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Alcohol, Abstinence, Efficacy, and Social Normative Expectancies: The Relationship to Alcoholics' Level of Drinking Following Inpatient Treatment

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ALCOHOL, ABSTINENCE, EFFICACY, AND SOCIAL NORMATIVE

EXPECTANCIES: THE RELATIONSHIP TO ALCOHOLICS' LEVEL

OF DRINKING FOLLOWING INPATIENT TREATMENT

by

Martin John Toohill

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DEDICATION

This work is dedicated to my wife, Nancy Glomb, who has seen me through some trying times. It is dedicated to my late parents, Martin and Mary Teresa Toohill, who left me with some surprising strengths. It is dedicated to Ward Rodriguez, who is probably unaware of how much he taught me about psychology and standards of excellence. This paper is dedicated to the Fuji Heavy Industries, Ltd., the makers of my 1980 Subaru station wagon that proved to be one reliable car over the course of this project. Finally, I would like to dedicate this manuscript to all the friends of Bill W., without whom I would not be writing these words.

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ABSTRACT

Alcohol, Abstinence, Efficacy, and Social Normative

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of Drinking Following Inpatient Treatment

by

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It has been argued that individuals receiving traditional alcohol treatment do not

necessarily perceive life-long abstinence from alcohol as a favorable treatment outcome, and

that negative expectations associated with this abstinence goal may have an adverse effect on

treatment outcome. However, "abstinence expectancies" have never been systematically

explored. This study used the Theory of Planned Behavior to investigate the relationship

between the abstinence outcome expectancies of alcoholics beginning treatment and subsequent

alcohol consumption. The independent and combined effects of abstinence outcome

expectancies, alcohol outcome expectancies, self-efficacy expectancies (to abstain from alcohol

use), and the normative beliefs of individuals beginning inpatient abstinence-oriented alcohol

treatment were related to level of drinking during the 90 days following treatment.

One hundred ten individuals receiving inpatient alcohol treatment were recruited for

the main portion of this study. A questionnaire that included belief-based measures of attitude

toward alcohol and abstinence, a belief-based measure of social normative pressure to either

use or abstain from alcohol, a belief-based measure of one's perceived behavioral control to abstain from alcohol, and a measure of behavioral intention to use alcohol during the 3 months following treatment was developed for use in this study. The questionnaire was administered to all subjects. During the 90-day Follow-Up period, subjects were sent brief questionnaires and asked to report any alcohol or drug use. Eighty-nine percent of the subjects provided follow-up information for the first 30 days, while 76% provided information for the entire 90 days.

An analysis of the data indicated that scores obtained from the belief-based measure of perceived behavioral control and scores from the belief-based measure of attitude toward abstinence were moderately correlated with intention to abstain from alcohol, while alcohol attitude scores and subjective norm scores were uncorrelated. Contrary to expectations, scores obtained from a measure of intention to use alcohol and the measure of perceived behavioral control were minimally predictive of scores from follow-up measures of drinking. However, intention and perceived behavioral control scores were somewhat more predictive of drug use for the 90-day Follow-Up period. These results were discussed in light of the Theory of Planned Behavior and the similarities between alcohol expectancies and drug expectancies. (218 pages)

CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

Relapse has been recognized as a central problem following the treatment of

alcoholism and substance abuse (Annis, 1990). Relapse refers to a "transitional process, a

series of events that may or may not be followed by a return to baseline levels of the target

behavior" (Marlatt, 1985b, p. 32). It also has been defined as a "failure to maintain behavior

change rather than a failure to initiate change (Annis, 1990, p. 118, emphasis in original).

Relapse prevention (RP) refers to a variety of strategies aimed at preventing relapse following

treatment of alcoholism, substance abuse, and other addictive behaviors, with an emphasis on

maintaining positive habit changes (Marlatt & Gordon, 1985). The RP strategies introduced

during the past decade have been described as the "major nonpharmacological substance abuse

treatment advancement of the 1980s" (Rawson, Obert, McCann, & Marinelli-Casey, 1993, p.

93).

RP models of alcohol and substance abuse treatment are premised on cognitive-

expectancy theories of behavior, especially Bandura's social-learning and self-efficacy theories

(1977a, 1977b, 1986). A key tenet of these theories is that procedures that produce initial

changes in behavior may not be appropriate for maintaining those changes, and therefore

specific strategies must be created so that behavior change can be generalized to the natural

environment and maintained over time (Wilson, 1987). As applied to alcohol treatment and

relapse, the maintenance of abstinence or reduced drinking may be governed by different

principles than those that are needed to initiate these changes in drinking. Thus, according to

the RP model, the self-efficacy expectations of alcoholics to resist drinking after completing

treatment and returning to their natural environment, combined with their cognitive

expectancies of alcohol, significantly affect whether they "relapse" back to pretreatment

drinking levels (Marlatt, 1978, 1985a). Specifically, alcoholics are likely to relapse in "high-risk" situations that in the past elicited excessive drinking (e.g., visiting with friends who drink). Due to the lack of appropriate coping skills, the alcoholic's self-efficacy expectations to resist drinking are low in these situations, and relapse occurs. The likelihood of relapse also is increased by the positive and negative expectancies that the alcoholic associates with any drinking (e.g., tension-reduction, and the belief that one drink leads to uncontrolled drinking, respectively). Relapse is thought to be avoidable if the alcoholic can produce effective coping responses that lead to a greater sense of self-efficacy to resist drinking when entering these high-risk situations, and if alcohol expectancies are changed. Treatment, according to the RP model, therefore should include the following goals: (a) identifying high-risk situations; (b) teaching effective coping skills that increase one's self-efficacy to resist the urge to drink in these high-risk situations; (c) challenging the inevitability of positive alcohol outcomes; and (d) challenging the belief that one drink must lead to another.

Systematic research evaluating RP strategies has only recently begun to appear (Rychtarik, Prue, Rapp, & King, 1992). Some early tests of this model failed to produce evidence of its superiority over more traditional treatment of alcoholism (Ito, Donovan, & Hall, 1988; Sjoberg & Samsonowitz, 1985). However, there is evidence that teaching effective coping skills to alcoholics reduces their probability of relapse (Chaney, O'Leary, & Marlatt, 1978; Eriksen, Bjornstad, & Gotestam, 1986; Monti et al., 1993). In addition, there is evidence that alcoholics who report positive alcohol expectancies are more likely to relapse (Brown, 1985; Eastman & Norris, 1982), as are alcoholics who believe that one drink leads to uncontrolled drinking (Heather, Winton, & Rollnick, 1982). Alcohol expectancy research has been criticized on methodological grounds (e.g., insufficient evidence of validity), and for not addressing the question of how alcohol expectancies affect drinking behavior (Leigh, 1989c). It has been suggested that research in attitude-behavior relations may provide some insight into this question. Specifically, the relationship between alcohol expectancies and

drinking behavior may be an "artifact" of an underlying relationship between drinking behavior and one's attitude toward that behavior, with alcohol expectancies representing the cognitive component of attitude (Leigh, 1989a, 1989c).

The primary goal of the RP model is to prevent alcoholics from relapsing to pretreatment levels of drinking. From the RP perspective, controlled drinking becomes a viable goal for some individuals who show evidence of alcohol dependence (Marlatt, 1985b; Miller, Leckman, Delaney, & Tinkcom, 1992). However, controlled-drinking goals for chronic alcoholics or those displaying severe dependence are no longer pursued by researchers and practitioners due to the unreliable outcomes of such treatment (Robertson et al., 1987), and resistance from adherents to the disease model of alcoholism (Nathan & Skinstad, 1987). Miller (1993) described the "dispositional" disease concept that has been widely accepted by the public and professionals in the United States. According to Miller, this model is characterized by four central assumptions: (a) alcoholism is a unitary disease; (b) it is caused by physical abnormalities; (c) it is characterized by loss of control; and (d) it is irreversible. These four assumptions taken together "lead logically to the requirement of lifelong abstinence from alcohol and other psychoactive drugs" (Miller, 1993, p. 130). While acknowledging that the disease model may serve to guide the treatment of those forms of alcoholism in which loss of control is a central symptom, Miller (1993) argued that this conceptualization of alcoholism is far too exclusive, failing to take into account the outcomes of research-based treatment that is predicated on the broader biopsychosocial model of alcoholism, and leading to treatment programs and treatment goals that are very limited in scope.

