
Psychosocial Factors in Alcohol Use and Alcoholism

There is no single, simple explanation for why some individuals develop problems with alcohol. One of the central findings of the large body of research that has examined the psychosocial causes, or etiology, of alcohol use is that there are multiple pathways to behavior that involves alcohol consumption (Cloninger et al. 1996; Sher et al. 1997; Zucker et al. 1994). Multiple biological and psychosocial factors mutually influence each other in causing alcohol abuse; it would be incorrect to view psychosocial causes as either independent from, or competing with, biological causes. Rather, alcohol use and alcoholism are best viewed as end products of a combination of biopsychosocial influences.

Researchers face the challenge of explaining diverse alcohol-related behavior ranging from simple alcohol experimentation to severe alcohol dependence. Clearly, different factors may influence different aspects of drinking, such as initial experimentation, later maintenance of regular drinking, and the decision to stop drinking. Not only is alcohol use different from alcoholism, but alcoholism itself takes different forms; researchers have suggested that different subtypes of alcoholism may have different etiologies (Cloninger et al. 1996; Zucker et al. 1996).

This section is not intended as a comprehensive overview of psychosocial research, but instead focuses on research that has been conducted since the *Ninth Special Report to the U.S. Congress on Alcohol and Health* (National Institute on Alcohol Abuse and Alcoholism [NIAAA] 1997) in four areas: family history of alcoholism, developmental issues, motivations, and alcohol-related cognitions (beliefs about alcohol). Recent research into the causes of alcoholism emphasizes the links between biological and psychosocial variables rather than studying each in isolation. Researchers hypothesize, for example, that in

childhood, biologically based vulnerabilities in emotional and behavioral regulation (temperament or personality) interact with poor parenting to create emotional distress and exposure to negative peer influences, both of which create risk for alcohol misuse.

Finally, environment encompasses a wide range of influences, including not only family and peers, but also culture, social forces, advertising, and economics. Other sections of this report discuss these issues.

Family History of Alcoholism

It has long been recognized that alcoholism “runs in families.” A family history of alcoholism is a well-established risk factor for the development of alcoholism (Cotton 1979; McGue 1994). Nonetheless, the majority of children of alcoholics do not develop alcohol use disorders. In fact, there is great variation among children of alcoholics with regard to their use of alcohol, and recent research has been directed at explaining this variation.

The *Ninth Special Report to the U.S. Congress on Alcohol and Health* (NIAAA 1997) identified several ways in which children of alcoholics have been found to differ from children without a family history of alcoholism. These findings include a higher prevalence of psychopathology (mental and behavioral disorders), more adverse family environments, and physiologic responses to alcohol that are known to be associated with risk—in particular, a lack of sensitivity to alcohol’s intoxicating effects or an increased sensitivity to its anxiety-reducing effects. It is important to note that these characteristics are not unique to children of alcoholics, and that the same factors that mediate risk of developing alcohol problems in children with a family history may also explain the risk faced by those without a family history (Molina et al. 1994). Models that seek to explain how these risk factors interact

to lead to alcohol-related problems suggest that children of alcoholics are exposed to higher levels of these risk factors than are other children. Nonetheless, research aimed at clarifying why children of alcoholics are more likely than others to develop alcohol problems can reveal much about how the same risk factors are at play in children without a family history.

Effects of Parental Psychopathology Other Than Alcoholism

One source of the variation in the outcomes of children of alcoholics—that is, whether they develop alcohol-related problems themselves—is that familial alcoholism occurs in different forms. Scientists have identified subtypes of alcoholism that are characterized by the type and degree of psychopathology associated with the alcohol abuse—in particular, antisocial personality and affective (mood) disorders such as depression. Recent studies suggest that the type of alcoholic syndrome present in the family influences the child's risk of having psychological characteristics associated with risk for alcoholism.

Recently, for example, a research team identified three subtypes of familial alcoholism risk: one with familial alcoholism but low levels of other psychopathology; one with high levels of both familial alcoholism and familial antisocial personality and violence; and one with high levels of familial alcoholism along with depression, mania, and anxiety disorders (Finn et al. 1997). Predictably, young adult offspring from the families with alcoholism had elevated levels of alcohol problems compared with peers with no family history of alcoholism. In addition, other differences in offspring among the families were noted; for example, offspring of the families with alcoholism and antisocial personality themselves had the highest levels of antisociality and negative affect (anxiety, depression, and neuroticism) compared with offspring in the other (alcoholic) families.

Similar findings emerged from a community sample of younger children (preschool through age 8) (Zucker et al. 1996). In a comparison of children of families without alcoholism, families

with alcoholism, and families with coexisting alcoholism and antisocial personality disorder, children whose families showed both alcoholism and antisociality had the highest levels of risk factors for developing alcohol problems—poor family environments and conduct problems—and were also most likely to maintain this risk over time.

Explaining the Effects of Parental Alcoholism: Mediational Models

Early research on risk factors in alcoholism tended to examine each one in isolation. A study might, for example, focus on one risk factor and attempt to identify differences between children of alcoholics and other children, the hypothesis being that the presence or absence of this single risk factor might explain why children of alcoholics themselves develop alcoholism.

A more recent trend has been the attempt to understand the mechanisms or processes that underlie the effects of parental alcoholism—and the associated risk factors—on children. An important approach involves the development and testing of mediational models, such as those described below, that provide an overall conception of how particular risk factors play out in the lives of the individuals affected to result in alcohol use or abuse. A test of the validity of a mediational model must include a demonstration that the risk factor is a feature of parental alcoholism; that individuals who show the highest level of the risk factor are most likely to develop drinking problems; and that this risk factor accounts for the effects of parental alcoholism on the development of drinking problems in their children (for more detail on mediational models, see Sher 1991). Recent advances in statistical methods allow tests of these models.

There have been three broad groups of theoretical models that provide platforms for exploring the transmission of alcoholism from parent to child: “deviance proneness,” “negative affectivity” (or emotionality), and “sensitivity to the effects of alcohol.” These hypothetical models, discussed below, are not mutually exclusive, but are interrelated and interacting.

Deviance Proneness. The deviance proneness model focuses on deficits in children in behavioral self-regulation and socialization and on the cascade of effects that result from and interact with these deficits. According to this model, children of alcoholics have difficult temperaments and experience poor parenting, both of which place them at risk for failure in school and emotional distress. This, in turn, raises risk for affiliation with a deviant peer group likely to promote alcohol use and misuse. Thus, according to this model, risk for alcohol misuse is part of a larger context of poor socialization and adolescent problem behavior.

