sup>	-	
7.SIZEPeer-D	.32 <sup>a</sup>	.40 <sup>a</sup>	.29 <sup>a</sup>	.52 <sup>a</sup>	-.37 <sup>a</sup>	.77 <sup>a</sup>	-
8.ASCFam	-.12	-.19 <sup>b</sup>	-.02	.10	.38 <sup>a</sup>	-.13 <sup>c</sup>	-.2 <sup>b</sup>
9.ASCPeer	.05	.05	-.05	.31 <sup>a</sup>	-.11	.38 <sup>a</sup>	.30 <sup>a</sup>
10.ASCPeer-D	.19 <sup>b</sup>	.23 <sup>a</sup>	.14 <sup>c</sup>	.25 <sup>a</sup>	-.20 <sup>b</sup>	.40 <sup>a</sup>	.56 <sup>a</sup>
11.Cohesion	-.13 <sup>c</sup>	-.30 <sup>a</sup>	-.08	.10	.10	.05	-.06
12.Express	.09	.00	.06	.13 <sup>c</sup>	-.08	.20 <sup>b</sup>	.14 <sup>c</sup>
13.Conflict	.17 <sup>b</sup>	.30 <sup>a</sup>	.05	-.06	.01	-.05	.05
14.Independ	.04	.08	.16 <sup>c</sup>	-.02	.01	-.03	.07
15.Achieve	-.09	-.02	.09	.11	.03	.12 <sup>c</sup>	.11
16.ICO	-.21 <sup>a</sup>	-.25 <sup>a</sup>	.01	.10	.01	.11	.03
17.ARO	-.08	-.06	-.03	.22 <sup>a</sup>	.01	.21 <sup>b</sup>	.19 <sup>b</sup>
18.MRE	-.07	-.05	.07	.02	-.09	.08	.08
19.Organiz'n	-.12 <sup>c</sup>	-.20 <sup>b</sup>	-.00	.12 <sup>c</sup>	-.04	.15 <sup>c</sup>	.11
20.Control	-.17 <sup>b</sup>	-.01	-.10	-.02	.02	-.01	-.03

Table 5 (continued)

Variables	8	9	10	11	12	13	14
8.ASCFam	-						
9.ASCPeer	.22 <sup>b</sup>	-					
10.ASCPeer-D	.07	.84 <sup>a</sup>	-				
11.Cohesion	.10	.04	-.03	-			
12.Express	-.01	.01	.04	.41 <sup>a</sup>	-		
13.Conflict	.06	-.07	-.00	-.63 <sup>a</sup>	-.22 <sup>a</sup>	-	
14.Independ	-.02	-.04	.05	.22 <sup>a</sup>	.23 <sup>a</sup>	-.26 <sup>a</sup>	-
15.Achieve	-.01	.07	.10	.02	-.09	.15 <sup>c</sup>	.01
16.ICO	-.01	.01	-.05	.48 <sup>a</sup>	.23 <sup>a</sup>	-.32 <sup>a</sup>	.09
17.ARO	-.03	.10	.09	.36 <sup>a</sup>	.20 <sup>b</sup>	-.24 <sup>a</sup>	.23 <sup>a</sup>
18.MRE	-.01	.03	.05	.17 <sup>b</sup>	.00	-.08	.05
19.Organiz'n	-.09	.03	.05	.38 <sup>a</sup>	-.02	-.31 <sup>a</sup>	-.01
20.Control	.07	-.02	-.02	-.16 <sup>c</sup>	-.44 <sup>a</sup>	.34 <sup>a</sup>	-.38 <sup>a</sup>

Variables	15	16	17	18	19	20
15.Achieve	-					
16.ICO	.17 <sup>b</sup>	-				
17.ARO	.11	.44 <sup>a</sup>	-			
18.MRE	.23 <sup>a</sup>	.34 <sup>a</sup>	.17 <sup>b</sup>	-		
19.Organiz'n	.19 <sup>b</sup>	.28 <sup>a</sup>	.21 <sup>a</sup>	.30 <sup>a</sup>	-	
20.Control	.35 <sup>a</sup>	.01	-.06	.24 <sup>a</sup>	.25 <sup>a</sup>	-

<sup>a</sup>  $p < .001$

<sup>b</sup>  $p < .01$

<sup>c</sup>  $p < .05$

### Social Network Variables (see Table 5)

Total network size was unrelated to QF score. However, since 61% of the female respondents listed the maximum number of network members, it was again suspected that this correlation coefficient may not accurately reflect the actual degree of association between extent of drinking and size of one's social network because of restricted range. More detailed analyses revealed that QF score was significantly correlated with SIZEFam ( $r = -.12, p < .05$ ) and positively correlated with SIZEPeer ( $r = .14, p < .05$ ). As predicted, SIZEPeer-D and ASCPeer-D were significantly correlated with QF score ( $r = .32, p < .0001, r = .19, p < .01$ , respectively).

### FES Variables (see Table 5)

As expected, QF was positively correlated with Conflict ( $r = -.17, p < .01$ ) and negatively correlated with Cohesion ( $r = -.13, p < .05$ ). In addition, ICO ( $r = -.21, p < .001$ ), Organiz'n ( $r = -.12, p < .05$ ) and Control ( $r = -.17, p < .01$ ) were negatively correlated with QF score. Unexpectedly, Express, Independ, and MRE were not significantly correlated with QF.

A Multiple Regression analysis was again performed to explore the relative predictive impact for females of the FES subscales on QF score. Table 6 summarizes the results of this analysis. When Conflict, Cohesion, ICO, Organiz'n, and Control were examined, only ICO, Control, and Conflict satisfied the criteria for entry. Together they explained 10% of QF variance for females. Intellectual-Cultural Orientation yielded a multiple correlation coefficient of .21, and an

Table 6

**Multiple Regression to Predict QF Score from FES Subscales for Females**

Variables Entered	Mult $R$	$R^2$	$R^2$ Change	Overall $F^*$
ICO	0.21	0.05	0.05	9.45
Control	0.27	0.07	0.02	7.87
Conflict	0.32	0.10	0.03	7.62

\*All  $F$ 's are significant at the  $p < .01$  level.

Note: Only those variables that are associated with a significant  $F$ -value are included in the table.

$R^2$  of .05. Control and Conflict increased the  $R^2$  to .07 and .10, respectively.

### Variables Related to SBPDS Score

Pearson Product-Moment correlations were computed to determine the degree of association of SBPDS score with demographic, social network, and family psychosocial environment variables.

#### Males

##### Demographic Variables (see Table 3)

As predicted, SBPDS score was significantly positively correlated with age ( $r = .33, p < .0001$ ).

##### Social Network Variables (see Table 3)

Size of the total social network was unrelated to SBPDS score. However, due to the restricted range of the Size variable, it was again decided to divide size of network into its component parts. Analysis revealed that SBPDS score was negatively correlated with SIZEFam ( $r = -.18, p < .01$ ), but positively correlated with SIZEPeer ( $r = .19, p < .01$ ). Consistent with the hypothesis, SIZEPeer-D was highly positively correlated with SBPDS ( $r = .44, p < .0001$ ). SBPDS score was negatively correlated with ASCFam ( $r = -.25, p < .0001$ ), but contrary to prediction, was not related to ASCPeer. SBPDS was, however, related to ASCPeer-D ( $r = .21, p < .001$ ).