From the perspective of cognitive-social learning theory, a life-long goal of abstinence from alcohol may have some significant treatment implications. While an individual might have the coping skills and the corresponding perceived self-efficacy to abstain from alcohol use, there is the possibility that the consequences associated with this outcome may not be perceived as attractive or desirable (Solomon & Annis, 1989). In other words, the outcomes

or expectancies that alcoholics beginning treatment associate with a complete change in drinking behavior may be very negative (e.g., social isolation, boredom), and these "abstinence expectancies" might have a direct affect on posttreatment drinking behavior. Rollnick and Heather (1982) argued that it is unwise to assume that alcoholics in abstinence-oriented treatment have positive abstinence expectancies, and that negative expectancies could lead to posttreatment relapse. Other investigators have similarly acknowledged the importance of assessing the consequences that individuals associate with a significant change in drinking behavior (Blakey & Baker, 1980; Sanchez-Craig, 1980; Solomon & Annis, 1989). However, so-called "abstinence expectancies" have never been systematically investigated, and their effect on posttreatment drinking behavior is unknown (Solomon & Annis, 1989, 1990).

Statement of the Problem

According to current models of alcoholism and alcohol treatment, various cognitive expectancies affect the development and maintenance of problem drinking. Evidence exists that different types of alcohol expectancies play a causal role in problem drinking, and that alcoholics with specific alcohol expectancies are more likely to relapse following treatment. It has been suggested that the abstinence expectancies of alcoholics in abstinence-oriented treatment also might affect whether that treatment is successful. The problem is that abstinence expectancies have never been studied systematically and their effect on posttreatment drinking behavior is unknown. A need, therefore, exists to investigate the relationship between abstinence expectancies and posttreatment drinking behavior.

CHAPTER II

REVIEW OF LITERATURE

In this chapter, the key concepts described in the Introduction are reviewed in order to provide a theoretical and empirical context for the study of abstinence expectancies and the effect these expectancies might have on the posttreatment drinking behavior of alcoholics. First, a brief historical overview of the term alcoholism is presented, leading up to its current conceptualization as a biopsychosocial phenomenon. Theory and research relating to a cognitive-expectancy interpretation of behavior is then presented. Emphasis is placed on Bandura's construct of self-efficacy (Bandura, 1977a), which has been a central concept in the newer cognitive-behavioral alcohol treatment models. This is followed by a review of research on RP and related strategies that are predicated on self-efficacy theory. A review of the alcohol-expectancy research that has been a central feature of cognitive-behavioral models of alcohol abuse and treatment is then presented, along with a critique of this research. Finally, after a discussion of abstinence expectancies and a review of the limited research that exists in this area, the topic of attitude-behavior relations is introduced within the context of alcohol-expectancy research. This is followed by a description and review of the attitude theories of Martin Fishbein and Icek Ajzen, whose expectancy-value models of attitude-behavior relations have been used by some investigators to explain how alcohol expectancies affect drinking behavior.

Concepts, Definitions, and Models of Alcoholism

Over the years, people have thought about alcoholism in a number of ways. Until the mid-19th century, when the term was first coined by the Swedish physician Magnus Huss, "alcoholism" did not even exist; rather, "drunkenness" did. Excessive drinking was sinful, a weakness in one's character (Miller & Hester, 1989). This perception of alcoholism as a

moral or character failing has been surprisingly persistent, even among the professional

community. For example, in the first Diagnostic and Statistical Manual of Mental Disorders,

or DSM-I (American Psychiatric Association, 1952), alcoholism was a subset of "sociopathic

personality disturbance." The implication was that alcoholics represented a threat to societal

order that was different from other mental disorders (Nathan, 1991). This view did not

change significantly in DSM-II (American Psychiatric Association, 1968), where alcoholism

was assigned its own classification, but grouped with personality disorders, sexual deviations,

and drug dependence.

The temperance movement that occurred in the United States from the late 1800s

through the repeal of Prohibition in 1933 brought about a change in thinking about alcohol

abuse. The temperance model emphasized that alcohol is a dangerous drug capable of

producing great harm, shifting the cause of alcohol problems from the individual to alcohol

itself, and underscoring its pharmacological properties (Miller & Hester, 1989). With the

formation of Alcoholics Anonymous in 1935, there was a further change in thinking.

Drunkenness, the failure of character, became alcoholism, the allergy (Alcoholics

Anonymous, 1976). This allergy concept was refined in the late 1940s by E. M. Jellinek and

his associates at Yale, who were instrumental in promoting the disease model of alcoholism

(Jellinek, 1960). This view was legitimated in 1956, when alcoholism was recognized as a

disease by the American Medical Association (Marlatt, 1985b).

The underlying assumption of the disease model is that some characteristic of the

alcoholic interacts with the pharmacology of alcohol in such a way that one drink leads to

uncontrolled drinking. Accordingly, treatment consists of informing alcoholics of their

"inherent" condition, helping them accept their diagnosis, and persuading them to remain

abstinent for the rest of their lives (Miller & Hester, 1989). The main advantage of this

model is that individuals can seek out and accept help without being held morally accountable

for their behavior (Marlatt, 1985b; Miller & Hester, 1989). Evidence does in fact exist that

hereditary and biological factors play a role in the development of alcoholism (Schuckit, 1987). However, the belief that alcoholism is a unitary disorder caused solely by hereditary physical abnormalities has been contradicted by a large body of scientific research (Nathan, 1991).

During the 1960s, behavioral psychologists questioned the validity of the disease model. They argued that the associative principles underlying classical and instrumental conditioning could explain alcoholism. Simply put, environmental cues elicit drinking behavior that is reinforced to a level of intensity and frequency that it becomes a maladaptive coping mechanism (Marlatt, 1985b).

In the 1970s, cognitive-expectancy theories of behavior and learning processes were introduced that built upon and expanded the conditioning models of alcohol use and abuse. For example, deficits in coping strategies assumed and often evident in alcoholics were interpeted as having a negative impact on an individual's perceived "self-efficacy" (Bandura, 1977a). The mere expectation of being unable to cope effectively in a particular situation increases the alcoholic's stress, which in turn increases the likelihood of using alcohol if such use is believed or expected to be the only means available of coping with and reducing stress (Donovan, 1988). In addition, it was suggested that individuals "acquire cognitive expectancies" about drinking behavior (alcohol expectancies), based on the outcomes of their own drinking behavior or from their observations of others, and that these expectancies could affect subsequent drinking behavior (Wilson, 1987). This view is supported by evidence that alcohol-related behavior is mediated at least in part by alcohol expectancies (Leigh & Stacy, 1991; MacAndrew & Edgerton, 1969; Marlatt, Demming, & Reid, 1973). Furthermore, evidence exists that specific alcohol expectancies might influence the development and maintenance of excessive drinking (Brown, 1985; Christiansen & Goldman, 1983; Farber, Khavari, & Douglass, 1980).

Current formulations of alcoholism integrate many of the above factors as being causal factors in the etiology of alcoholism. For example, the DSM-III-R (American Psychiatric Association, 1987) criteria for substance abuse and dependence were theoretically and empirically based on the alcohol dependence syndrome described by Edwards and his colleagues (Edwards, 1986; Edwards, Arif, & Hodgson, 1981; Edwards & Gross, 1976). According to Rounsaville and Kranzler (1989), this substance dependence syndrome was developed "in accordance with behavioral principles via a system of reinforcement that initiates and perpetuates substance taking and dependence, . . . [and] is seen as multidimensional with biologic, social, and behavioral components" (pp. 324-326). The elements of this syndrome consisted of the following: (a) substance use becomes stereotypic and follows a regular schedule of continuous or daily use; (b) despite negative consequences, substance use becomes extremely salient and has priority over other activities that previously had been important; (c) increased tolerance; (d) withdrawal symptoms; (e) substance use to avoid withdrawal; (f) a subjectively experienced compulsion to use the substance; and (g) a high probability of readdiction.