Recent data are consistent with this model. For example, one study found that offspring of alcoholic fathers were more likely to abuse substances, in part because paternal alcoholism increased the likelihood of a child's having early conduct problems (Cadoret et al. 1995). Similarly, having an alcoholic father was found to be related to poor parental monitoring of adolescent behavior, which, in turn, was associated with membership in a drug-using peer group and escalating substance use over time. However, in both studies, the effect of paternal alcoholism could not be completely explained by these mediators, suggesting that other variables also must be considered.

Negative Affectivity. The negative affectivity model focuses on the importance of stress and negative affect in explaining the transmission of alcoholism from generation to generation. According to this model, children of alcoholics are exposed to high levels of life stress and are, as well, temperamentally hyperreactive to stress. These children develop high levels of emotional distress and drink to relieve these feelings. Again, recent tests of this model provide supportive data. In one study, researchers found that the environments of adolescent children of alcoholics were more stressful than those of other children, and that greater emotional reactivity was part of their temperaments. Both factors predicted more negative affect—self-reported crying and tension, for example—among these children than among children without a family history of alcoholism

(Chassin et al. 1996). In turn, children in the study with high levels of negative affect were more likely than other children to join a drug-using peer group and to increase their substance use over time.

Another study found paternal alcoholism to be strongly associated with childhood stressors (for example, disrupted family rituals, embarrassment, neglect, or abuse). However, these stressors were only moderately and inconsistently related to the development of an alcohol use disorder in young adulthood (Sher et al. 1997). In both studies, the stressors only partly explained the effects of paternal alcoholism on the outcomes for children, again suggesting that other mediators must be considered.

Sensitivity to the Effects of Alcohol. “Alcohol effects” mediational models are based on the hypothesis that children of alcoholics have greater sensitivity to the stress response-dampening effects of alcohol (Pihl and Peterson 1995) and less sensitivity to the negative effects of alcohol (such as body sway and intoxication). Few tests of these mediational models have been performed. However, in one study, young men with a family history of alcoholism who had not yet developed drinking problems reacted less to alcohol than men from nonalcoholic families did (Schuckit and Smith 1996). The men with the lowest reactions—those in the bottom 15 percent—were more likely to be diagnosed 8 years later as having alcohol dependence. In another study, young men with a family history of alcoholism showed smaller responses as measured by an electroencephalogram (EEG) than others to a dose of alcohol (Volavka et al. 1996). Those men with the smaller EEG responses were more likely to eventually develop alcohol dependence.

The Role of Executive Functioning

Some theorists suggest that early conduct problems—which evolve according to the deviance proneness model into a broad set of “undercontrolled” behaviors, including alcoholism—are related to neuropsychological deficits in “executive functioning.” Executive functioning encompasses the capacity for

sustained attention, concentration, abstract reasoning, goal setting, anticipation and planning, and the ability to monitor one's own behavior, inhibiting what is inappropriate and shifting to behavior that is adaptive (Moffitt 1993).

Recent studies of the executive functioning of children of alcoholics have produced conflicting results. Researchers conducted neuropsychological tests in a sample of 12-year-old boys with a multigenerational family history of alcoholism. These boys had poorer executive functioning than did boys with no familial alcoholism (Harden and Pihl 1995). However, other researchers found no significant differences in executive functioning between children in families with and without parental substance abuse (Giancola et al. 1996). Conflicting findings may be the result of differences among the groups participating in these studies. Alternatively, deficits in executive functioning may be found only among boys whose families are characterized by transmission of alcoholism from male to male over several generations (Pihl and Peterson 1995) or among children of fathers whose alcoholism is severe and persistent (Ozkaragoz et al. 1997).

Recent data suggest that poor executive functioning predicts increases in alcohol consumption among young adults with a family history of alcoholism (Deckel and Hesselbrock 1996). Poor executive functioning may lead to alcohol problems in several ways. Children with poor executive functioning are harder to parent, evoke more punishment, and thus may develop poorer bonds to parents and poorer socialization (Dobkin et al. 1997; Ge and Cadoret 1996). Moreover, children with poor executive functioning are likely to experience more failure in school (Moffitt 1993), and recent data suggest that executive functioning partially mediates the impact of parental alcohol dependence on academic achievement (McGrath et al. 1999). School failure increases the risk that children will make friends with deviant peers, which increases the risk of escalating alcohol use in adolescence (Curran et al. 1997), a sequence of effects hypothesized in the deviance proneness model.

Finally, investigators have suggested that individuals with deficits in executive function also are unable to regulate their own mood, making them more sensitive to stress. These individuals would be particularly vulnerable to the stress response-dampening properties of alcohol (Pihl and Peterson 1995).

The Role of Parenting and the Family Environment

Researchers have examined parenting and family environment in an attempt to understand both the transmission of alcoholism from generation to generation and the causes of alcohol use and misuse in the wider population (Barnes et al. 1994; Wills and Cleary 1996). In general, the same parenting factors that are linked to adolescent alcohol abuse—low levels of parental emotional support and a lack of control and monitoring of child behavior—are linked to other adolescent problem behaviors, such as smoking and early sexual activity (Jacob and Leonard 1994; Jessor and Jessor 1977; Stice and Barrera 1995).

Evidence suggests that children of alcoholics grow up in homes in which parenting and the family environment are poor (Jacob and Leonard 1994; Zucker et al. 1996). These conditions may improve when parents recover from alcoholism (Moos and Billings 1982). Moreover, the effects of parental alcoholism are not confined to parent-child interactions that involve the alcoholic parent. In families with heavily drinking fathers, researchers have found disturbances in attachments between mothers and infant children (Eiden and Leonard 1996).

Some of the parenting deficits in alcoholic families are associated with the development of early conduct problems and early onset of alcohol use, a risk factor itself for later problems with alcohol use. For example, in alcoholic families, parents show less monitoring of adolescent behavior (Chassin et al. 1996), more family conflict (Barrera et al. 1995; Webb and Baer 1995), and poorer parent-child relationships (Blanton et al. 1997; Curran et al. 1997). Children of these families may not learn

emotional and behavioral self-regulation and may lack social skills, which also increases the likelihood of rejection by mainstream peer groups and association with substance-using peers (Webb and Baer 1995). All of these findings support the hypothesis that poor parenting and poor socialization create a high risk of alcohol problems, not only for children of alcoholics, but also for adolescents from nonalcoholic families.