##### FES Variables (see Table 3)

Consistent with the hypotheses, SBPDS was correlated with

scores on the Cohesion ( $r = -.20, p < .01$ ) and MRE ( $r = -.25, p < .0001$ ) subscales in the predicted direction. Express and ARO, however, were unrelated to SBPDS. As predicted, scores on the Conflict and Independ subscales were significantly positively correlated with SBPDS ( $r = .16, p < .01$  and  $r = .15, p < .05$ , respectively). Scores on the Control subscale were significantly negatively correlated with SBPDS score ( $r = -.14, p < .05$ ). Neither Achieve, ICO, nor Organiz'n subscale scores was significantly associated with SBPDS.

Scores on the Cohesion, Conflict, Independ, MRE, and Control subscales were examined for their relative influence on males' SBPDS scores employing a Stepwise Multiple Regression procedure. As shown in Table 7, MRE, Cohesion, and Control explained 6%, 2% and 3% respectively of the variance of SBPDS, and yielded multiple correlations of .25, .28, and .34, respectively. The remaining variables did not qualify for admission into the equation using the PIN value of .05.

### Females

#### Demographic Variables (see Table 5)

In support of the hypothesis, SBPDS was correlated with age ( $r = .21, p < .001$ ).

#### Social Network Variables (see Table 5)

SBPDS was unrelated to total network size. SBPDS was, however, related to SIZEFam ( $r = -.17, p < .01$ ) and SIZEPeer ( $r = .18, p < .01$ ) that comprise the total network. SIZEPeer-D was positively

Table 7

Multiple Regression to Predict SBPDS from FES Subscales for Males

Variables Entered	Mult <i>R</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> Change	Overall <i>F</i> *
MRE	0.25	0.06	0.06	13.70
Cohesion	0.28	0.08	0.02	8.98
Control	0.34	0.11	0.03	8.62

\* All *F* 's are significant at the  $p < .001$  level.

Note: Only those variables that are associated with a significant *F* -value are included in the table.

correlated with SBPDS ( $r = .40, p < .0001$ ). ASCFam was significantly negatively correlated with SBPDS ( $r = -.19, p < .01$ ). Contrary to prediction, ASCPeer was unrelated to SBPDS; however, ASCPeer-D was significantly positively correlated to SBPDS ( $r = .23, p < .001$ ).

#### FES Variables (see Table 5)

Scores on the Cohesion subscale were significantly negatively correlated with SPBDS ( $r = -.30, p < .0001$ ). The hypotheses that scores on the Express, ARO, and MRE would be negatively correlated with SBPDS were unsupported. SBPDS score was positively correlated with Conflict scores ( $r = .30, p < .0001$ ). However, there was no relation between the Independ and Control subscale scores and SBPDS scores. SBPDS was found to be negatively correlated with ICO ( $r = -.25, p < .0001$ ) and with Organiz'n ( $r = -.20, p < .01$ ) subscale scores. Achieve was unrelated to SBPDS scores.

The FES variables that correlated with the SBPDS, namely Cohesion, Conflict, ICO and Organiz'n were subjected to Stepwise Multiple Regression procedures to determine the relative importance of these FES subscales to the criterion variable. The results of this analysis are presented in Table 8. Only Cohesion and Conflict entered into the equation with multiple correlation coefficients of .30 and .33 respectively. They accounted for 11% of the SBPDS variance (9% and 2% respectively).

#### Summary of Correlational Analyses

In summarizing these results, it appears that higher QF scores

Table 8

**Multiple Regression to Predict SBPDS from FES Subscales for Females**

Variables Entered	Mult $R$	$R^2$	$R^2$ Change	Overall $F^*$
Cohesion	0.30	0.09	0.09	19.78
Conflict	0.33	0.11	0.02	12.35

\*All  $F$ 's are significant at the  $p < .001$  level.

Note: Only those variables that are associated with a significant  $F$ -value are included in the table.

of male adolescents are associated with higher SIZEPeer-D and ASCPeer-D scores, as well as greater Conflict scores and age. Lower QF scores are associated with higher ASCFam and Cohesion scores.

Higher QF scores of females in the study are associated with greater age, as well as higher SIZEPeer-D, ASCPeer-D, and Conflict scores. Negatively related to QF scores for females are SIZEFam, and ICO.

Higher male SBPDS scores are associated with greater age, SIZEPeer, SIZEPeer-D, and ASCPeer-D scores. Lower SBPDS scores are related to greater SIZEFam and ASCFam, as well as to greater Cohesion, MRE, and Control scores.

SBPDS scores in females are positively correlated with age, SIZEPeer, SIZEPeer-D, ASCPeer-D, and Conflict scores. Inversely related to SBPDS scores in females are SIZEFam, ASCFam, and Cohesion scores.

### Multiple Regression Analyses

Stepwise multiple regression analyses were performed to examine the simultaneous effect of the demographic, social network and family psychosocial environment variables on QF and SBPDS for males and females. Separate analyses were computed with QF score and SBPDS score as the criterion variables.

#### QF Score

With QF score as the criterion, the predictor variables entered into the equation were those variables that were significantly correlated with QF according to the Pearson Product-Moment Coefficients. For males those variables were age, SIZEPeer-D, ASCFam, ASCPeer-D, as well as scores on the Cohesion, Conflict, and MRE subscales of the FES.

Table 9 contains a summary of the regression analysis to predict QF score for males. The results indicated that 16 % of the variance of QF score can be accounted for by only two variables. They were: SIZEPeer-D and age. The major share of this variance was accounted for by SIZEPeer-D, which yielded a multiple regression coefficient of .35, and an  $R^2$  of .12. Adding the age variable increased the multiple regression coefficient from .35 to .40, and accounted for the remaining 4% of the explained variance. All other variables failed to qualify for entry into the equation using a significance level of  $p = .05$ .

For females, with QF score as the criterion, the following variables were entered into the regression equation: age, SIZEFam, SIZEPeer, SIZEPeer-D, and ASCPeer-D. Additionally, scores on the Cohesion, Conflict, ICO, Control, and Organiz'n subscales of the FES were included.

As can be seen in Table 10, regression analysis indicated that 24% of the QF variance for females can be explained by five variables. They were: SIZEPeer-D, age, as well as ICO, Control, and Conflict subscale scores. The SIZEPeer-D score yielded a multiple regression

Table 9

Multiple Regression to Predict QF Score for Males

Variables Entered	Mult $R$	$R^2$	$R^2$ Change	Overall $F$ *
Friends who drink	0.35	0.12	0.12	24.46
Age	0.40	0.16	0.04	17.22

\*All  $F$  's are significant at the  $p < .001$  level

Note: Only those variables that are associated with a significant  $F$  -value are included in the table.

Table 10

Multiple Regression to Predict QF Score for Females

Variables Entered	Mult <i>R</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> Change	Overall <i>F</i> *
Friends who Drink	0.31	0.10	0.10	18.39
Age	0.38	0.14	0.04	14.03
ICO	0.43	0.19	0.05	13.03
Control	0.47	0.22	0.03	11.76
Conflict	0.49	0.24	0.02	10.54

\*All *F* 's are significant at the  $p < .001$  level.

Note: Only those variables that are associated with a significant *F* -value are included in the table.

coefficient of .31 and an  $R^2$  of .10, and, as was the case with males, was the major predictor of QF score. Age increased the multiple correlation to .38 and accounted for an additional 4% of the variance. In contrast to the results for males, family environment variables increased the predictive power of the equation substantially. Scores on the ICO, Control, and Conflict subscales increased the explained QF variance by 5%, 3%, and 2%, respectively.

### SBPDS Score

Stepwise multiple regression analyses were similarly performed employing SBPDS score as the criterion. Again, only those variables that were significantly correlated with SBPDS according to the Pearson Product-Moment coefficients were entered into the equation. Separate analyses were performed for males and females.