This view of substance abuse and dependence is consistent with the biopsychosocial model that has emerged from health psychology and behavioral medicine, and has been widely adopted to account for alcoholism and other addictive behaviors (Donovan, 1988; Jacobsen, 1989). Donovan (1988) defined an addictive behavior as follows:

> a complex, progressive behavior pattern having biological, psychological, sociological, and behavioral components (and) the individuals's overwhelmingly pathological involvement in or attachment to it, subjective compulsion to continue it, and reduced ability to exert personal control over it. (p. 6)

He described five features that reflect the etiology and maintenance of all addictive behaviors: (a) the addictive experience rapidly changes one's mood and sensations as a joint function of physiological effects and learned expectations; (b) various physical and psychological states such as general arousal, stress, pain, or negative moods are associated with and increase the

probability of engaging in the addictive behavior; (c) classical and instrumental conditioning appear to play a role in the addictive process; (d) addictive behaviors are viewed as behaviors that are out of one's control, yet they are behaviors an individual readily can engage in to produce immediate physical and psychological effects (the paradox of control); and (e) addictive behaviors show high rates of relapse following periods of abstinence.

In summary, a variety of reasons has been offered over the years to account for excessive drinking of alcohol. At the present time, there is evidence indicating that alcoholism is a multidimensional phenomenon caused by biological, hereditary, social, and psychological factors. According to current cognitive-learning theory, expectancies of alcohol's effects and one's expected ability to cope effectively in the world are thought to play a crucial role in the development and maintenance of problem drinking.

A Cognitive-Expectancy Interpretation of Behavior

The concept of expectancy as a formal construct has a

rich history across many disciplines within psychology, and has enjoyed significant recent development as an explanatory tool for many basic psychological phenomena, including classic and operant conditioning, and social processes. (Goldman, Brown, Christiansen, & Smith, 1991, p. 144)

Expectancy theory can be traced back to E.C. Tolman's cognitive behaviorism (Tolman, 1932, 1959). He maintained that organisms acquire a cognitive representation of the environment (cognitive map) such that specific choice behaviors will lead to expected consequences, independent of receiving those consequences. When motivational or "demand" conditions are appropriate, the organism utilizes its "cognitive map" to choose and act upon those environmental stimuli that produce consequences that will meet the demand (Kendler, 1987). Thus, actions and their potential consequences take on an "expectancy value" (Feather, 1982).

This basic cognitive expectancy-value model has had a variety of names over the years. However, it was during the late 1960s and the 1970s that cognitive constructs such as expectancy value became prominent and were incorporated into mainstream theories of learning (Kazdin, 1978b). The 1969 publication of Bandura's Principles of Behavior Modification was perceived as a major shift toward incorporating cognitive concepts such as expectancy into an understanding of learning processes (Mahoney & Arnkoff, 1978; Wilson, 1978). The associative learning theories of classical and instrumental conditioning were reinterpreted in terms of learned expectations: Organisms acquire predictive knowledge of the contingencies between stimulus events and the contingencies between behavior and its outcome (Bandura, 1986; Bolles, 1972).

Bandura's Self-Efficacy Theory

The shift toward cognitive theories of learning has had a major impact on psychological analyses of alcohol use and abuse (Wilson, 1987). Among the most influential cognitive theories is Bandura's cognitive-social learning theory (Annis & Davis, 1989), which has been described as the "theoretical basis" common to the newer strategies used in substance abuse treatment (Rawson et al., 1993). One of the key features of this theory is the concept of self-efficacy, proposed as a unifying mechanism that accounts for similar behavioral effects obtained by different intervention procedures (Bandura, 1977a). Specifically, psychological procedures create and strengthen expectations of personal efficacy. An efficacy expectation is the conviction that one can successfully execute the behavior required to produce desired outcomes. Efficacy expectations are distinguished from outcome expectations, which refer to a person's estimate that a given behavior will lead to certain outcomes.

The above self-efficacy concepts are illustrated in the following example of treatment of snake phobia, a common phobia that Bandura and his associates have treated in order to

illustrate self-efficacy concepts. Individuals suffering from a snake phobia are asked at the outset of treatment to rate their confidence that they can hold a snake firmly and with complete control. These would be ratings of efficacy expectations, and likely would be quite low. Subjects would then be taught how to handle a snake safely, either with a hands-on procedure (direct experience), or perhaps by watching a skilled snake handler (vicarious experience). Eventually, as the subjects mastered the skill of firmly handling a snake, ratings of one's perceived efficacy expectations would increase, as would the probablity of engaging in the behavior (this correspondence is a key feature of self-efficacy theory). In other words, there is a greater likelihood that a person who has mastered a behavior will perform that behavior. Outcome expectations would refer to the subjects' estimate that they would feel comfortable while holding a snake and be in no danger. At the outset of treatment, these ratings also would be low, with subjects likely being quite anxious. However, ratings would increase as the subjects' skill in handling snakes increased. In other words, as they mastered snake handling, their fears of approaching and touching snakes would decrease. According to Bandura, the outcome expectations (feelings of comfort and safety) follow from the efficacy expectations (the ability to hold a snake firmly). Finally, as efficacy and outcome expectations increase, subjects' sense of personal efficacy would be enhanced.

Bandura (1977a) originally argued that efficacy expectations were more central determinants of behavior than were outcome expectations. He reasoned that desired outcomes automatically follow efficacious behaviors, since the latter is defined by its ability to produce the former. Others questioned this, arguing that the effects on subsequent behavior of outcome expectations are no less important than efficacy expectations, because positive outcomes do not necessarily follow from efficacious behavior (Kazdin, 1978a; Teasdale, 1978). This issue is very relevant to abstinence-oriented alcohol treatment. Rollnick and Heather (1982), in a frequently cited paper, suggested that many individuals beginning abstinence-oriented alcohol treatment do not view abstinence as a favorable outcome. Yet the

procedures and strategies emphasized in treatment have abstinence as the goal or desired treatment outcome, while any use of alcohol is considered a negative treatment outcome. Individuals with an unfavorable view of abstinence are likely to be perceived by treatment staff as being unmotivated and resistant, and treatment becomes jeopardized. Rollnick and Heather (1982) argued that it becomes imperative to negotiate a treatment outcome that is acceptable (positive outcome expectancy) to such individuals.

Bandura (1978) later clarified the relationship between efficacy and outcome expectations, suggesting that while outcome expectations often are dependent upon efficacy expectations, in some circumstances behavior is best predicted by joint consideration of both expectancies. He used the matrix in Figure 1 to explain this. For example, as the efficacy expectations of a snake phobic individual increase (due to some therapeutic intervention), the individual is less likely to exhibit anxious behavior (3) and more likely to initiate successful approach behavior (1), motivated by the expected positive outcomes produced by his or her own snake-handling skills or the skills of others that he or she observes. In contrast, the individual who begins treatment with high efficacy expectations and expects to produce a positive outcome, but who does not obtain it (2), intensifies his or her effort to produce that outcome. However, if a positive outcome cannot be obtained and negative outcomes are then expected, the individual either tries to change the environmental contingencies or leaves that environment and applies his or her efficacious behavior elsewhere. This might be an individual who believes at the outset of treatment that he or she can firmly hold a snake, yet continues to experience extreme fear. The individual tries to either negotiate a different form of treatment, or leaves to receive treatment elsewhere. Similarly, as applied to alcohol treatment, some individuals may begin alcohol treatment fairly confident that they can fight the urge to drink, yet view total abstinence as an unfavorable outcome. However, they receive a treatment that emphasizes total abstinence as the only favorable outcome, and are taught strategies to attain that outcome. These individuals also

		Outcome Expectations	
		+	−
Efficacy Expectations	+	(1) Success	(2) High Effort, alter contingencies, leave environment
	−	(3) Depression (Anxiety)	(4) Apathy

Figure 1. Behavior as a function of efficacy and outcome expectations (adapted from Bandura, 1978).

would be likely to either negotiate a different form of treatment, or leave to receive services elsewhere. Finally, the individual who has low self-efficacy and expects negative outcomes exhibits apathetic behavior (4) if the individual's efforts or those of others fail to produce positive outcomes. This might be an individual who experiences strong fear and simply gives up even trying to learn how to handle a snake.

The key point in the above analysis is that behavior change is a joint function of efficacy and outcome expectations. For an intervention to be effective, both expectations must be assessed prior to treatment.