However, poor parenting may be a product as well as a cause of behavioral difficulties in children. Some researchers have noted that children with conduct disorders may evoke poor parenting (Ge and Cadoret 1996). Another study showed that boys from alcoholic families who themselves were not disruptive had interactions with their mothers that were not disturbed and that were similar to the interactions between mothers and sons in a group of nonalcoholic families (Dobkin et al. 1997).

Moreover, it is not yet clear to what extent correlations between parenting practices and adolescent alcohol involvement may be due to shared genetic influences. In a study of more than 650 families with adopted adolescents, poor family functioning had only a slight effect on whether the adopted child drank, while the effect was substantial for birth offspring (McGue et al. 1996*a*). On the basis of these findings, the investigators suggested that research may overestimate the importance of family environment and underestimate the role of genetic factors. Another finding of this study was that the adopted children were significantly more likely to drink if another sibling in their adopted family used alcohol. If the sibling was of the same gender and similar age, it increased further the likelihood that the adopted child would drink, suggesting that sibling influence may be an important and understudied form of family influence on adolescent drinking (McGue et al. 1996*a,b*). The recognition that siblings as well as parents can influence adolescent drinking will broaden the inquiry into the effects of family environment on the development of alcohol problems.

Protective Factors

Most children of alcoholics do not develop alcohol dependence. According to the mediational models described earlier, this would be partially due to these children not experiencing mediators of risk such as difficult temperaments or poor parenting. It is also possible that even children of alcoholics subject to these risk mediators may have good outcomes—avoiding problems with alcohol—because their risk is buffered by exposure to a protective factor.

Some recent evidence is available on protective factors. One 3-year study of adolescents in alcoholic families found that these children were less likely to begin using substances if they perceived that they had control over their environment, if they had good cognitive coping skills, and if they reported that their families were highly organized (Hussong and Chassin 1997). Other investigators have found that in alcoholic families that preserve family rituals, such as keeping to established daily routines and celebrating holidays, the young adult offspring are less likely to report problem drinking (Hawkins 1997).

Although only a few studies of protective factors have looked specifically at alcoholic families, some broader studies have found evidence of risk buffers among children. Important recent findings come from the National Longitudinal Study on Adolescent Health, in which nearly 12,000 students in grades 7 through 12 completed two extensive interviews 1 year apart (Resnick et al. 1997). On the basis of the interview data, the investigators identified children who were less likely to take risks in four health areas: substance abuse (cigarettes, alcohol, and marijuana), emotional health, violence, and sexuality. Two factors were found to protect children from taking risks in all four areas: parent-family connectedness and school connectedness. Children who experienced parent-family connectedness said they felt close to their mother or father or both, they perceived that either or both of their parents cared about them, they expressed satisfaction with their relationship with either or both of their parents, and they felt loved and wanted by family

members. School connectedness was experienced as a feeling that teachers treated students fairly and a feeling of being close to people at school and being part of one's school.

Other studies have found parental support to be protective, particularly in terms of children's mental health (Barrera et al. 1995). In a study of more than 1,700 adolescents, those who received more emotional support from their parents were found to drink less; the parental support seemed to work by enabling these adolescents to cope better with life stresses, which prevented them from turning to heavy drinking (Wills and Cleary 1996).

However, parental support may be less protective for children's alcohol and drug use in the context of parental alcoholism. In a study of nonalcoholic families, adolescents who reported good relationships with their parents were more likely to imitate their parents' patterns of substance use than were adolescents with less positive relationships with their parents (Andrews et al. 1997). If such imitation were to occur in an alcoholic family, then receiving support from an alcoholic parent might increase a child's risk of drinking.

Developmental Issues

Alcohol use and alcoholism can best be studied within the context of psychosocial development throughout the life span (Tarter and Vanyukov 1994), and research interest in applying a developmental perspective to alcohol problems is increasing. Findings suggest that early developmental antecedents to alcoholism can be seen even in the preschool years in the form of deficits in self-regulation, emotional reactivity, and conduct problems (Tarter and Vanyukov 1994; Zucker 1994). In one study, observers rated the temperaments of 3-year-old children; 18 years later the same individuals underwent diagnostic interviews (Caspi et al. 1996). The boys whose temperaments were rated as undercontrolled at age 3 (impulsive, restless, distractable) were more likely than other children to be diagnosed at age 21 as alcohol dependent or as having alcohol-related problems. Boys rated as having inhibited temperaments at age 3 (shy, fearful, and easily

upset) also were more likely to have alcohol-related problems at age 21.

Developmental researchers also look at age-related peaks and declines in alcohol use. Drinking usually begins in adolescence. National epidemiologic data show that the prevalence of alcohol use increases greatly after eighth grade. For example, the Monitoring the Future Study reported that in 1999, 9.4 percent of 8th graders, 22.5 percent of 10th graders, and 32.9 percent of 12th graders reported being drunk in the past month (Johnston et al. 1999). Escalation of drinking during adolescence is a risk factor for alcohol-related problems in adulthood (Hawkins et al. 1997; Schulenberg et al. 1996*b*), and in subgroups of children, drinking does escalate during this time.

Recently, researchers have been able to predict which subgroups of adolescents will increase their alcohol use. In general, the factors that predict alcohol involvement among adolescents are similar to those that predict other forms of adolescent problem behavior, such as delinquency and risky sexual behavior. Current work has identified several predictors of increased adolescent substance use. In addition to paternal alcoholism and affiliation with substance-using peers (Chassin et al. 1996), the predictors include high life stress, nonadaptive coping styles, parental and peer substance use, little parental support, a low level of academic competence, and poor behavioral control (Wills et al. 1996).

For young adults, alcohol use peaks in age-related patterns and then declines after the mid-20's (Chen and Kandel 1995; Gotham et al. 1997; Johnstone et al. 1996; Schulenberg et al. 1996*a*). The stronger evidence in more recent studies for this age-related decline in drinking may reflect changes in social norms regarding the acceptability of using alcohol (Johnstone et al. 1996). Research suggests that developmental changes in older adolescents and young adults as they experience the freedoms and responsibilities of this age period influence drinking behavior (Bachman and Wadsworth 1997). From the developmental perspective, the heavy drinking

often seen in late adolescence is linked to adolescents' moving away from parental restrictions and living in college environments, including fraternities and sororities (Cashin et al. 1998). At this stage, alcohol use is a relatively accepted norm.