For males, the predictor variables entered into the equation were age, SIZEFam, SIZEPeer, SIZEPeer-D, ASCFam, and ASCPeer-D. As well, the following FES subscale scores were included: Cohesion, Conflict, Independ, MRE, and Control.

Presented in Table 11 are the results of the stepwise regression for predicting SBPDS for males. Regression analysis revealed that 31% of the variance was explained by five variables. They were: SIZEPeer-D, age, SIZEPeer, Control and Conflict scores. Consistent with the results for the QF regression analysis, SIZEPeer-D accounted for the majority of the explained variance of SPBDS score, with a multiple regression coefficient of .42 and an  $R^2$  of .18. Adding

**Table 11**  
**Multiple Regression to Predict SBPDS Score for Males**

Variables Entered	Mult $R$	$R^2$	$R^2$ Change	Overall $F$ *
Friends who drink	0.42	0.18	0.18	38.40
Age	0.48	0.23	0.05	27.01
Friends	0.51	0.26	0.03	20.74
Control	0.53	0.28	0.02	17.13
Conflict	0.56	0.31	0.03	15.67

\*All  $F$  's are significant at  $p < .001$  level.

Note: Only variables that are associated with significant  $F$  -values are included in the table.

the age variable increased the multiple regression to .48 and contributed an additional 5% to the explained variance. Including the SIZEPeer variable yielded a multiple regression coefficient of .51 and raised the explained variance from 23% to 26%. The FES subscale scores for Control and Conflict jointly increased the multiple regression coefficient to .56, and accounted for an additional 2% and 3%, respectively, of the explained variance.

For females, the following variables were entered into the regression equation to predict SBPDS score: age, SIZEFam, SIZEPeer, SIZEPeer-D, ASCFam, and ASCPeer-D. In addition, the FES subscale scores for Cohesion, Conflict, ICO, and Organiz'n were entered.

Regression analyses for predicting female SBPDS scores are presented in Table 12. The results indicated that 31% of the variance was explained by four variables. They were: SIZEPeer-D, iCO, Conflict and SIZEPeer scores. In keeping with the previous analyses, SIZEPeer-D was the variable with the greatest power to predict SBPDS score. It had a multiple correlation coefficient of .39 and accounted for 16% of the total explained variance. ICO increased the multiple correlation to .50 and contributed 9% to the explained variance. Adding Conflict scores into the equation yielded a multiple correlation coefficient of .54 and raised the  $R^2$  from .25 to .28. Finally, SIZEPeer raised the multiple correlation coefficient to .56 and contributed the remaining 3% to the total explained variance.

Table 12

Multiple Regression to Predict SBPDS Score for Females

Variables Entered	Mult $R$	$R^2$	$R^2$ Change	Overall $F$ *
Friends who drink	0.39	0.16	0.16	31.40
ICO	0.50	0.25	0.09	28.75
Conflict	0.54	0.28	0.03	23.30
Friends	0.56	0.31	0.03	19.13

\*All  $F$  's are significant at the  $p < .001$  level.

Note: Only variables that are associated with a significant  $F$  -value are included in the table.

## **DISCUSSION**

The primary purpose of this study was to examine the influence of social network and family environment on alcohol consumption and related potential problems among adolescents. A secondary goal was to describe the rates of alcohol use in terms of age and gender within a sample of Halifax region students and to compare these rates with those reported in Neumann et al. (1987).

### **Prevalence**

The findings indicate that 73.6 % of the junior-high and high school students drink alcohol. The prevalence of alcohol use among the adolescents surveyed in this study is larger than those reported in other surveys of Canadian adolescent drinking behavior (eg. Smart et al., 1985; SADAC, 1987; Neumann et al., 1987). Neumann et al. (1987) reported a 61% prevalence rate for students in the Halifax secondary school system. This discrepancy may be related to a number of factors. First, it should be pointed out that the results of Neumann et al.'s research are based on a stratified random sampling of subjects from the Halifax school board, whereas the results of the present study are based on subjects from only two Halifax-region schools that were selected on a non-random basis. The higher prevalence rate, therefore, may be an artifact of non-random sampling and the lower rate reported by Neumann et al. may be a more accurate reflection of the drinking patterns of adolescents in

the Halifax region. Care should therefore be exercised in interpreting the remainder of the descriptive data with regard to alcohol use.

An alternate explanation for the observed discrepancy in alcohol use rates concerns differences in the questionnaire content. The survey conducted by Neumann et al. required students to report their use not only of alcohol, but of additional drugs that are both legally and socially proscribed. Adolescents tend to underreport their alcohol consumption (Smart, 1985). When subjects are required to report their consumption of alcohol and numerous additional drugs concomitantly, they may even further de-emphasize the extent of their substance use, so that the overall presentation of use does not appear to be excessive. As well, the inclusion of items pertaining to illegal drug use with items on the use of alcohol use may have presented alcohol as an illegal substance, and consequently may have inadvertently influenced subjects to even further minimize their familiarity with it. Because of this tendency, the data reported in Neumann et al. may less accurately represent drinking behavior than the data in the present study.

Consistent with the trend in recent years, the male-female usage gap is negligible. Prevalence rates were 72% and 75% for males and females, respectively. While there are no gender differences in terms of the proportion of drinkers versus non-drinkers, the data indicate that males remain at greater risk for becoming more extensively involved in alcohol use than females. When level of alcohol consumption was examined in terms of the six drinking categories,

more females than males were classified as lighter drinkers, whereas more males, as compared to females, were classified in the moderate and heavy categories. The greater consumption rate by male versus females adolescents is consistent with the results reported in numerous studies on the drinking patterns of Canadian adolescents (for example, Smart et al., 1985; Neumann et al., 1987).

An increase in the proportion of drinkers occurred with age, as intuitively expected and as supported in the literature (eg., Christiansen and Goldman, 1983; Downs and Robertson, 1982; Huba and Bentler, 1980; McLaughlin, Baer, Burnside, and Pokorny, 1984). There was a 20% rise in the proportion of male drinkers between the ages of 12 and 19, and a 70% increase in proportion of 12 year old to 19 year old females. This greater increase in the proportion of female drinkers may reflect the fact that there are fewer 12 year old girls who drink, whereas many of the 12 year old boys had already begun to drink. The onset of drinking, then, appears to occur later in girls than in boys, possibly due to the fact that young girls have fewer peer models of drinking behavior. Although females begin drinking at a later age, there was a trend for the proportion of female drinkers versus non-drinkers to surpass that of males by the end of adolescence.

Age was found to be associated not only with prevalence rate but also with extent of drinking. Older males and females were more likely to drink greater amounts and in greater frequencies than younger subjects. With the exception of the two youngest age

groups, a greater proportion of males as compared to females were classified as Heavier Drinkers at every age level. Thus, although there was a trend for more females than males to drink by the end of adolescence, males still consume alcohol in greater quantity and frequency.