Criticisms of Self-Efficacy Theory

The concept of self-efficacy has been challenged on both theoretical and empirical grounds. Eastman and Marzillier (1984), for example, questioned whether efficacy expectations can be unambiguously differentiated from outcome expectations. They also argued that it is unclear what exactly is being measured in empirical studies of self-efficacy,

suggesting that subjects may actually be rating the probability of performing a future behavior rather than rating their own perceived self-efficacy. Biglan (1987) similarly argued that ratings of self-efficacy might simply be forms of verbal behavior in which people predict other overt target behavior, such as handling a snake. He acknowledged that the verbal behavior and the overt behavior are correlated. However, he argued that both are a product of environmental events, rather than self-efficacy mediating the target behavior. Bandura (1984) has acknowledged that "other mechanisms" play a significant role in behavior. However, he has nevertheless maintained that perceptions of self-efficacy are more than simply predictors of behavior, and indeed contribute a significant degree to the performance of behaviors.

Empirical Evidence Supporting Self-Efficacy Theory

Bandura and his colleagues, as well as others, have produced a large body of research that supports a close relationship between efficacy expectations and a wide variety of behaviors (see Bandura, 1986, 1984; Bandura, Adams, Hardy, & Howells, 1980; Kazdin, 1980). In a recent study by Ozer and Bandura (1990), for example, women enrolled in an ongoing self-defense program were trained to display control during sexually coercive and assaultive situations. Using a mastery modeling program, which included performance mastery experiences, modeling of effective coping strategies for variable circumstances, physiological indicators of capacity, and repeated verification of personal coping skills, participants significantly enhanced perceived coping self-efficacy. Mastery modeling also increased a sense of efficacy to control negative and intrusive thinking. Most important, these self-efficacy changes were accompanied by a decrease in avoidance behaviors and an increase in activities such as walking, jogging, travel in a city, and use of public transportation.

There is evidence that efficacy judgments about one's ability to refrain from using alcohol and drugs are predictive of subsequent drinking behavior and drug use among alcoholics and substance abusers following treatment (Condra, 1982; Rist & Watzl, 1983; Stiemerling, 1983). Burling, Reilly, Moltzen, and Ziff (1989), for example, interviewed 81 male substance abusers about their drug use approximately 6 months following their discharge from a residential treatment at a Veterans Administration medical center. The treatment program utilized a modified therapeutic community environment, and included behavioral and cognitive-behavioral procedures to improve social and problem-solving skills, didactic classes, and group therapy. Self-efficacy was measured at intake, during the course of treatment, and at the time of the follow-up assessment using the Situational Confidence Questionnaire, or the SCQ (Annis, 1982b), an instrument that requires the respondent to rate their confidence (0% to 100%) on their ability to avoid relapse in 100 "high-risk" situations. The results of the study revealed that individuals with lower intake SCQ ratings were more likely to remain in treatment for a longer period. Also, those with a low number of no-confidence ratings (0%) tended to leave treatment under negative circumstances. Those who were abstinent from any drug use during a 6-month follow-up period were more likely to start inpatient treatment with lower levels of self-efficacy. While abstainers as a group had a higher mean self-efficacy ratings than relapsers at the time of discharge, this difference was not statistically significant. However, abstainers displayed significantly greater positive change in self-efficacy ratings between intake and discharge. Furthermore, at the time of the 6-month follow-up, their mean self-efficacy rating was significantly higher than the mean rating of relapsers.

More recently, Rychtarik et al. (1992) conducted multiple follow-up interviews with 78 male subjects diagnosed with alcohol dependence who had received 28 days of inpatient treatment at a Veterans Administration medical center. The treatment program utilized cognitive-behavioral procedures to avoid relapse, including self-management and assertiveness training, individual behavior therapy, leisure skills training, and vocational counseling.

Aftercare treatment also was provided. The investigators used the Confidence Questionnaire, or the CQ (Condiotte & Lichtenstein, 1981) to measure subjects' perceived self-efficacy to resist the urge to drink. The SQ was administered at intake, discharge, and each of the follow-up interviews. Subjects were classified as either abstinent or relapsed (more than 2 days of reported drinking) at 6 months and 12 months following treatment. At 6 months posttreatment, the self-efficacy rating obtained at intake was the only variable that correlated significantly with relapse status, with higher levels of self-efficacy associated with abstinence. Relapse status was not associated with past drinking behavior, demographic variables, and discharge efficacy ratings. Similar results were obtained at 12 months posttreatment, although the relationship between self-efficacy ratings and relapse status was not as strong. The investigators concluded that perceived self-efficacy at the time of admission for treatment may delay relapse, but might not prevent it from eventually occurring.

Effects of Efficacy and Outcome
Expectancies on Behavior

Finally, a few investigators have addressed the question of whether efficacy and outcome expectancies act jointly in their effect on behavior (Davis & Yates, 1982; Lee, 1984a). For example, Lee (1984b) presented college students with a hierarchy of snake-handling tasks, ranging from looking at a snake to actually holding it in one's lap. Subjects rated their efficacy to perform each task and the outcome associated with the task, and then were asked to perform the tasks. The number of snake-handling tasks successfully performed was more highly correlated with total self-efficacy scores than with total outcome expectancy scores, although both correlation coefficients were statistically significant. However, the combined predictive power of efficacy and outcome expectations was no greater than efficacy expectations alone. Desharnais, Bouillon, and Godin (1986) asked 98 young adults beginning a college physical fitness program to complete measures of outcome and efficacy expectations

regarding the effects of physical exercise and their capability to continue the program through its completion, respectively. While scores on measures of both self-efficacy and outcome expectancies predicted adherence, scores on the self-efficacy measure were a more central determinant of adherence than scores on the measure of outcome expectancies.

Summary

Over the years, cognitive constructs have been incorporated into theories of learning and behavior. Bandura's cognitive-social learning theory has been widely adopted to account for behavior change, including recovery from alcohol abuse. According to this theory, behavior is a joint function of efficacy and outcome expectations, with efficacy expectations being the central determinant of behavior under appropriate environmental contingencies. There is evidence indicating that ratings of efficacy expectations about one's ability to perform behaviors are the best predictors of subsequent performance of those behaviors. A number of investigators have found that self-efficacy ratings to remain abstinent from alcohol and drugs are predictive of subsequent drinking behavior and drug use following treatment.

Research on Relapse Prevention

Over the past several years, controlled studies of RP strategies used to treat problem drinking and substance abuse have been conducted and reported in the literature. In the vast majority of these studies, subjects have been taught one or more cognitive or behavioral strategies for use in high-risk situations that in the past elicited excessive drinking behavior. The underlying assumption in these studies, based upon cognitive-social learning theory, is that repeated success in coping with these high-risk situations without the use of alcohol or other drugs will increase an individual's perceived competence and self-efficacy, with the latter being viewed as critical for long-term abstinence (Rawson et al., 1993).

Early Studies Using Self-Control Strategies

Systematic studies on controlled or moderated drinking conducted in the 1970s that used cognitive-behavioral strategies to reduce problem drinking may be considered as precursors to the more integrated RP strategies that followed. A series of investigations was carried out by William R. Miller and his associates (e.g., Miller, 1978; Miller, Pechacek, & Hamburg, 1981; Miller & Taylor, 1980). In these studies, outpatient subjects (primarily self-referred, with no history of severe alcohol withdrawal or medical complications that would preclude moderate drinking) were administered Behavioral Self-Control Training (BSCT) to help them moderate their problem drinking. BSCT consisted of (a) alcohol education and limit-setting, (b) blood alcohol discrimination training, (c) self-monitoring of consumption, (d) functional analysis of drinking behavior to reduce consumption, (e) training in self-reinforcement when drinking goals were achieved, and (f) training in alternative coping skills (Carey & Maisto, 1985; Miller et al., 1992). For example, Miller (1978) provided BSCT, aversive conditioning, and BCST plus aversive conditioning to groups of self- and court-referred individuals. While all three groups displayed significant improvement in drinking behavior at both 3- and 12-month follow-up assessments, there were no group differences. Several of the court-referred subjects were demonstrating "controlled drinking" at the outset of the study, thus introducing a bias into the results. In another study, Miller and Taylor (1980) administered BSCT plus relaxation training either in a group format or individually. Both treatment groups (individual vs. group format) demonstrated reduced alcohol consumption at the end of the 10-week training, with no statistically significant difference between the groups. The subjects in the BSCT group did show greater improvement on other outcome measures than did the individual BSCT subjects. However, Miller and Taylor themselves conducted the BSCT group, while a paraprofessional trained by the investigators

conducted the individual sessions, thus introducing a potential confounding factor into the study. In addition, subjects were not randomly assigned in this study.