Studies show that when young adults take on the responsibilities of work and marriage, they reduce their drinking (Gotham et al. 1997; Schulenberg et al. 1996a) and are less likely to report symptoms of alcohol abuse and dependence (Chilcoat and Breslau 1996). One interpretation is that these individuals drink less during this period because drinking is incompatible with the obligations of adult roles (Yamaguchi and Kandel 1985). These findings are consistent with past research indicating that a subtype of alcoholism may be developmentally limited; that is, some people may drink heavily and have alcohol-related problems in young adulthood but not in later years (Zucker 1994).

Indeed, investigators are finding more evidence to support the idea that different subtypes of alcoholism start at different ages, and that they have different causes. Alcohol problems that begin in adolescence and young adulthood are often part of broader problems of undercontrolled behavior. In a subtype that tends to have its onset in later adulthood, individuals drink to self-medicate negative emotions such as anxiety and depression (Cloninger et al. 1996; Zucker et al. 1996). Establishing classification schemes for alcoholics is not an abstract pursuit; the treatment needs of these groups are likely to differ.

Motivation To Drink

One area of psychosocial research on alcohol use focuses specifically on what motivates individuals to drink. Perhaps the most commonly studied motivation involves alcohol's ability to reduce anxiety, thus making it a way to cope with stress (Cappell and Greeley 1987; Sher 1987; Wills and Filer 1996). The *Ninth Special Report to the U.S. Congress on Alcohol and Health* (NIAAA 1997) reviewed the literature on the relationship between stress and alcohol use and concluded that the relationship was complex, varying with

the nature of the stressor, the characteristics of the individual, and the context within which the drinking occurs. This report also suggested that the strength of the relationship between stress and alcohol consumption varies across the life span, being weaker in adolescents and more pronounced in older adults.

Stress Reduction

Evidence that some people use alcohol to reduce stress is complex and inconsistent for a number of reasons, not least of which is that there are multiple determinants of alcohol use. Only subgroups of individuals use alcohol to cope with stress. One model proposes that experiencing negative emotions such as anxiety or depression, expecting that alcohol will relieve these feelings, and having a coping style characterized by avoiding rather than confronting life issues all combine to make it more likely that an individual will be motivated to drink to cope with stress. Data support this model in adolescents and adults, and across racial/ethnic groups. Individuals with these characteristics show the strongest correlation between stress and drinking (Cooper et al. 1992; Cooper et al. 1995; Kushner et al. 1994).

Other individuals who might be vulnerable to "drinking to cope" are those with a family history of alcoholism. Laboratory data suggest that male children with multigenerational family histories of alcoholism are hyperreactive to stress and derive greater stress response-dampening benefits from alcohol (Conrod et al. 1995, Harden and Pihl 1995).

The effect of protective factors that reduce the impact of stress on drinking also complicates the evidence for the relationship between stress and drinking. For example, a 3-year study of more than 1,000 people examined the relationship between financial stress and drinking (Peirce et al. 1996). Financially stressed individuals who reported that they had tangible support, such as help with transportation and chores, were less likely to have drinking problems than were other financially stressed people without this support.

Finally, problems in study methods may result in inconsistent findings. For example, there may be a time lag between the occurrence of a stressful event and resulting alcohol use. One study found, using daily diaries, that women consumed less alcohol on high-stress weeks, perhaps because alcohol impaired their ability to cope with stressors. However, these women then consumed more alcohol after the stressful event was over. Thus, variations in the time lag between the measurement of the stressor and alcohol consumption are likely to produce different findings (Breslin et al. 1995).

Mood Enhancement

Another reason for the modest relationship between stress and drinking is that other motives and determinants of alcohol use can overshadow stress-reduction motives. Alcohol, for example, can be used to enhance positive mood, a motive that has received recent research interest (Cooper et al. 1995). In both adolescents and adults, and in different racial/ethnic groups, data support a model in which individuals characterized by high levels of sensation seeking, and those who expect that alcohol use will enhance positive mood, will be more strongly motivated to drink for this effect (Cooper et al. 1995). Such a model does not imply that using alcohol to reduce stress or enhance positive mood (including its use for celebratory reasons) are mutually exclusive motivations to drink, or that they cannot be observed in the same person. The most severe alcohol problems have been reported in individuals who are characterized by both high levels of negative affect and low levels of constraint (including high sensation seeking [McGue et al. 1997]).

Alcohol's Effect on Emotional State

Questions remain as to exactly how alcohol affects emotional state. Laboratory data show that alcohol dampens responses to stress, but this effect of alcohol differs in individuals; alcohol can increase anxiety in some cases (Sayette 1993; NIAAA 1997).

Recently, investigators used a “startle probe” method to determine whether alcohol produced

a specific decrease in negative affect or whether it simply reduced emotional arousal across the board, muting the intensity of any emotion. The startle probe method involves showing individuals slides with pleasant, unpleasant, and neutral subjects and observing the watchers' responses to a sudden noise while viewing different slides. Studies have repeatedly shown that a person viewing an unpleasant slide—intended to evoke an unpleasant emotional state—will have a quicker, stronger startle response to a sudden noise than when viewing pleasant or neutral scenes. In this study, alcohol dampened the startle reflexes of viewers of both pleasant and unpleasant scenes (Stritzke et al. 1995). The data suggest that alcohol generally reduces emotional arousal, rather than specifically diminishing responses occurring during positive emotional states evoked by pleasant slides. In contrast, in similar studies, diazepam (Valium) blocked the startle response during exposure to aversive stimuli, but not during exposure to neutral stimuli (Patrick et al. 1996).

If the effect of alcohol consumption is generally to lower emotional arousal, then it is unclear how alcohol acts to enhance emotional state. However, more research must be conducted using these investigators' methods with different doses (they administered roughly three standard drinks to each person), placebo conditions (comparing the effect of alcohol with a nonalcoholic beverage), and a wider range of participant groups. These investigators suggest that alcohol's effects on emotional reactivity may be the result of alcohol's effects on cognition and information processing, rather than on motivational systems involving affect and emotion. Cognitive factors, such as those discussed below, may account for the role in motivating alcohol consumption of the positive effects of alcohol on emotion.