The above findings clearly suggest that males, especially those in later adolescence, are still more susceptible than females to extensive involvement with alcohol. The vast majority of studies on adolescent alcohol use have reported similar findings (Smart et al. 1978; Smart and Gray, 1979; Barnes, 1981; Engs, 1982; Zucker and Harford, 1983; Smart et al. 1985; Barnes and Welte, 1986; Gibbons et al., 1986; and Neumann et al., 1987). According to Selnow (1985), in fact, no studies exist which report greater alcohol use by female than male adolescents. This phenomenon likely reflects the more permissive attitude by society towards more extensive drinking by males than by females. Wilsnack and Wilsnack (1979) state that ideas about traditional gender-roles affirm norms which, for all intents and purposes, obligate young males to drink as a part of their initiation into adulthood. The same may not hold true for females. It appears that heavy alcohol use, inebriation, and alcoholism continue to be undesirable behaviors in both adolescent and adult women (Lindbek, 1972). If social norms play a causal role in the drinking behavior of males and females, then one might expect to find differences in alcohol consumption by women who adhere to traditional gender appropriate norms and those who reject such norms. In a study which examined attitudes towards feminine ideals,

Wilsnack and Wilsnack (1978) found that the desire to be traditionally feminine was negatively correlated with quantity and frequency of alcohol consumption, drinking problems, and symptomatic drinking. Furthermore, females who reject the belief that "it is worse for girls/women to drink than it is for boys/men" are more likely to drink than females who adhere to this norm against women's drinking. Other studies contain findings consistent with the notion that adherence to socially dictated norms can influence adolescent drinking behavior (Zucker, 1968; Widseth, 1971; and Parker, 1975). The gender difference revealed in this investigation suggests that the present generation of adolescents have not rejected traditional gender appropriate expectations, at least with respect to alcohol use.

#### Social Network Variables

The peer network variables were related to the drinking measures similarly for males and females. Further, the observed gender difference in extent of drinking was not due to gender differences in peer network. As hypothesized, the greater number of peer network members who drink and the greater amount of social contact with these drinking friends, the greater the likelihood that adolescents will drink extensively and will experience more alcohol-related negative consequences.

The hypothesis that the amount of social contact with peers, regardless of peer drinking status, would predict drinking was unsupported by the data for both drinking measures and for gender.

This result contradicts those of Fondacaro and Heller (1983). The discrepancy may reflect the difference in ages of subject groups, as Fondacaro and Heller used a sample of first year college males. The potential differences in the types of activities engaged in by these two groups must be considered. For example, due to issues of newfound accessibility, acceptability, and legality, many of the social activities of first year college males are centered around alcohol. It has been suggested that alcohol use is very often a pre-requisite for social activity among young college students (Fondacaro and Heller, 1983). Adolescent social interactions, in contrast, may be more varied and, while they may include a number of unstructured peer activities such as dating and attending parties, they may also include activities which are adult supervised. As well, adolescents are more likely to be involved in activities which are organized around formal group affiliations, such as school and church groups, or Boy/Girl Scouts. Selnow and Crano (1986) report that increased participation in these formally organized groups is related to less substance use.

Overall, it appears that adolescents who drink heavily and report frequent occurrences of alcohol-related negative events have extensive peer network systems. This finding is consistent with those of Moos et al. (1976, 1977), Margulies et al. (1977), Fondacaro and Heller (1983), and Gibbons et al. (1986). Together, these findings present challenges to the traditional social support literature which has emphasized only the health-enhancing effects of large social networks. Extensive peer networks may actually place the adolescent at greater risk for more alcohol use and negative consequences of

such use. Adolescent peer influence would appear to have the potential for positive, as well as negative effects.

While embeddedness within a large peer network is associated with potentially deleterious alcohol-related effects, integration within a large family network is related to less involvement with alcohol. The data on the family network variables at least partially supported the hypotheses that size of family network and amount of time spent with family members would be negatively associated with the drinking indices. It was found that reports of larger family networks were associated with decreased quantity and frequency of drinking by females, and fewer alcohol-related negative events by males and females. It can be speculated that large family networks provide considerably greater potential for buffering their youth from the many stresses associated with the period of adolescence. An important contributor to heavy alcohol consumption appears to be the expectation that alcohol will relieve stress symptoms such as anxiety, shyness, and sadness (Nathan, Titler, Lowenstein, Solomon, and Rossi, 1970; Powers and Kutach, 1985). The assumption underlying this perspective is that the greater the quantity of interconnections in the interpersonal realm, the greater the potential availability of supportive resources an individual may draw from. Adolescents who are integrated within a large family network system may be, therefore, less likely to use alcohol as a way of coping with stress.

An interesting gender difference was revealed with respect to the

relationship between family network structure and the extent of alcohol use. The actual size of the family network was unrelated to quantity and frequency of alcohol consumed by males. However, the amount of time spent with family during the week preceding the survey was negatively related to extent of drinking by males. For females, the inverse was true. The number of hours spent with family was irrelevant to the extent of alcohol consumption, while the size of the family network was negatively related to the quantity and frequency of alcohol consumed. If the family in some way influences the decreased alcohol use by females, then its influence is evident even in adolescent girls who spend little time with their families. In contrast, more frequent direct contact with family members appears to be necessary to minimize the risk of adolescent boys becoming extensive alcohol users.

#### Family Environment Variables

The hypotheses predicted that Cohesion, Expressiveness, Active-Recreational Orientation, and Moral-Religious Emphasis would be negatively related to the two drinking measures. Contrary to expectation, neither Expressiveness nor Active-Recreational Orientation were related to adolescent drinking. This finding has important implications for the recent national media campaigns urging parents to "talk" to their children. General discussion among family members and an orientation towards structured family activity in themselves may not prevent or reduce extensive use of alcohol or the number of alcohol-related negative events their children experience.

Cohesion, on the other hand, appears to be more relevant to the issue of adolescent drinking. In partial support of the hypotheses, the degree of perceived cohesion within the family is related to drinking behavior. Males and females who perceived greater commitment, concern, and support from family members report fewer alcohol-related negative events than those who are low in perceived family cohesion. Similarly, perceived cohesion predicts the extent of drinking among males. Cohesion is especially relevant for males, as it is the only FES subscale that significantly predicts the quantity and frequency of their drinking.

The extent to which ethical and religious issues and values are emphasized within the family is positively associated with the occurrence of alcohol-related negative events for males only, thereby offering partial support for the hypothesis. It remains to be understood why the same pattern did not hold true for alcohol-related problems in females, and for extent of drinking in both males and females. In previous research, religiosity emerged as an important and persistent predictor of alcohol and other substance use in adolescents (Maddox, 1970; Burkett, 1980; Selnow, 1985; and Gibbons et al, 1986). Perhaps the discrepancy between the results of the present study and those of others reflect differences in the way religiosity is measured. Gibbons et al. (1986), for example, defined religiosity on the basis of frequency of attendance at religious services. Other researchers have included such items as belief and frequency of prayer (Selnow, 1985), and the belief that alcohol use is a sin (Burkett, 1980). The FES Moral-Religious Emphasis subscale

incorporates some of the above factors, as well as others including discussion of religious issues, and the presence or absence of a more generalized strong ethical code. It has already been determined that open expression and discussion of issues is unrelated to drinking, at least among those adolescents surveyed in the present study. Additionally, adolescents likely do not define the use of alcohol as an issue of ethics or morality, but rather as a socially acceptable rite of passage into adulthood.

Perceived Conflict and Independence within the family were hypothesized to be positively correlated with the drinking indices. Contrary to expectation, the extent to which adolescents perceive their families to encourage independence, that is, assertiveness, self-sufficiency, and independent decision making, bears no relationship to either the extent of their drinking or the occurrence of related negative events.

The level of perceived conflict within the family emerged as a significant predictor of the drinking indices for males and females. If adolescents report relatively high levels of conflict in their interactions with family, they are also likely to report relatively heavy drinking and relatively more alcohol-related negative events. This result supports the findings of numerous studies (Prendergast and Schaefer, 1974; Svobodny, 1982; and Thompson and Wilsnack, 1987). Thompson and Wilsnack (1987) found that parent-child conflict had a large and consistent positive correlation with adolescent drinking, levels of consumption, drunkenness, and problem

drinking.