Miller et al. (1992) described the long-term clinical outcomes (3.5 to 8 years posttreatment) of moderately impaired and alcohol-dependent individuals who had received outpatient BSCT as part of four separate studies. They found that 14% of those who sought treatment with a goal of controlled drinking were able to maintain asymptomatic drinking, 23% remained abstinent, 22% were rated as improved but still showing signs of alcohol abuse or dependence, 35% were unchanged or deteriorated, and 5% had died. The investigators stated that it was not possible to conclude whether BSCT was better than no-treatment or abstinence-oriented treatment, because all subjects in the four studies had received BSCT.

Other forms of self-control training to reduce problem drinking have been reported (e.g., Alden, 1978; Baker, Udin, & Vogler, 1975). For example, Caddy and Lovibond (1976) administered self-control training, aversive conditioning, and aversive plus self-control training to 60 male and female alcoholics. At both 6- and 12-month follow-up, the combined treatment group displayed significantly more improvement than the single treatment groups. However, treatment for the combined group took longer, thus confounding type of treatment with length of treatment. In addition, approximately 35% of all subjects were lost to attrition.

Carey and Maisto (1985) reviewed many of these early studies using self-control procedures, including those of Miller and his associates, and concluded that no self-control technique or combination of techniques demonstrated superiority in reducing alcohol problems. They also stated that, because of some of the methodological problems in these studies, "it is difficult to say whether the self-control techniques themselves are effective at all in treating problem drinking" (Carey & Maisto, 1985, p. 242).

<u>Recent Studies Utilizing Relapse Prevention Strategies</u>

More recent studies of RP and related strategies have utilized improved methodology (e.g., the use of control groups, random assignment of subjects), allowing for more unbiased comparisons of these methods to other treatment interventions. It is noteworthy that in many of these studies, a variety of treatment outcomes was assessed, providing a broader assessment of treatment efficacy. Thus, abstinence was not the only measure of treatment outcome.

In some studies, RP strategies have produced at best inconsistent positive treatment outcomes. For example, Monti et al. (1990) randomly assigned inpatient alcoholics either to communication skills training (with and without family involvement) or to mood management training. While treatment condition had no statistically significant effects on whether subjects relapsed during a 6-month follow-up period, how soon after discharge from inpatient treatment they relapsed, or the number of abstinent days during a 6-month follow-up period, those subjects assigned to social skills training consumed less alcohol on drinking days (the days that they did drink) during the follow-up period than subjects assigned to mood management training. Sjoberg and Samsonowitz (1985) randomly assigned outpatient alcoholics seeking treatment either to a coping skills treatment condition or to a more traditional psychodynamic treatment condition. There was no difference between groups on the number of subsequent relapses or the use of coping techniques. However, the frequency of reported use of coping techniques (e.g., diverting attention away from tempting thoughts, seeking support for sticking to the decision to give up or reduce drinking) was negatively associated with number of relapse episodes for subjects in both groups.

Finally, in a study by Ito et al. (1988) that involved the use of a multidimensional relapse prevention program, 39 males receiving inpatient treatment for alcoholism at a Veterans Administration hospital who volunteered to participate in the study and met certain criteria (e.g., no organic brain dysfunction, an absence of a primary drug dependence

diagnosis) were assigned either to RP or interpersonal process (IP) aftercare groups. Three cotherapy teams each conducted both types of aftercare treatment, for a total of six aftercare groups that lasted eight sessions. All subjects were then assigned to regular aftercare. Because of clinical and staffing needs, treatment assignment was not truly random. However, patient characteristics did not determine group assignment, nor were the participants allowed to self-select the procedure to which they were assigned. In the RP condition, patients were taught a variety of RP strategies, such as coping with urges to drink, assertiveness, what to do if one "slips," and challenging self-defeating thinking. In the IP condition, patients focused on underlying conflicts leading to drinking and other maladaptive behaviors. The investigators found no statistically significant differences between the treatment groups on measures of drinking, aftercare attendance, or change process measures (temptation, self-efficacy, cognitive coping, and behavioral coping) at a 6-month follow-up. There were some short-term gains for patients in the RP groups: The mean score on a temptation to drink measure declined from pretreatment to posttreatment. In addition, the mean score on a self-efficacy measure (to resist drinking) increased during the same period of time for these same patients. However, there were no statistically significant changes on either measure from posttreatment to 6-month follow-up for either of the two treatment groups. Among other conclusions, the investigators stated that the RP treatment as implemented in this study may have added little to an already comprehensive treatment program, and that an inadequate follow-up period, along with insufficient statistical power, may have precluded an adequate test of the effects of RP strategies. Interestingly, in a follow-up report to this study, Ito and Donovan (1990) reported that pretreatment chronicity of drinking problems was associated with poor treatment outcome, while increased aftercare attendance and the use of "cognitive coping" strategies were associated with positive treatment outcomes for subjects in both treatment groups.

In other studies, various behavioral and cognitive-behavioral interventions that fit under the umbrella of RP procedures have been more successful. In a recent study, Monti et al. (1993) found that inpatient alcoholics at a Veterans Administration hospital who received standard treatment that was supplemented with coping skills training combined with alcohol cue exposure (CET subjects) did not differ from inpatients who received only the standard treatment (Control subjects) on measures of drinking days, amount of alcohol consumed, and total days of abstinence during the first three months following treatment. However, for the fourth- through sixth-month period following treatment, CET subjects drank significantly less and had more abstinent days than did control subjects. Eriksen et al. (1986) randomly assigned alcoholics who had been hospitalized for 8 weeks in a long-term inpatient treatment program to either eight weekly 90-minute sessions of social skills training group (SSTG, e.g., behavioral rehearsal, feedback, and role-playing to improve and increase social skills and assertiveness), or to a control group (CG) that participated in an existing weekly discussion group. During the year following discharge from the inpatient facility, SSTG subjects had more sober days than CG subjects (means of 281 vs. 116, respectively), more employed working days (223 vs. 104), a longer period of initial abstinence immediately following discharge (51.6 days vs. 8.3 days), and consumed less alcohol on a weekly basis (6.5 drinks vs. 10.5 drinks). On each day that subjects drank, however, SSTG subjects drank more alcohol than CG subjects (4 drinks vs. 2 drinks). The investigators stated that the overall amount of alcohol consumed by SSTG subjects was well within the socially acceptable levels of alcohol consumption by drinkers in Norway, where the study was conducted.

In another study, Annis (1988) randomly assigned individuals reporting moderate alcohol abuse either to outpatient relapse prevention treatment or to traditional outpatient counseling. Relapse prevention treatment consisted of two phases, the first emphasizing strategies to initiate behavior change (e.g., avoidance of high-risk situations, a directive role on the part of the therapist, the use of alcohol-sensitizing drugs as needed), and the second

concentrating on strategies for long-term maintenance (e.g., graduated exposure to high-risk situations, homework assignments that promote the attribution of success to the client). All subjects completed the Inventory of Drinking Situations, or IDS (Annis, 1982a), a measure of drinking for eight categories of high-risk relapse situations (e.g., unpleasant emotions, conflict with others). According to their pattern of responding on the IDS, subjects were categorized as either "generalized" drinkers, that is, drinking was unrelated to the eight high-risk categories, or "differentiated" drinkers, that is, high consumption of alcohol occurred in specific situations and not in others. At a 6-month follow-up assessment, there was no difference between treatment groups in the typical daily quantity of alcohol consumed for generalized drinkers. However, the typical daily quantity of alcohol consumed by differentiated drinkers who received relapse prevention training was significantly less than those differentiated drinkers who received traditional outpatient counseling. Annis (1988) concluded that relapse prevention procedures may be the superior treatment for moderate abusers of alcohol with well-differentiated drinking patterns.