External Motivations To Drink

Finally, it is important to note that regulation of emotional state—reducing stress or lifting or enhancing mood—is not the only motive for alcohol consumption. External motives to drink include the social rewards of projecting a particular image, as well as the avoidance of social

rejection by complying with perceived social norms that include consuming alcohol in social settings (Cox and Klinger 1988). Thus, social influences, norms, and contexts also play a role in the motivation to drink.

The Role of Cognition: Beliefs About Alcohol

Most of the previous discussion has focused on the impact of alcohol on emotional tone. Another active research area involves cognition, or conscious and unconscious knowledge or beliefs about alcohol and the role of these beliefs in shaping alcohol-related behavior. As a result of direct experience with the pharmacologic effects of alcohol and vicarious learning—from parents, peers, and the broader culture and media—individuals develop expectancies about what will happen to them when they consume alcohol. These expectancies then influence their decisions to drink.

Theorists have suggested that cognition may in some cases be a bridge between the primary reinforcing effects of alcohol—the sense that alcohol reduces stress, for example—and individuals' decisions to use alcohol in a particular situation. For example, expectancies about alcohol's effects may be the mediator between the neurobiological reinforcing effects of alcohol and the decision to drink (Stacy 1997; Stacy et al. 1994). As someone makes the decision to drink, expectancies about alcohol's effects may be the common pathway mediating the effects of many other psychosocial variables that set the stage for the decision (Smith et al. 1995).

Explicit Beliefs and Expectations

If asked, most people can describe many of their beliefs and expectations about alcohol. These beliefs are conscious or “explicit.” As noted in the *Ninth Special Report to the U.S. Congress on Alcohol and Health* (NIAAA 1997), expectations about alcohol's effects begin developing early in life, even before a person drinks any alcohol (Zucker et al. 1995). Recent studies continue to confirm earlier work showing that expectations about alcohol predict future alcohol use. For

example, young adolescents who told researchers that they believed alcohol makes it easier to socialize were shown in later years to have increased their drinking over time to higher rates than their peers without this belief (Smith et al. 1995). More general expectancies may not be predictive; in another study, responses to such general questions as whether alcohol had “positive” or “negative” effects did not predict increased alcohol use over time in a group of adolescents, many of whom were from families with alcoholism (Colder et al. 1997). Data suggests that expectancies and the experience of drinking have reciprocal effects. Not only do expectancies predict later drinking, but drinking experiences shape later expectancies about alcohol's effects (Sher et al. 1996; Smith et al. 1995).

Recent data have been less supportive of the hypothesis that expectancies by offspring about alcohol can explain the effects of family history of alcoholism on drinking. Researchers have found differences in expectations about alcohol between children of alcoholics and children of non-alcoholics (Sher et al. 1996). Even in preschool, children of alcoholics have more knowledge about alcohol than their peers. For example, they are better able to identify alcoholic beverages visually (Zucker et al. 1995). However, recent data suggest that expectations about alcohol explain only a modest amount of the influence of familial alcoholism on alcohol use among college students (Sher et al. 1996). College students are a select group, however, and live in an environment that strongly promotes drinking, a factor that may mask the role of expectations. As noted above, a study of younger adolescents showed that their general expectations about alcohol did not account for differences in the increase of heavy alcohol use over time among children of alcoholics versus those of nonalcoholics (Colder et al. 1997).

Recent studies have identified a role for expectancies about alcohol as moderators of the effects of other risk factors on alcohol consumption. For example, as noted in the earlier discussions of motivational factors, individuals will be motivated to drink to reduce anxiety only if they believe that

alcohol consumption actually produces this effect (Cooper et al. 1995; Kushner et al. 1994).

Implicit Beliefs and Expectations

In the studies described so far, researchers directly asked individuals to report their beliefs and expectations about the effects of drinking. This approach best measures “explicit cognition”: what individuals consciously think and report to be their attitudes and beliefs. In other studies, researchers attempt to identify (and investigate) the beliefs, memory associations, and emotional states that are activated more spontaneously, without a person’s conscious awareness—termed “implicit cognition” (Greenwald and Banaji 1995). Recently, alcohol researchers have begun to study the role of implicit alcohol-related cognition in drinking behavior (Dunn and Goldman 1996; Stacy 1997; Stacy et al. 1996; Weingardt et al. 1996).

These associative memory processes have been measured in diverse ways, including investigating how individuals at various ages mentally organize associations between alcohol and its effects (Dunn and Goldman 1996), measuring free associations to alcohol-related words and pictures (Stacy et al. 1996; Stacy 1997), and priming memory activation (observing how exposure to an alcohol-related concept affects a participant’s responses to later stimuli) (Roehrich and Goldman 1996; Weingardt et al. 1996).

Data from these studies suggest that while late elementary school children resemble adults in how they process memory associations related to alcohol, there are also age-related changes. Older children activate impressions about the positive and arousing effects of alcohol, and this may reflect a form of preparation for alcohol use (Dunn and Goldman 1996). Children in the early years of elementary school are apt to have mostly negative alcohol-related associations, describing drinkers with words such as “sleepy,” “dizzy,” “goofy,” and “rude” (Dunn and Goldman 1998). As children get older, their associations turn to the positive and arousing effects of alcohol, and they begin to use words such as “outgoing,” “relaxed,” “wild,” and “funny.”

Recent studies using similar methods have shown that high school students who drink are more likely than those who do not drink to have these positive and largely unconscious memory associations about alcohol (Stacy et al. 1996); similar results have been found among college students (Weingardt et al. 1996).

Little is yet known about the relationship between implicit and explicit beliefs about alcohol and the potential differences in the way that the two types of knowledge influence alcohol use. One hypothesis suggests that conscious, explicit expectations influence alcohol use through deliberate, conscious decision making (Stacy 1997). In contrast, unconscious memory associations may influence alcohol use more spontaneously, when the expectations are triggered in an immediate situation. A recent study that measured conscious beliefs and expectations about alcohol (by direct questions) and unconscious beliefs and expectations (by free association) in a sample of college students showed that both predicted later alcohol use (Stacy 1997).

In Closing

Research on psychosocial factors in alcohol consumption and alcoholism encompasses a broad range of investigations, all aimed at understanding how multiple biological and psychosocial risk factors interact to influence alcohol-related behavior. Research on familial transmission of alcoholism in particular focuses on how genetic vulnerabilities are translated in the context of the family and social environment into alcoholism.