The remaining FES subscales were Achievement-Orientation, Intellectual-Cultural Orientation and Control. No a priori hypotheses were proposed regarding their relationship to the drinking indices. The extent to which family members cast school or work activities into an achievement-oriented or competitive framework bears no relationship to either extent of adolescent drinking or related negative events.

However, Intellectual-Cultural Orientation did emerge as a predictor of drinking, but only for females. Families of females who drink extensively are characterized by a lack of concern for intellectual and cultural issues. The importance of this construct to drinking may be understood in terms of differences in the socio-economic status (SES) among families. Unfortunately, it was not possible, given the confines and limitations of the present study, to obtain SES data on the families of subjects. However, it is possible that differences in the intellectual and cultural tone of familial interactions actually reflect SES differences. As noted in the introduction to this study, some researchers have suggested that individuals from lower SES groups are more likely to drink and to drink extensively. This interpretation is limited, however, in its inability to explain why intellectual-cultural orientation would effect drinking among females but not males. Perhaps this gender discrepancy reflects the general tendency for females to be more sensitive, and thereby more responsive to subtle fluctuations in

interpersonal familial interactions than males. Further research on the interactive effects of gender, SES, and Intellectual-cultural orientation within the family must be attempted in order to resolve these issues.

Inconsistent results have been reported in previous research regarding the association between perceived control within the family and adolescent drinking. An important finding in the present study was the presence of a relationship between Control and alcohol-related negative events among males, and between Control and extent of drinking among females. While some studies have found that greater perceived parental control is associated with more intensive involvement with alcohol and other substances (eg. Pandina and Schuele, 1983), the present study did not support this view. Instead, the level of perceived control was inversely correlated with the drinking indices. This result confirms previous findings that the less control the adolescent feels from parents, the greater the likelihood of substance use (Tudor, Petersen, and Ellfson, 1980) As well, it supports Rees and Wilborn's (1983) contention that parents of substance abusers are more likely to believe that changing a child's behavior is not possible and that children's behavior is influenced not by parental or environmental determinants, but by inherent causes.

#### **Integrating Social Network and Family Environment**

In addition to describing the bivariate relationships among variables, this study also sought to determine the extent to which the demographic, peer and family network, and family environment

variables contribute independently to the prediction of the two drinking outcome measures when analyzed simultaneously. The findings based on the multiple regression analyses suggest that peer network and family psychosocial environment variables, as well as age, are all associated with the extent of alcohol use and the occurrence of alcohol-related negative events among adolescents.

In contrast, family network variables contributed little to the prediction of the criterion scores. Although the bivariate analyses suggested that both the size of family and the amount of time spent with family were significantly correlated with QF and SBPDS scores, it appears that the unique variance contributed by these predictors is negligible in comparison to the other variables entered in the equation. It would appear that a structural approach to describing the families of adolescents may be of limited value in explaining the extent of adolescent drinking and alcohol-related events. The results suggest that a greater understanding of adolescent drinking behavior may be achieved by directing future efforts to describing peer network structure and the qualitative aspects of family relationships.

There were gender differences in the patterns with which the specific peer network and family psychosocial climate variables contributed to the outcome measures. Sixteen percent and 24% of the variance of extent of drinking by males and females, respectively, was explained. For males, the number of drinking peers accounted for almost all of this explained variance. The only other variable that significantly added to the explained variance for males was age.

Older males whose networks are comprised of many drinking peers are most likely to drink extensively. The qualitative character of males' relationships and interactions with family appears to be superfluous.

For females, the number of drinking peer network members accounted for slightly less than half of the total explained variance of extent of drinking, which confirms the importance of this variable to adolescent drinking. Age added significantly to the variance as it did in males. In contrast to the pattern observed in males, however, several aspects of the family psychosocial climate significantly increased the power to predict extent of drinking. Families of females who drink more extensively place little emphasis on intellectual and cultural issues, lack control, and experience conflictual interactions.

It would appear, then, that perceived family environment may at least partially influence the extent of drinking by females. Interestingly, this finding does not hold true for males. This gender discrepancy is consistent with previous research which suggests there are gender differences in the effect of parental influence on adolescent drinking (Biddle, Bank, and Marlin, 1980; Thompson and Wilsnack, 1987). While both genders appear to attend and respond to the intense peer pressure to drink, females may be more sensitive than males to the sometimes subtle variations in the quality of family relationships and interactions. This interpretation supports the traditional characterization of females as being more dependent

on family relationships than males.

For both males and females, 31% of the variance of alcohol-related negative events was explained by the predictor variables. The number of drinking peer network members accounted for the majority of this variance in both cases, again affirming its significance in predicting adolescent drinking behavior. Interestingly, independent of drinking status of friends, the more extensive an adolescents' overall peer network is, the greater the likelihood that he or she will experience alcohol-related problems. This result stands in marked contrast to the reported health-enhancing effects of social network ties in adults. Numerous empirical studies have demonstrated a strong association between large social networks and a sense of stability, predictability, and control over one's environment (Caplan, 1974; Cassel, 1976; and Cobb, 1976). Extensive social ties have also been reported to correlate with increased health-related behaviors such as diet, exercise, and medical-help seeking, and with decreased smoking and alcohol consumption (Krantz, Grunberg and Baum, 1985). Clearly there are differences in the manner in which peer network variables influence alcohol use among adolescents compared to adults. Caution is therefore advised regarding the generalization of results from adult-oriented social-support studies to adolescents.

The intellectual-cultural orientation of the family contributed significantly to the explained variance of drinking-related negative events of females only, thus confirming its unique relevance to the

issue of female drinking.

Control, on the other hand, appears to be related to drinking-related negative events in males only. It is suggested that parents need to assume greater responsibility for determining boundaries of acceptable behavior among their adolescent male children and for more strictly enforcing family rules.

The level of perceived family conflict increased the ability to predict the drinking measures in both genders. The idea that conflict with parents encourages problem drinking among adolescents is not new (Glatt and Hills, 1968; Weschler and Thum, 1973; Potvin and Lee, 1980; Thompson and Wilsnack, 1987) Thompson and Wilsnack (1987) have shown through time-lagged correlations that the effects of early conflict with parents may even influence how adolescents drink, get drunk, and experience drinking-related problems four years later.

An interesting finding was that age emerged as a significant and independent predictor for males, but not females. It remains to be understood why males become increasingly susceptible to experiencing alcohol-related negative events as they approach adulthood. One possibility is that deviant behavior is tolerated to a greater extent in young men than in boys or in females of any age. Additionally, it has been suggested that males experience a greater pressure than females to conform to gender appropriate standards of behavior (Hetherington and Parke, 1979). Adherence to these traditional standards may, in effect, isolate the male from potential

sources of support, as he becomes increasingly oriented towards control, independence and other traditional male qualities (Hetherington and Parke, 1979; Hays and Oxley, 1986). Thus, as it becomes less viable for them to seek support during the stress inducing transition into adulthood, the older male adolescent may turn to alcohol as a way of coping with or escaping from emotional distress. Further, the more problematic his drinking behavior becomes, the further he is likely to isolate himself from potential support-providing relationships. This notion might seem to contradict the finding that potentially problematic drinkers have extensive social networks. However, the size of an individual's peer network simply indicates the number of potential connections that individual has access to, but describes nothing of the qualitative aspects of that connection, or, indeed, whether the connections are utilized at all as sources of support.

#### Methodological Limitations

Some possible limitations to the generalizability of the findings of this study should be considered. Firstly, the study relied solely on self-report measures to assess both the predictor and criterion variables. The extent to which subjects' descriptions reflect the actual situation, therefore, remains unknown. In further research of this type, confidence in the validity of the self-reports can be enhanced by obtaining corroborating data from other informants such as parents, siblings, peers, and teachers, or by using other measures such as behavioral checklists and diaries.