The findings obtained by Annis (1988) suggest that treatment outcomes may be a function of the interaction between subject characteristics and specific RP strategies. Some investigators have examined whether specific treatment strategies can be matched to specific types of clients (Rohsenow et al., 1991). For example, Cooney, Kadden, Litt, and Getter (1991) reported 2-year outcomes on patients recruited from an inpatient alcoholism treatment program who were randomly assigned either to a coping skills or an interactional therapy aftercare group. It was hypothesized that patients with more sociopathy, psychopathology, and neurological impairment would respond more positively to the methods taught in the coping skills group, including strategies such as self-instruction to delay drinking, and imagining the negative consequences of drinking. Higher functioning patients were hypothesized to profit more from the insight and interpersonal experiences available in the interactional therapy. There were no differences between treatment groups for the number of

heavy drinking days at 6-, 12-, and 24-month follow-up assessments. However, consistent with their prediction, the investigators found that subjects rated higher on measures of sociopathy and overall psychopathology who received coping skills training took longer to relapse, as did higher functioning patients assigned to interactional therapy. Contrary to expectations, neurologically impaired subjects who received interactional therapy took longer to relapse than did neurologically patients who participated in the coping skills training group. The investigators stated that the interaction or match between patient type (e.g., high sociopathy) and treatment modality was both statistically and clinically significant: "For example, using sociopathy as a matching variable, mismatched subjects relapsed sooner and had a 2-year abstinence rate of approximately 25% compared with an approximate 45% abstinence rate for matched subjects" (Cooney et al., 1991, p. 601).

Summary

Early studies using behavioral and cognitive-behavioral methods based on or consistent with a relapse prevention model of alcohol treatment had various methodological problems, and conclusions regarding their efficacy were difficult to draw. Later studies were more methodologically sound, but with mixed outcomes. In some studies, the use of RP treatment strategies were not demonstrated to be more effective than more traditional approaches to alcohol treatment. In other studies, the use of specific strategies, such as social skills and coping skills training, were associated with clinically significant positive outcomes, though not necessarily abstinence. The investigation of various RP strategies has identified additional factors (e.g., patient-matching) that must be considered in order for specific treatment strategies to be successful.

Alcohol and Expectancies

While the self-efficacy expectancies to resist using alcohol are hypothesized to play a significant role in whether alcoholics relapse following treatment, the outcome expectancies associated with drinking alcohol also are considered an important factor. Consistent with a cognitive-social learning theory, drinking alcohol is like any other behavior in that there are outcome expectancies that are anticipated or expected when one engages in this behavior. Marlatt (1985a) described a variety of outcome expectancies associated with alcohol (or drug) use, including physical effects (e.g., sensations and feelings), psychological effects (e.g., altered emotions and cognitions), and behavioral effects (e.g., changes in specific overt behaviors). Marlatt (1985a) noted that any expectancy, including alcohol outcome expectancies, has both a cognitive or informational component, and a motivational or incentive component (Bolles, 1972). The informational component is thought to be associated with what an individual knows will occur when engaging in a behavior. The incentive component of expectancy is associated with how desirable/reinforcing or undesirable/aversive that behavior is, thus providing the impetus to either engage in or inhibit the behavior, respectively. As applied to drinking alcohol, this could refer to the expectancy of sexual arousal (informational component), which may be seen as either desirable or aversive (incentive component), with the latter then determining whether or not drinking alcohol occurs.

Marlatt (1985a) used the above informational/incentive analysis of alcohol outcome expectancies to account for the concept of craving, which he defined as "a subjective state that is mediated by the incentive properties of positive outcome expectancies" (Marlatt, 1985a, p. 138). The phenomenon of craving is considered to be one of the primary precipitants for relapse following alcohol treatment (Donovan & Chaney, 1985). Craving has been described as both a conditioned response to drug withdrawal (Ludwig & Wikler, 1974; Ludwig, Wikler,

& Stark, 1974), and a conditioned appetitive response to the central nervous effects of drugs and alcohol (Stewart, de Wit, & Eikelboom, 1984). A full discussion of the concept of craving is beyond the scope of this literature review. The key point is that classical conditioning processes have been used to account for the acquisition of alcohol outcome expectancies such that neutral stimuli (e.g., a can of beer, a bar, or drinking friends) can act as conditioned stimuli and elicit positive outcome expectancies associated with alcohol effects (Marlatt, 1985a).

Alcohol outcome expectancies also can be acquired through other means, including the process of observing others. MacAndrew and Edgerton (1969) presented anthropological evidence showing that alcohol-induced changes in behavior vary across cultures, and within the same culture, across time periods: "People learn about drunkenness what their society 'knows' about drunkenness" (MacAndrew & Edgerton, 1969, p. 88). An example of how alcohol expectancies are acquired vicariously is provided by Marshall (1983). He observed young males on the Turk Islands, who had never consumed alcohol, behaving in an intoxicated and "crazy" manner after they had sniffed an empty liquor bottle. These boys believed or expected that simply sniffing the bottle was sufficient to become intoxicated. Furthermore, they previously had learned that the outcome associated with intoxication was acting crazy. This was a behavior they apparently had observed among the older males in their social group, and it was a behavior or state that they considered desirable.

Alcohol Expectancies as Cognitive Sets

The above example demonstrates another related but separate meaning of the term alcohol expectancy that often is confused with outcome expectancy. Suppose an island boy is motivated to become intoxicated because he has learned and expects that the consequence of intoxication is "acting crazy," an apparently desirable event. This is the positive outcome

expectancy already described (incentive). Next, the boy sniffs an empty bottle of alcohol

expecting to become intoxicated (thinking fumes are sufficient to produce intoxication). Leigh

(1989c) has referred to this type of expectancy as cognitive set, with expectancy essentially

being equivalent to a conditioned stimulus. The question is whether the expectation of

becoming intoxicated after sniffing the bottle is sufficient to produce changes in behavior, and

whether these changes correspond to the outcome expectancy, that is, acting crazy. In other

words, does the mere expectation of intoxication (cognitive set) produce changes in behavior,

and do these changes correspond to the outcome expectancies associated with intoxication that

have been acquired either through direct experience, vicariously, or through some other

means such as cultural beliefs? In the example provided by Marshall (1983), the expectancy

that sniffing the bottle would produce intoxication was sufficient to produce changes in

behavior, which in this case corresponded to the outcome expectancies ("acting crazy") that

had been learned vicariously.

The fact that cognitive set could produce changes in behavior that corresponded to

learned outcome expectancies was an important finding established by MacAndrew and

Edgerton (1969), who concluded that the pharmacological effects of alcohol alone cannot

account for behavior change associated with alcohol ingestion. Their findings indicated that

the belief or expectancy that one has ingested alcohol and the actual pharmacological effects

of alcohol may be independent. Controlled research on this issue began in the early 1970s

with the introduction of the two-by-two "balanced placebo" design (expect alcohol-expect

placebo X receive alcohol-receive placebo), which allows an investigator to parcel out the

independent expectancy and pharmacological effects of alcohol. Marlatt et al. (1973) were

among the first to use this design, investigating whether the "uncontrolled" drinking of

alcoholics was a function of alcohol's expected effects, its pharmacological effects, or some

combination of both. They compared male alcoholics with a matched control group of male

social drinkers. Subjects were given either vodka and tonic, or tonic alone (receive alcohol-

receive placebo), and were asked to compare either three brands of vodka mixed with tonic, or three brands of plain tonic (expect alcohol-expect placebo). Subjects in all four conditions were allowed to drink on an ad-lib basis while rating the taste of the drink being consumed. Thus, the dependent variable was the amount consumed. The investigators found that the only factor associated with total amount consumed, for both alcoholics and social drinkers, was the expectancy factor, that is, expect alcohol. They argued that this finding "casts a serious shadow of doubt over the validity of the loss of control drinking hypothesis advanced by advocates of the disease model of alcoholism" (Marlatt, 1985a, p. 150).

Research Using the Balanced-Placebo Design

A number of balanced-placebo design studies have been conducted over the past 15 years investigating the role of alcohol and alcohol expectancy on a variety of behaviors, including sexual arousal, aggression, memory and motor performance, emotions, and alcohol consumption (Hull & Bond, 1986). In a recent study, for example, Wigmore and Hinson (1991) extended the basic balanced-placebo design to include the factor of setting, so that in addition to the alcohol (receive alcohol-receive placebo) and expectancy (expect alcohol-expect placebo) factors, there was a setting factor (bar-laboratory). The dependent variable was the amount of beverage consumed. The investigators obtained a main effect for both expectancy and setting, plus an interaction between these two factors: subjects expecting alcohol consumed more alcohol than those not expecting alcohol only in the laboratory setting. In the bar room, subjects in all conditions consumed roughly the same amounts of beverage.