Recent research traces the evolution of the disorder of alcoholism along the life span and teases out the motivational factors—both emotional and cognitive—that induce individuals to drink. By constructing models of how the risk factors identified interact, then testing these models empirically—seeing to what extent the models can predict who will drink and to what extent—scientists are identifying risk factors for alcohol misuse, as well as potential mediators and moderators of this risk. The ultimate goal of this research is to develop preventive interventions

that target these risk and protective factors in order to reduce the prevalence of alcohol-related illness and death.

References

- Andrews, J.A.; Hops, H.; and Duncan, S.C. Adolescent modeling of parent substance use: The moderating effect of the relationship with the parent. *J Fam Psychol* 11(3):259–270, 1997.
- Bachman, J.G.; Wadsworth, K.N.; O'Malley, P.M.; Johnston, L.D.; and Schulenberg, J.E. *Smoking, Drinking, and Drug Use in Young Adulthood: The Impacts of New Freedoms and New Responsibilities*. Mahwah, NJ: Lawrence Erlbaum Associates, 1997.
- Barnes, G.M.; Farrell, M.P.; and Banerjee, S. Family influences on alcohol abuse and other problem behaviors among black and white adolescents in a general population sample. *J Res Adolesc* 4:183–201, 1994.
- Barrera, M., Jr.; Li, S.A.; and Chassin, L. Exploring the role of ethnicity and family conflict in adolescents' vulnerability to life stress and parental alcoholism. In: McCubbin, H.I.; Thompson, E.A.; and Fromer, J.E., eds. *Resiliency in Ethnic Minority Families. Vol 1. Native and Immigrant American Families*. Madison, WI: University of Wisconsin, 1995.
- Blanton, H.; Gibbons, F.X.; Gerrard, M.; Conger, K.J.; and Smith, G.E. Role of family and peers in the development of prototypes associated with substance use. *J Fam Psychol* 11(3):271–288, 1997.
- Breslin, F.C.; O'Keeffe, M.K.; Burrell, L.; Ratliff-Crain, J.; and Baum, A. The effects of stress and coping on daily alcohol use in women. *Addict Behav* 20(2):141–147, 1995.
- Cadore, R.S.; Yates, W.R.; Troughton, E.; Woodworth, G.; and Stewart, M.A. Adoption study demonstrating two genetic pathways to drug abuse. *Arch Gen Psychiatry* 52(1):42–52, 1995.
- Cappell, H., and Greeley, J. Alcohol and tension reduction: An update on research and theory. In: Leonard, K.E. and Blane, H.T., eds. *Psychological Theories of Drinking and Alcoholism*. New York, NY: Guilford Press, 1987. pp. 15–54.
- Cashin, J.R.; Presley, C.A.; and Meilman, P.W. Alcohol use in the Greek system: Follow the leader? *J Stud Alcohol* 59(1):63–70, 1998.
- Caspi, A.; Moffitt, T.E.; Newman, D.L.; and Silva, P.A. Behavioral observations at age 3 years predict adult psychiatric disorders: Longitudinal evidence from a birth cohort. *Arch Gen Psychiatry* 53(11):1033–1039, 1996.
- Chassin, L.; Curran, P.S.; Hussong, A.M.; and Colder, C.R. The relation of parent alcoholism to adolescent substance use: A longitudinal follow-up study. *J Abnorm Psychol* 105(1):70–80, 1996.
- Chen, K., and Kandel, D.B. The natural history of drug use from adolescence to the mid-thirties in a general population sample. *Am J Public Health* 85(1):41–47, 1995.
- Chilcoat, H.D., and Breslau, N. Alcohol disorders in young adulthood: Effects of transitions into adult roles. *J Health Soc Behav* 37(4):339–349, 1996.
- Cloninger, C.R.; Sigvardsson, S.; and Bohman, M. Type I and Type II alcoholism: An update. *Alcohol Health Res World* 20(1):18–23, 1996.
- Colder, C.R.; Chassin, L.; Stice, E.M.; and Curran, P.J. Alcohol expectancies as potential mediators of parent alcoholism effects on the development of adolescent heavy drinking. *J Res Adolesc* 7(4):349–374, 1997.
- Conrod, P.J.; Pihl, R.O.; and Ditto, B. Autonomic reactivity and alcohol-induced dampening in men at risk for alcoholism and men at risk for hypertension. *Alcohol Clin Exp Res* 19(2):482–489, 1995.

Cooper, M.L.; Frone, M.; Russell, M.; and Mudar, P. Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *J Pers Soc Psychol* 69(5):990–1005, 1995.

Cooper, M.L.; Russell, M.; Skinner, J.B.; Frone, M.R.; and Mudar, P. Stress and alcohol use: Moderating effects of gender, coping, and alcohol expectancies. *J Abnorm Psychol* 101(1):139–152, 1992.

Cotton, N.S. The familial incidence of alcoholism: A review. *J Stud Alcohol* 40(1): 89–116, 1979.

Cox, W.M., and Klinger, E. A motivational model of alcohol use. *J Abnorm Psychol* 97(2): 168–180, 1988.

Curran, P.J.; Stice, E.; and Chassin, L. The relationship between adolescent alcohol use and peer alcohol use: A longitudinal random coefficients model. *J Consult Clin Psychol* 65(1): 130–140, 1997.

Deckel, A.W., and Hesselbrock, V. Behavioral and cognitive measurements predict scores on the MAST: A 3-year prospective study. *Alcohol Clin Exp Res* 20(7):1173–1178, 1996.

Dobkin, P.L.; Charlebois, P.; and Tremblay, R.E. Mother-son interactions in disruptive and nondisruptive adolescent sons of male alcoholics and controls. *J Stud Alcohol* 58(5):546–553, 1997.

Dunn, M.E., and Goldman, M.S. Empirical modeling of an alcohol expectancy memory network in elementary school children as a function of grade. *Exp Clin Psychopharmacol* 4(2):209–217, 1996.

Dunn, M.E., and Goldman, M.S. Age and drinking-related differences in the memory organization of alcohol expectancies in 3rd-, 6th-, 9th-, and 12th-grade children. *J Consult Clin Psychol* 66(3):579–585, 1998.