Consideration must also be given to the degree of accuracy of the subjects' self-reports of alcohol use and alcohol-related negative events. In their survey of adolescent drug use, Neumann et al. (1987) enhanced the validity of questionnaire responses by including a question on the subjects' use of a fictitious drug. Due to the alcohol-specific nature of the present study however, it was not possible to subtly integrate an item on the use of a fictitious drug, and an alternative method of detecting over-reporting was not found. However, previous research designed to assess the accuracy of adolescent substance use self-reports supports their reliability and validity. Smart et al. (1985) suggest the most common form of inaccuracy is under-reporting. The percentage of subjects who do exaggerate their substance use (as indicated by reporting use of a fictitious drug) ranges from 1% to 5% (Petzel, Johnson, and McKillop, 1973; Single et al., 1975; Mitic, McGuire, and Neumann (*in press*)). Research with populations other than students supports the conclusion that self-reports of drinking are accurate, reliable, and valid (Sobell and Sobell, 1978). Thus, it seems reasonable to assume that self-reported alcohol use is generally representative of actual drinking behavior.

Third, caution must be exercised in interpreting the findings due to the correlational and cross-sectional nature of the study. Unfortunately, no conclusion regarding the causality or directionality of the roles of network structure or family environment in adolescent alcohol use can be offered at this time. It is more than likely that reciprocal paths of influence exist among these variables. It remains

to be determined, for example, whether adolescents who use alcohol seek out friends who have similar levels of alcohol consumption, or whether adolescents shape their alcohol use to suit those of their friends, or whether some portion of both processes occurs. As well, adolescent drinking can shape relationships with parents by causing family members to relate in a specific fashion towards their drinking children, by causing adolescents to behave differently towards their parents, or by causing adolescents to distort their perceptions of their family environments.

There have been a number of recent attempts in the literature on adolescent substance use to address the issue of causality. For example, Svobodny (1982) reports that "poor family interactions" are cited by adolescent substance abusers as an influential factor in their decision to become involved with alcohol and drugs. There is evidence from recent panel studies to suggest that the parent-child relationship is a contributor to, and not a consequence of, extensive drinking in adolescents (Winfrey, 1985; Thompson and Wilsnack, 1987).

A word regarding the generally low magnitude of the correlation and multiple regression coefficients is necessary. Although many of the predictor variables were significantly correlated to drinking, very few of the correlation coefficients were large. While it is true that correlation coefficients above 0.30 are rare in this line of research (Fondacaro and Heller, 1983), and while one can assign statistical significance to even low correlations, these correlations are limited

in terms of their clinical/practical implications for any one adolescent. Similarly, while up to 31 % of the variance of drinking is explained by the combined variables included in this study, the majority of the variance is as yet unexplained. Research in this area could be extended to include variables such as the influence of stress on adolescent drinking with an emphasis on the potential buffering effects of family, friends, and community.

Fifth, caution is advised in interpreting and generalizing the findings of this and any other research conducted only within the school system. Data collection in the schools precludes obtaining information on adolescents who had dropped out of, or had been expelled from school, quite possibly due to problems linked with family or alcohol use. It is these adolescents and their families, however, who are most in need of a clearer understanding of the factors involved in excessive alcohol consumption. As well, the present results cannot be generalized to students enrolled in private schools or to those institutionalized for correctional or health reasons. Researchers who limit their data collection to students such as those in the present study must remember that the implications of their findings can be applied only to adolescents who remain inside the public school system.

## CONCLUSIONS

This study has been an attempt not only to describe the alcohol-use patterns of adolescents from the Halifax region, but also to relate these alcohol use patterns to peer and family factors. The results are complex but may be summarized in three general categories.

One of the most striking findings was the consistent importance of the peer network variables in predicting drinking behavior. Some researchers have suggested that prevention programs be limited to those adolescents who are alienated or socially isolated (Smart and Gray, 1979). The present results offer evidence to suggest that the adolescents most at risk for excessive and problematic alcohol use are those who appear to have many friends and ample opportunity for social interaction. It should be noted, however, that a structural approach to describing social relationships provides a quantitative, but not a qualitative account of the relationships. Nevertheless, counsellors and other professionals working towards developing prevention programs need to recognize that their target populations may not be adolescents who are structurally isolated, as previously thought, and to gear their intervention efforts to impact the youth in the context of his or her peer network.

The second general finding was the importance of the family

psychosocial environment in improving prediction and understanding of adolescent drinking behavior, and how this differs for males and females. This result lends support for social control theory which proposes that parental input is a strong contributor to alcohol use among youth. Other research has suggested the importance of family cohesion in predicting alcohol use. The present study suggests that decreased alcohol use and problem behaviors are not related to the presence of cohesion but rather to the absence of conflict among family members. Increased control may also be important in keeping alcohol use within moderate levels and preventing problematic use. Parents of drug-abusing adolescents have been found to have little confidence in their child-rearing abilities (Rees and Wilborn, 1983), which may account for the lack of control among the families of the heavier alcohol users in the present study. These results argue for the need for increasing societal awareness that effective parenting skills are not necessarily guaranteed when one becomes a parent. Parents very often need to learn the skills required to develop healthy relationships with their children. In this sense, intervention and prevention strategies focused exclusively on the adolescent would not be as effective as interventions that involve other family members as well.

Finally, despite the trend in recent years towards decreasing numbers of Canadian adolescents who drink, the present study suggests that the prevalence rate may not be as low as previously thought. Adolescent drinking is very likely a reflection of the norms and behaviors of the adult world in which they live. Therefore, unless

adults are willing to drastically alter their own drinking behavior, researchers may be misusing their energy, and resources in developing programs whose aims are to promote total abstinence. Greater benefit may be gained by concentrating research efforts on promoting a responsible and mature approach to drinking by both adolescents and adults. The results of the study indicate the need to decrease the extent of drinking among some youth. Males appear to be at greater risk than females for heavier drinking. Intervention programs should therefore be designed to impact them especially.

Overall, the results highlight the benefit of conceptualizing adolescent alcohol use using a multifaceted approach that incorporates both peer and family factors. Adolescent drinking behavior involves a continuously interacting set of complex relations between these variables and no doubt others. Much more research is needed to investigate the complex interrelations among adolescent drinking parameters. One recent methodological advance in the field has been the application of path analysis to understanding adolescent alcohol use. It's primary advantage over multiple regression is that it can estimate the intercorrelations among the predictor variables that may influence the criterion behavior, thus identifying the indirect effects. As well, path analytic techniques can aid in the construction and evaluation of empirically based models of alcohol use by youth.