Hull and Bond (1986) conducted a meta-analysis of 36 balanced-placebo experiments to investigate the independent and combined effects of alcohol and alcohol expectancy on a variety of behaviors. The investigators also used the meta-analysis to test which of two theoretical models best accounts for the effects of alcohol and expectancy on behavior. Citing Marlatt and Rohsenow (1980), the authors argued that a conditioning analysis predicts that

alcohol expectancy (a placebo beverage) serves as a conditioned stimulus or cue, and will elicit a conditioned state of intoxication. Thus, alcohol expectancy will have the same broad-based effects on behavior as alcohol itself (e.g., slurred speech, lack of social inhibition). In contrast, an attributional analysis predicts that only "illicit" behaviors would be affected by alcohol expectancy, because ingestion of alcohol is considered by consumers of alcohol as an excuse to engage in what is otherwise considered inappropriate behavior. Other "nonsocial" behaviors, such as physiological arousal or motor performance, would be unaffected by alcohol expectancy, but may be affected by alcohol.

Using mean effect sizes to compare and summarize the main effects of alcohol consumption (receive alcohol-receive placebo) and alcohol expectancy (expect alcohol-expect placebo), Hull and Bond (1986) found that, across most studies, the "nonsocial" behaviors of memory and information processing, physical sensations, self-reported mood, physiological arousal, and motor performance were affected by alcohol consumption, but not by the expectancy of receiving alcohol. In contrast, alcohol expectancy affected the "illicit" behaviors of sexual arousal and total alcohol consumption, while the actual consumption of alcohol did not affect these illicit behaviors. Neither alcohol expectancy nor alcohol consumption affected aggression in a consistent manner. Finally, there was only a small number of alcohol X expectancy interactions, and this number was consistent with what would be expected by chance. The authors concluded that the differential effect on behavior of alcohol consumption and alcohol expectancy is best explained by an attributional analysis of expectancy, that is, that the belief or expectancy that one is ingesting alcohol provides an excuse to engage in desired but socially prohibited behaviors.

Summary

Anthropological evidence exists that the mere expectation of ingesting alcohol changes behavior, and that these behaviors correspond to the outcome expectancies associated with

alcohol ingestion that have been learned either through direct experience or by other means such as modelling and observation. Researchers using the balanced-placebo design have provided empirical evidence that behavior will change due to the expectancy effects of alcohol. There also is evidence to suggest that only specific "illicit" behaviors are affected by alcohol expectancy, that these behaviors generally are unaffected by actual alcohol consumption, and that this differential effect of alcohol expectancy is best explained by an attributional analysis. This interpretation has interesting implications, for it suggests a potential mechanism to account for the findings of MacAndrew and Edgerton (1969) that a wide variety of outcomes is associated with alcohol use, and that these outcomes go beyond pharmacological action. Specifically, an almost limitless number of culture-specific yet highly individualized "illicit" or otherwise socially inappropriate behaviors (e.g., acting silly, or being sarcastic) could be attributed to alcohol, with these behaviors then generally expected to occur following subsequent alcohol use.

Assessing Alcohol Outcome Expectancies

Anthropological and laboratory evidence that the effects of alcohol are at least partly due to the expectancies that individuals associate with alcohol has led a number of researchers to investigate whether there are common outcome expectancies that people hold about alcohol (Leigh, 1989c). Beginning in the late 1970s and early 1980s, questionnaires were developed to measure alcohol expectancies and study their relationship with drinking behavior. These include the Alcohol Beliefs Scale, or ABS (Connors & Maisto, 1988; Connors, O'Farrell, Cutter, & Thompson, 1987), the Alcohol Expectancy Questionnaire, or AEQ (Brown, Goldman, Inn, & Anderson, 1980), the Effects of Drinking Alcohol scale, or EDA (Critchlow, 1987; Leigh, 1987), and the Alcohol Effects Scale, or AES (Southwick, Steele, Marlatt, & Lindell, 1981).

Leigh (1989a) described how three of these scales (the AEQ, EDA, and AES) were similarly constructed by compiling a large number of alcohol effects, factor analyzing, and then forming individual subscales from those items that loaded together on the individual factors. However, these scales differ on conceptual and methodological lines. The 90 items of the AEQ require subjects to respond "yes" or "no" to a variety of questions about mood beliefs, physiological changes, cultural attitudes, and social effects associated with alcohol consumed in moderate quantities. Furthermore, it included only generalized positive expectancies. According to Brown et al. (1980), "Positive reinforcement effects of moderate consumption were emphasized in this study to provide a link with motivation for drinking" (p. 420). In contrast, the 20 items of the EDA emphasize social behavior, requiring subjects to rate a variety of positive and negative social behaviors on a 5-point scale of likelihood. The AES consists of 37 5-point bipolar semantic differential items (e.g., happy-sad, relaxed-tense) that subjects rate for both moderate drinking, and then again for "too much" drinking, thus yielding a total of 74 items.

The AEQ (Brown et al., 1980) has become the best known and most frequently used of the alcohol expectancy scales (Connors & Maisto, 1988; Leigh, 1989c). Following some preliminary statistical and conceptual analyses of over 200 expectancy items, Brown and her colleagues (Brown et al., 1980; Brown, Christiansen, & Goldman, 1987) administered their final selection of 90 expectancy items to a wide variety of adults with and without a history of drinking in the Detroit metropolitan area, including college students, patients in alcohol treatment programs, and other adults of varying age, sex, and socioeconomic status. Factor analysis yielded the following six independent expectancy factors: (a) Global Positive Changes; (b) Physical and Social Pleasure Enhancement; (c) Sexual Enhancement; (d) Arousal and Aggression; (e) increased Social Assertiveness; and (f) Relaxation and Tension Reduction. The investigators noted that the Sexual Enhancement, Arousal and Aggression, Social Assertiveness, and Relaxation/Tension Reduction factors overlapped with expectancies found

in balanced-placebo design studies, while the factors of Global Positive Changes and Pleasure Enhancement were new to the alcohol literature. A more thorough description of the psychometric properties of the AEQ can be found elsewhere (see Brown et al., 1980; Brown et al., 1987). Following its initial development, the AEQ was used in a number of studies, including investigations of the relationship between alcohol outcome expectancies and different patterns of alcohol use, as well as in studies on how different types of alcohol expectancies might influence the development and maintenance of problem drinking (Goldman et al., 1991).

Measuring the Alcohol Outcome Expectancies
of Adolescents and Children

Variants of the AEQ have been developed for use with adolescents and children, and have been used to document the formation of specific alcohol outcome expectancies. The AEQ was adapted for use with adolescents ranging in age from 12 to 19 to include negative aspects of alcohol consumption, and to accommodate adolescents with little or no drinking experience (Christiansen & Goldman, 1983; Christiansen, Goldman, & Inn, 1982). While factor analysis of this adapted version (AEQ-A) produced a slightly different factor structure than the AEQ (there are seven factors on the AEQ-A, five of which overlap with the AEQ), there is an obvious overlap in the content areas assessed by these questionnaires (Brown et al., 1987). However, the major finding in the development of the AEQ-A was that adolescents with no history of drinking alcohol possessed well-developed alcohol expectancies (Christiansen et al., 1982), thus providing empirical evidence that specific alcohol expectancies are acquired without direct experience with alcohol.

Miller, Smith, and Goldman (1990) used a variant of the AEQ-A to investigate the alcohol expectancies of preadolescent children. Their intent was to try to assess the development of alcohol expectancies independently of cognitive maturation and reading level.