Eiden, R.R., and Leonard, K.E. Paternal alcohol use and the mother-infant relationship. *Dev Psychopathol* 8(2):307–323, 1996.

Finn, P.R.; Sharkansky, E.J.; Viken, R.; West, T.L.; Sandy, J.; and Bufferd, G.M. Heterogeneity in the families of sons of alcoholics: The impact of familial vulnerability type on offspring characteristics. *J Abnorm Psychol* 106(1):26–36, 1997.

Ge, X., and Cadoret, R.J. The developmental interface between nature and nurture: A mutual influence model of child antisocial behavior and parent behaviors. *Dev Psychol* 32(4):574–589, 1996.

Giancola, P.R.; Martin, C.S.; Tarter, R.E.; Pelham, W.E.; and Moss, H.B. Executive cognitive functioning and aggressive behavior in preadolescent boys at high risk for substance abuse/dependence. *J Stud Alcohol* 57(4):352–359, 1996.

Gotham, H.J.; Sher, K.J.; and Wood, P.K. Predicting stability and change in frequency of intoxication from the college years to beyond: Individual difference and role-transition variables. *J Abnorm Psychol* 106(4):619–629, 1997.

Greenwald, A.G., and Banaji, M.R. Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychol Rev* 102(1):4–27, 1995.

Harden, P.W., and Pihl, R.O. Cognitive function, cardiovascular reactivity, and behavior in boys at high risk for alcoholism. *J Abnorm Psychol* 104(1):94–103, 1995.

Hawkins, C.A. Disruption of family rituals as a mediator of the relationship between parental drinking and adult adjustment in offspring. *Addict Behav* 22(2):219–231, 1997.

Hawkins, J.D.; Graham, J.W.; Maguin, E.; Abbott, R.; Hill, K.G.; and Catalano, R.F. Exploring the effects of age of alcohol use initiation and psychosocial risk factors on subsequent alcohol misuse. *J Stud Alcohol* 58(3):280–290, 1997.

- Hussong, A.M., and Chassin, L. Substance use initiation among adolescent children of alcoholics: Testing protective factors. *J Stud Alcohol* 58(3):272–279, 1997.
- Jacob, T., and Leonard, K. Family and peer influences in the development of adolescent alcohol abuse. In: Zucker, R.A.; Boyd, G.M.; and Howard, J., eds. *Development of Alcohol Problems: Exploring the Biopsychosocial Matrix of Risk*. NIAAA Research Monograph No. 26. NIH Pub. No. 94-3495. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism, 1994. pp. 123–155.
- Jessor, R., and Jessor, S.L. *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. New York, NY: Academic Press, 1977.
- Johnston, L.D.; O'Malley, P.M.; and Bachman, J.G. Drug trends in 1999 are mixed [University of Michigan News and Information Services web site]. Available at: www.monitoringthefuture.org. Accessed January 21, 2000.
- Johnstone, B.M.; Leino, V.E.; Ager, C.R.; Ferrer, H.; and Fillmore, K.M. Determinants of life-course variation in the frequency of alcohol consumption: Meta-analysis of studies from the Collaborative Alcohol-Related Longitudinal Project. *J Stud Alcohol* 57(5):494–506, 1996.
- Kushner, M.G.; Sher, K.J.; Wood, M.D.; and Wood, P.K. Anxiety and drinking behavior: Moderating effects of tension-reduction alcohol outcome expectancies. *Alcohol Clin Exp Res* 18(4):852–860, 1994.
- McGrath, C.E.; Watson, A.L.; and Chassin, L. Academic achievement in adolescent children of alcoholics. *J Stud Alcohol* 60(1):18–26, 1999.
- McGue, M. Genes, environment, and the etiology of alcoholism. In: Zucker, R.A.; Boyd, G.M.; and Howard, J., eds. *Development of Alcohol Problems: Exploring the Biopsychosocial Matrix of Risk*. NIAAA Research Monograph No. 26. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, 1994. pp. 1–40.
- McGue, M.; Sharma, A.; and Benson, P. Parent and sibling influences on adolescent alcohol use and misuse: Evidence from a U.S. adoption cohort. *J Stud Alcohol* 57(1):8–18, 1996a.
- McGue, M.; Sharma, A.; and Benson, P. The effect of common rearing on adolescent adjustment: Evidence from a U.S. adoption cohort. *Dev Psychol* 32(4):604–613, 1996b.
- McGue, M.; Slutske, W.; Taylor, J.; and Iacono, W.G. Personality and substance use disorders. I. Effects of gender and alcoholism subtype. *Alcohol Clin Exp Res* 21(3):513–520, 1997.
- Moffitt, T.E. The neuropsychology of conduct disorder. *Dev Psychopathol* 5:135–151, 1993.
- Molina, B.S.; Chassin, L.; and Curran, P.J. A comparison of mechanisms underlying substance use for early adolescent children of alcoholics and controls. *J Stud Alcohol* 55(3):269–276, 1994.
- Moos, R.H., and Billings, A.G. Children of alcoholics during the recovery process: Alcoholic and matched control families. *Addict Behav* 7(2):155–163, 1982.
- National Institute on Alcohol Abuse and Alcoholism. *Ninth Special Report to the U.S. Congress on Alcohol and Health*. NIH Pub. No. 97-4017. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism, 1997.
- Ozkaragoz, T.; Satz, P.; and Noble, E.P. Neuropsychological functioning in sons of active alcoholic, recovering alcoholic, and social drinking fathers. *Alcohol* 14(1):31–37, 1997.
- Patrick, C.J.; Berthot, B.D.; and Moore, J.D. Diazepam blocks fear-potentiated startle in humans. *J Abnorm Psychol* 105:89–96, 1996.
- Peirce, R.S.; Frone, M.; Russell, M.R.; and Cooper, M.L. Financial stress, social support, and alcohol involvement: A longitudinal test of the buffering hypothesis in a general population study. *Health Psychol* 15(1):38–47, 1996.