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**APPENDIX A**

**1986 CENSUS CHARACTERISTICS FOR POPULATION**

**1986 Census Characteristics for Population From Which Schools  
Were Selected\***

\*(characteristics for Halifax included for comparison)

POPULATION	HALIFAX
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Average Income

Males:	\$28,330	Males:	\$24,289
Females:	\$11,975	Females:	\$13,030

Education

< grade 9:	8.5%	< grade 9:	10.61%
Grade 9-13:	37.37%	Grade 9-13:	36.49%
Trade certificate:	2.42%	Trade certificate:	2.72%
Other non-Univ.:	24.86%	Other non-Univ.:	23.35%
University:	25.85%	University:	26.83%

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**POPULATION**
**HALIFAX**


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Occupational Categories with Heaviest Densities
**Males**

<b>Service:</b>	<b>31.14%</b>	<b>Service:</b>	<b>19.57%</b>
<b>Managerial:</b>	<b>13.82%</b>	<b>Managerial:</b>	<b>12.93%</b>
<b>Sales:</b>	<b>9.51%</b>	<b>Sales:</b>	<b>9.84%</b>

**Females**

<b>Clerical:</b>	<b>37.13%</b>	<b>Clerical:</b>	<b>37.13%</b>
<b>Service:</b>	<b>16.23%</b>	<b>Service:</b>	<b>15.84%</b>
<b>Medicine and Health:</b>	<b>15.54%</b>	<b>Medicine and Health:</b>	<b>11.44%</b>

Ethnic Origin

<b>Single:</b>	<b>56.94%</b>	<b>Single:</b>	<b>58.99%</b>
<b>British:</b>	<b>77.60%</b>	<b>British:</b>	<b>76.40%</b>
<b>French:</b>	<b>12.66%</b>	<b>French:</b>	<b>8.80%</b>
<b>German:</b>	<b>2.81%</b>	<b>German:</b>	<b>2.99%</b>
<b>Black:</b>	<b>0.56%</b>	<b>Black:</b>	<b>2.91%</b>
<b>Dutch:</b>	<b>1.50%</b>	<b>Dutch:</b>	<b>1.44%</b>
<b>Other:</b>	<b>4.87%</b>	<b>Other:</b>	<b>7.46%</b>
<b>Multiple:</b>	<b>43.02%</b>	<b>Multiple:</b>	<b>41.01%</b>

---

**APPENDIX B**

**PERSONAL INFORMATION SHEET AND DRINKING BEHAVIOR ITEMS**

## INSTRUCTIONS

This survey is to find out what types of alcohol students use. The questionnaire also asks about things like your age and the grade you are in. If this study is to be helpful, it is important that you answer each question carefully.

All information is strictly secret and will not be shown to your parents or teachers. Do not put your name on the questionnaire. Your participation is voluntary; you do not have to answer if you do not want to.

1. Read each question CAREFULLY.
2. Read EVERY answer to each question before you decide which is the best one for you.
3. Circle the number of your answer on the the questionnaire sheet.
4. Do not answer any question which you do not understand or do not want to answer.

Thank you for answering these questions.

**PERSONAL INFORMATION SHEET**

1. How old are you?

1. 11 years of age or younge
2. 12 years
3. 13 years
4. 14 years
5. 15 years
6. 16 years
7. 17 years
8. 18 years
9. 19 years or older

2. Are you male or female?

1. male
2. female

3. What grade are you in?

1. grade 7
2. grade 8
3. grade 9
4. grade 10
5. grade 11
6. grade 12

4. Who are you currently living with?

1. mother and father
2. mother only
3. father only
4. mother and stepfather
5. father and stepmother
6. other relatives
7. friends
8. alone
9. other

5. How often do you usually drink beer?

0. do not drink beer at all
1. less than once a year
2. less than once a month, but at least once a year
3. about once a month
4. three or four days a month
5. three or four days a week
6. one or two days a week
7. every day

6. Think of all the times you have had beer recently. When you drink beer, how much do you usually have at one time, on the average?

0. do not drink beer at all
1. less than one can/bottle of beer
2. one can/bottle of beer
3. two cans/bottles of beer
4. three cans/bottles of beer
5. four cans/bottles of beer
6. five cans/bottles of beer
7. six cans/bottles of beer
8. about nine cans/bottles of beer
9. twelve or more cans/bottles of beer (two six-packs or more)

7. How often do you usually drink wine?

0. do not drink wine at all
1. less than once a year
2. less than once a month, but at least once a year
3. about once a month
4. three or four days a month
5. one or two days a week
6. three or four a day
7. every day

8. Think of all the times you have had wine recently. When you drink wine, how much do you usually have at one time, on the average? (One glass of wine = approximately 4 ounces).

0. do not drink wine at all
1. less than one wine glass
2. one wine glass
3. two wine glasses
4. three wine glasses
5. four wine glasses
6. five wine glasses
7. six wine glasses
8. about nine wine glasses
9. twelve or more glasses

9. How often do you usually drink hard liquor (whiskey, vodka, gin, mixed drinks, etc.)?

0. do not drink hard liquor at all
1. less than once a year
2. less than once a month, but at least once a year
3. about once a month
4. three or four days a month
5. one or two days a week
6. three or four days a week
7. every day

10. Think of all the times you have had hard liquor recently. How many drinks of hard liquor do you usually have at one time, on the average? (One drink = approximately 1 1/2 ounces of liquor).

0. do not drink hard liquor at all
1. less than one drink
2. one drink
3. two drinks
4. three drinks
5. four drinks
6. five drinks
7. six drink
8. about nine drinks
9. twelve or more drinks

11. How often have you drunk alcohol during the last 30 days?

1. not at all
2. a sip to see what it's like
3. once
4. 2-3 times
5. once a week
6. 2-3 times per week
7. 4-5 times per week
8. almost every day, 6-7 times per week

**APPENDIX C**

**DETERMINATION OF DRINKING LEVEL CLASSIFICATIONS**

## Determination of Drinking Level Classifications

1) The type of beverage with the largest AA value (see Appendix D) was identified. If there was a tie for maximum value between the three types of beverage, AAB was selected before AAW, and AAW was selected before AAL.

2) For the type of beverage with the largest AA, the quantity per typical drinking occasion was determined, and then a numerical value ranging from 1-10 was assigned to represent QUANTITY as follows:

**Think of all the times you have had beer/wine/liquor. When you drink beer/wine/liquor, how much do you usually have at one time, on the average/?**

do not drink beer/wine/liquor at all	1
less than one can/bottle/glass/drink	10
one can/bottle/glass/drink	9
two cans/bottles/glasses/drinks	8
three cans/bottles/glasses/drinks	7
four cans/bottles/glasses/drinks	6
five cans/bottles/glasses/drinks	5
six cans/bottles/glasses/drinks	4
about nine cans/bottles/glasses/drinks	3
twelve or more cans/bottles/glasses/drinks	2

3) For the type of beverage with the largest AA, the frequency of drinking was determined, and a numerical value ranging from 1-8 was assigned to represent FREQUENCY as follows:

**How often do you usually drink beer/wine/liquor?**

do not drink	1
less than once a year	8
less than once a month, but at least once a year	7
about once a month	6
three or four days a month	5
one or two days a week	4
three or four days a week	3
every day	2

4) For the beverage with the largest AA value, QUANTITY and FREQUENCY values were combined in the following manner to arrive at a numerical value which ranged from 0-9 and which represented DRINKING TYPE:

If QUANTITY value is:	and FREQUENCY value is:	TYPE is:
1	1	0
9,10	6,7,8	1
6,7,8	6,7,8	2
2,3,4,5	6,7,8	3
9,10	5	4
6,7,8	5	5
2,3,4,5	5	6
9,10	2,3,4	7
6,7,8	2,3,4	8
2,3,4,5	2,3,4	9

5) Finally, DRINKING LEVEL CLASSIFICATION were determined in the following manner:

if TYPE is :	CLASSIFICATION is:
0	<u>Abstainer</u> : don't drink or drink less than once a year
1	<u>Infrequent Drinker</u> : drink once a month at most and small* amounts
2,4	<u>Light Drinker</u> : drink once a month at most and drink medium* amounts, or drink no more than three to four times a month and small amounts
3,5,7	<u>Moderate Drinker</u> : drink at least once a week and small amounts, or three to four times a month and medium amounts, or no more than once a month in large* amounts
6,8	<u>Moderate Heavier Drinker</u> : drink at least once a week in medium amounts, or three to four times a month in large amounts
9	<u>Heavier Drinker</u> : drink at least once a week in large amounts

\*

small = less than one, or one beer, glass of wine, or drink, and implies less than 0.68 ounces of absolute alcohol.

medium = two to four beers, glasses of wine, or drinks, and implies between 0.68 - 2.70 ounces of absolute alcohol.

large = more than four beers, glasses of wine, or drinks, and implies greater than 2.70 ounces of absolute alcohol.

**APPENDIX D**  
**CALCULATION OF QF SCORE**

### Calculation of QF Score

QF scores were obtained by first calculating absolute alcohol consumption, in ounces, per day (AA). Separate scores were calculated for beer (AAB), wine (AAW), and hard liquor (AAL). The scores were calculated using the general formula for

$$AA = (\text{QUANTITY in ounces}) (\text{FREQUENCY}) (\text{ALCOHOL CONTENT})$$

1) To obtain the QUANTITY score, the following numeric values were assigned to the response choices for the quantity items. In computing these scores, assumptions were made regarding the weight in ounces of a can/bottle of beer (12 ounces), a glass of wine (4 ounces), and a drink of liquor (1.5 ounces).

**Think of all the times you have had beer . When you drink beer, how much do you usually have at one time, on the average?**

do not drink beer at all	0
less than one can/bottle of beer	6
one can/bottle of beer	12
two cans/bottles of beer	24
three cans/bottles of beer	36
four cans/bottles of beer	48
five cans/bottles of beer	60
six cans/bottles of beer	72
about nine cans/bottles of beer	108
twelve or more cans/bottles of beer	144

**Think of all the times you have had wine. When you drink wine, how much do you usually have at one time, on the average?**

do not drink wine at all	0
less than one wine glass	2
one wine glass	4
two wine glasses	8
three wine glasses	12
four wine glasses	16
five wine glasses	20
six wine glasses	24
about nine wine glasses	36
twelve or more wine glasses	48

**Think of all the times you have had hard liquor. When you drink hard liquor, how much do you usually have at one time, on the average?**

do not drink hard liquor at all	0
less than one drink	0.75
one drink	1.5
two drinks	3.0
three drinks	4.5
four drinks	6.0
five drinks	7.5
six drinks	9.0
about nine drinks	13.5
twelve or more drinks	18.0

2) To obtain the FREQUENCY score, the following numeric values were assigned to the response choices for the frequency items.

**How often do you usually drink beer/wine/liquor?**

do not drink beer/wine/liquor at all	0.00
less than once a year	0.00
less than once a month, but at least once a year	0.01
about once a month	0.03
three or four days a month	0.10
one or two days a week	0.20
three or four days a week	0.50
every day	1.00

3) To obtain ALCOHOL CONTENT, the following the following values were assigned:

beer	.04
wine	.15
liquor	.45

4) For each subject, AA was calculated for beer (AAB), wine (AAW), and liquor (AAL). QF score was the sum of the AA scores for the three beverages:

$$QF = (AAB) + (AAW) + (AAL)$$

**APPENDIX E**

**STRAUS-BACON PROBLEM DRINKING SCALE**

**STRAUS-BACON PROBLEM DRINKING SCALE\***

**Directions:** Please answer the following questions by circling the number beside the appropriate response.

1. Has your drinking ever affected your classwork or exams so that you did not do so well?

1. yes
2. no

2. Has your drinking ever caused tension or disagreement with family or friends?

1. yes
2. no

3. Have you been in trouble with the police as a result of your drinking?

1. yes
2. no

4. Have you been in trouble with teachers or the principal as a result of your drinking (for example, in class, or at a school dance)?

1. yes
2. no

5. Have you consumed alcohol before going to a party?

1. yes
2. no

6. Has the cost of alcohol ever caused you to give up buying other things?

1. yes
2. no

7. Have you ever had a blackout from drinking (when you can't remember what happened to you)?

1. yes
2. no

8. Have you ever consumed alcohol while alone?

1. yes
2. no

9. Have you ever consumed alcohol before or instead of breakfast?

1. yes
2. no

10. When drinking have you ever destroyed things or hurt someone?

1. yes
2. no

11. Has your drinking ever resulted in your own personal injury?

1. yes
2. no

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**APPENDIX F**  
**SOCIAL RELATIONSHIP QUESTIONNAIRE**

**SOCIAL RELATIONSHIP QUESTIONNAIRE**

**Directions:** Answer the following 5 questions on the separate answer form labeled ANSWER FORM A (next page).

1. List the first names or initials of up to 15 individuals (for example, friends, family members, boy/girlfriend, etc.) with whom you are likely to interact at least once during any 2 to 3 week period. Write the names or initials in Column 1 of Answer Form A.

2. Indicate your relationship to each of the individuals listed in question 1 using the following scale: (Mark your answer in column 2 of Answer Form A)

- 1=family member
- 2=boy/girlfriend
- 3=friend
- 4=other

3. For each individual listed, indicate their gender. Mark your answer in Column 3 of Answer Form A.

- 1=male
- 2=female

4. Rate the drinking habits of each individual, using the following scale. Mark your answer in Column 4 of Answer Form A.

- 1=non-drinker
- 2=occasional or light drinker
- 3=moderate or average social drinker
- 4=frequent or heavy social drinker
- 5=problem drinker

5. For each individual listed, estimate the number of hours, rounded to the nearest half hour, that you spent with that person over the last seven days. Write your estimate in the blank provided in Column 5 of Answer Form A.

**SOCIAL RELATIONSHIP QUESTIONNAIRE  
ANSWER FORM A**

	1 (name)	2 (relation -ship)	3 (gender)	4 (drink -ing)	5 (hours)
1	_____	_____	_____	_____	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____
5	_____	_____	_____	_____	_____
6	_____	_____	_____	_____	_____
7	_____	_____	_____	_____	_____
8	_____	_____	_____	_____	_____
9	_____	_____	_____	_____	_____
10	_____	_____	_____	_____	_____
11	_____	_____	_____	_____	_____
12	_____	_____	_____	_____	_____
13	_____	_____	_____	_____	_____
14	_____	_____	_____	_____	_____
15	_____	_____	_____	_____	_____

**APPENDIX G**  
**SAMPLE OF FES SUBSCALE ITEMS**

Leaf 137:

Sample of FES Subscale Items  
by Rudolf H. Moos  
and  
Bernice S. Moos  
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**APPENDIX H**

**DESCRIPTION OF PARENTAL CONSENT FORM**

## Description of Parental Consent Forms

Consent forms were sent to parents within a monthly newsletter written by the principals of the schools. In the description of the study, parents were told a) that the purpose of the study was to determine the alcohol use patterns of adolescents, b) that their children would be requested to answer questions on their drinking behavior, as well as some items about their friends and family, and c) that the questionnaires were to remain completely anonymous and confidential. Parents were provided with the name and telephone number of the researcher and thesis advisor and were encouraged to call if they had any questions or concerns. The following permission form was included in the newsletter with instructions to sign and return to the child's teacher.

---

### Adolescent Alcohol Use

Permission for survey (Check appropriate response).

I do \_\_\_\_\_

I do no \_\_\_\_\_ give permission

for \_\_\_\_\_'s participation in the Alcohol Use Survey

---

(Parent's signature)

**APPENDIX I**

**PEER NETWORK MEANS FOR MALES AND FEMALES**

**Peer Network Means and Standard Deviations for Males and Females**

Variable	<u>males</u>		<u>females</u>		t -value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
SIZEPeer	8.85	3.83	8.79	3.51	0.19 ns
SIZEPeer-D	6.26	4.60	6.41	3.92	-0.35 ns
ASCPeer	127.53	112.62	151.77	140.32	-1.93 ns
ASCPeer-D	88.62	99.69	105.03	113.97	-1.50 ns