- Pihl, R.O., and Peterson, J.B. Alcoholism: The role of different motivational systems. *J Psychiatry Neurosci* 20(5):372–396, 1995.
- Resnick, M.D.; Bearman, P.S.; Blum, R.W.; Bauman, K.E.; Harris, K.M.; Jones, J.; Tabor, J.; Beuhring, T.; Sieving, R.E.; Shew, M.; Ireland, M.; Bearinger, L.H.; and Udry, J.R. Protecting adolescents from harm. Findings from the National Longitudinal Study on Adolescent Health. *JAMA* 278:(10) 823–832, 1997.
- Roehrich, L., and Goldman, M.S. Implicit priming of alcohol expectancy memory processes and subsequent drinking behavior. *Exp Clin Psychopharmacol* 4:402–410, 1995.
- Sayette, M.A. An appraisal-disruption model of alcohol's effects on stress responses in social drinkers. *Psychol Bull* 114:459–476, 1993.
- Schuckit, M.A., and Smith, T.L. An 8-year follow-up of 450 sons of alcoholics and control subjects. *Arch Gen Psychiatry* 53:202–210, 1996.
- Schulenberg, J.; O'Malley, P.M.; Bachman, J.G.; Wadsworth, K.N.; and Johnston, L.D. Getting drunk and growing up: Trajectories of frequent binge drinking during the transition to young adulthood. *J Stud Alcohol* 57(3):289–304, 1996a.
- Schulenberg, J.; Wadsworth, K.N.; O'Malley, P.M.; Bachman, J.G.; and Johnston, L.D. Adolescent risk factors for binge drinking during the transition to young adulthood: Variable- and pattern-centered approaches to change. *Dev Psychol* 32(4):659–674, 1996b.
- Sher, K.J. Stress response dampening. In: Blane, H.T., and Leonard, K.E., eds. *Psychological Theories of Drinking and Alcoholism*. New York, NY: Guilford Press, 1987.
- Sher, K.J. *Children of Alcoholics: A Critical Appraisal of Theory and Research*. Chicago, IL: University of Chicago Press, 1991.
- Sher, K.J.; Gershuny, B.; Peterson, L.; and Raskin, G. The role of childhood stressors in the intergenerational transmission of alcohol use disorders. *J Stud Alcohol* 58(4):414–427, 1997.
- Sher, K.J.; Wood, M.D.; Wood, P.K.; and Raskin, G. Alcohol outcome expectancies and alcohol use: A latent variable cross-lagged panel study. *J Abnorm Psychol* 105(4):561–574, 1996.
- Smith, G.T.; Goldman, M.S.; Greenbaum, P.E.; and Christiansen, B.A. Expectancy for social facilitation from drinking: The divergent paths of high-expectancy and low-expectancy adolescents. *J Abnorm Psychol* 104(1):32–40, 1995.
- Stacy, A.W. Memory activation and expectancy as prospective predictors of alcohol and marijuana use. *J Abnorm Psychol* 106(1):61–73, 1997.
- Stacy, A.W.; Ames, S.L.; Sussman, S.; and Dent, C.W. Implicit cognition in adolescent drug use. *Psychol Addict Behav* 10(3):190–203, 1996.
- Stacy, A.W.; Leigh, B.C.; and Weingardt, K.R. Memory accessibility and association of alcohol use and its positive outcomes. *Exp Clin Psychopharmacol* 2(3):269–282, 1994.
- Stice, E., and Barrera, M., Jr. A longitudinal examination of the reciprocal relations between perceived parenting and adolescents' substance use and externalizing behavior. *Dev Psychol* 31(2):322–334, 1995.
- Stritzke, W.G.; Patrick, C.J.; and Lang, A.R. Alcohol and human emotion: A multidimensional analysis incorporating startle probe methodology. *J Abnorm Psychol* 104(1):114–122, 1995.
- Tarter, R., and Vanyukov, M. Alcoholism: A developmental disorder. *J Consult Clin Psychol* 62(6):1096–1107, 1994.
- Volavka, J.; Czobor, P.; Goodwin, D.W.; Gabrielli, W.F., Jr.; Penick, E.C.; Mednick, S.A.; Jensen, P.; Knop, J.; and Schulsinger, F. The electroencephalogram after alcohol administration in high-risk men and the development of alcohol use disorders 10 years later: Preliminary findings. *Arch Gen Psychiatry* 53(3):258–263, 1996.

- Webb, J.A., and Baer, P.E. Influence of family disharmony and parental alcohol use on adolescent social skills, self-efficacy and alcohol use. *Addict Behav* 20(1):127–135, 1995.
- Weingardt, K.; Stacy, A.W.; and Leigh, B.C. Automatic activation of alcohol concepts in response to positive outcomes of alcohol use. *Alcohol Clin Exp Res* 20(1):25–30, 1996.
- Wills, T.A., and Cleary, S.D. How are social support effects mediated? A test with parental support and adolescent substance use. *J Pers Soc Psychol* 71(5):937–952, 1996.
- Wills, T.A., and Filer, M. Stress-coping model of adolescent substance use. *Adv Clin Child Psychol* 18:91–132, 1996.
- Wills, T.A.; Vaccaro, D.; McNamara, G.; and Hirky, A.E. Escalated substance use: A longitudinal grouping analysis from early to middle adolescence. *J Abnorm Psychol* 105(2):166–180, 1996.
- Yamaguchi, K., and Kandel, D.B. On the resolution of role incompatibility: A life event history analysis of family roles and marijuana use. *Am J Sociol* 90:1284–1325, 1985.
- Zucker, R.A. Pathways to alcohol problems and alcoholism: A developmental account of the evidence for multiple alcoholisms and for contextual contributions to risk. In: Zucker, R.A.; Boyd, G.M.; and Howard, J., eds. *The Development of Alcohol Problems: Exploring the Biopsychosocial Matrix of Risk*. NIAAA Research Monograph No. 26. NIH Pub. No. 94-3495. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, 1994. pp. 255–289.
- Zucker, R.A.; Boyd, G.M.; and Howard, J., eds. *Development of Alcohol Problems: Exploring the Biopsychosocial Matrix of Risk*. NIAAA Research Monograph No. 26. NIH Pub. No. 94-3495. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, 1994.
- Zucker, R.A.; Ellis, D.A.; Bingham, C.R.; and Fitzgerald, H.E. The development of alcoholic subtypes: Risk variation among alcoholic families during the childhood years. *Alcohol Health Res World* 20(1):46–54, 1996.
- Zucker, R.A.; Kincaid, S.B.; Fitzgerald, H.E.; and Bingham, C.R. Alcohol schema acquisition in preschoolers: Differences between children of alcoholics and children of non-alcoholics. *Alcohol Clin Exp Res* 19(4):1011–1017, 1995.