Briefly, these investigators presented puppets to 114 children in the first through fifth grade. The children were told to pretend that the puppets had just ingested some whiskey or beer. The children were asked to answer some questions about what they think happens to the puppet after it drinks whiskey or beer. Items from the CARE (Children's Alcohol-Related Expectancies) were then read aloud to the children, and they circled "yes" or "no" on a separate sheet of paper. The CARE is a simplified version of the AEQ-A that assesses the same seven expectancy factors. Psychometric analyses indicated satisfactory reliability and validity for the following factors: Global Positive Changes, Social Behavior, Sexual Enhancement, Arousal and Aggression, and Relaxation and Tension Reduction (see Miller et al., 1990 for more psychometric information on the CARE). It was found that older children indicated more positive expectancies than younger ones, and that there was a marked increase in positive expectancy item endorsement from second to third grade, and from third to fourth grade. Parents of the children in this study had been asked to complete a questionnaire on frequency of drinking, amount typically consumed, age that they first used alcohol, problems caused by drinking, and so on. The drinking behavior of both mothers and fathers was not associated with CARE scores. However, the children of fathers who reported no family history of alcoholism tended to report more positive alcohol expectancies. The investigators observed that the significant increase in positive alcohol expectancy endorsement in the third and fourth grades parallels the increase in receptive and expressive communication skills for that age group, suggesting that "increased expectancy endorsement may reflect, in part, a greater receptivity to a wide range of societal information about alcohol" (Miller et al., 1990, p. 348). They also stated that the results provided preliminary evidence that the precursors for later alcohol use and abuse may form at this developmental stage.

Alcohol Outcome Expectancies
and Drinking Behavior

Alcohol expectancy measures have been used in a number of studies investigating the

relationship between alcohol expectancies and drinking behavior. A body of evidence has

been accumulated using the AEQ to indicate that alcohol outcome expectancies differ

according to patterns of alcohol use, and that different types of alcohol expectancies might

influence the development and maintenance of problem drinking (Goldman et al., 1991). For

example, in the development of the AEQ, Brown et al. (1980) found that heavier consumption

of alcohol was associated with the expectancy factors of Sexual Enhancement, and Aggression

and Arousal. Brown and Munson (1987) found that "high-drinking" college students

generated significantly higher scores on the AEQ scales of Global Positive Change, Physical

and Social Pleasure, Social Assertion, and Tension Reduction than did light and moderate

college drinkers. Brown, Goldman, and Christiansen (1985) administered the AEQ to groups

of hospital patients, alcoholics in treatment, and college students. They found that inpatient

and outpatient alcoholics, medical patients who drank excessively, and heavy drinking college

students produced significantly higher alcohol expectancy scores on the AEQ scales of Social

and Physical Pleasure Enhancement, Social Assertion, and Relaxation and Tension Reduction

than did moderate to occasional drinking college students and medical patients.

In a study that investigated the relationship between alcohol expectancies and alcohol

treatment outcome, Brown (1985) administered the AEQ to 42 males during their inpatient

treatment at a Veterans Administration medical center. These patients were then interviewed

one year after treatment (81% participated in the follow-up assessment). Brown correlated the

six AEQ scale scores and the total AEQ score with measures of abstinence for the year

following treatment (subjects reporting any drinking were classified as nonabstinent),

nondrinking/nonproblem drinking days for the same year, and the number of weeks of

participation in Alcoholics Anonymous and aftercare meetings (posttreatment services). She

found significant negative correlations between abstinence and the total AEQ score, plus all AEQ scale scores except for Arousal and Aggression. Nondrinking/nonproblem drinking days were significantly and negatively associated with scores on the Sexual Enhancement, Social and Physical Pleasure Enhancement, and Relaxation and Tension Reduction scales. Thus, poor treatment outcome was associated with the endorsement of a greater number of alcohol expectancy items. The Relaxation and Tension Reduction expectancy factor had the strongest negative correlation with abstinence and nondrinking/nonproblem drinking days. Participation in posttreatment services did not correlate with any of the AEQ scores.

In summarizing research on various populations administered the AEQ, Goldman et al. (1991) stated that measures of AEQ factors have contributed to the prediction of different drinking patterns. Specifically:

> The expectancy of social enhancement is consistently predictive of more frequent drinking in adolescents and adult samples, whereas more specific and pharmacologically linked effects (e.g., tension reduction, relaxation) are associated with problem drinking and alcohol dependency. (Goldman et al., 1991, p. 140)

In addition, while alcohol expectancies may exist beyond those measured by the AEQ, several of the factors from the AEQ (e.g., Physical and Social Pleasure, Relaxation and Tension Reduction) are quite similar to factors extracted on other alcohol expectancy measures, and this overlap "contributes to the emerging picture of expectany structure" (Goldman et al., 1991, p. 141).

Several other measures of alcohol expectancy also have been used to identify specific alcohol outcome expectancies associated with drinking behavior. Farber et al. (1980) factor analyzed responses from a "Reasons for Drinking" questionnaire administered to a sample of 2,496 subjects and extracted positive (social) and negative (escape) reinforcement factors. Categorizing subjects as either positive or negative reinforcement drinkers, they found that negative reinforcement drinkers scored significantly higher on all indices of alcohol consumption. Among a sample of 133 alcoholics administered the same questionnaire, 93%

were classified as negative reinforcement drinkers. Southwick et al. (1981) administered the Alcohol Effects Scale to college students and found that positive alcohol expectancies were more associated with moderate drinking, while negative alcohol expectancies were more frequently endorsed for heavy drinking. Eastman and Norris (1982) asked alcoholics attending an alcoholism information center to complete a self-identity measure (actual self vs. ideal self) that was then used to rate the consequences of abstinence, mild drinking, and heavy drinking as either positive or negative. They found that alcoholics who maintained positive expectancies of "drinking" and "drunkenness" during treatment had a higher probability of relapse than those who did not maintain such expectancies. Heather et al. (1982) found differences in the posttreatment drinking status of individuals receiving inpatient alcohol treatment who believed in the "first drink, then drunk" dictum (one drink inevitably leads to out-of-control drinking) and those who either had never heard of it or did not believe in it. Of the 26 patients who believed in the dictum, only two (8%) engaged in "harmfree" drinking (moderate drinking with no evidence of drink-related problems) following treatment. The rest either relapsed to pretreatment levels of drinking or remained essentially abstinent. Of the 15 patients who either had never heard of the dictum or did not believe in it, 5 (33%) engaged in "harmfree" drinking after treatment, with the rest either abstaining or relapsing.

Finally, Connors, O'Farrell, and Pelcovits (1988) interviewed 34 male alcoholics 24 months following inpatient alcohol treatment at a Veterans Administration hospital. Twenty-two of the subjects had relapsed, with 9 reporting two relapses, for a total of 31 relapse episodes. The subjects were asked the following questions about their relapse episodes: (1) What did you expect that drinking in the relapse situation would accomplish, and (2) Did the drinking achieve this (these) expectation(s). A total of 52 alcohol outcome expectancies was described for the 31 relapse episodes. According to the investigators, 48% of the expectancies had to do with alcohol as a means of coping in a social situation; 23% of the expectancies dealt with alcohol as a means of controlling a situation (e.g., buying drinks for

others); the remaining expectancies had to do with alcohol as a means of coping with a nonsocial situation (15%) or creating an altered physical state (14%). Most of the alcohol outcome expectancies were judged as being achieved or realized (81%) by using alcohol, ranging from 67% for drinking to gain control of a situation, to 100% for producing an altered physical state.

A Critique of Alcohol Outcome Expectancy Measures

In a series of papers, Leigh (1989a, 1989b, 1989c) reviewed some of the methodological and conceptual problems involved in alcohol expectancy research. She argued that many of the available measures of alcohol expectancy have psychometric problems, never having been subjected to psychometric examination beyond calculations of reliability and correlations with drinking habits to measure construct validity. For example, she described how there is a great deal of overlap in the factor loadings of the individual items on the AEQ, and that most items load significantly on the first general factor of Global Positive Changes (Leigh, 1989b, 1989c). She argued that these overlapping factor loadings undermine the ability of individual scales to measure distinctive aspects of alcohol expectancies, and that the scales may be confounded with one another. In a subsequent paper (Leigh & Stacy, 1991), the claim of the developers of the AEQ that specific expectancy factors are predictive of specific drinking patterns was challenged. In a review of published studies using the AEQ, Leigh and Stacy (1991) concluded that none of the AEQ subscales were consistently predictive of drinking patterns. Leigh (1989c) also argued that higher scores on specific AEQ subscales have been interpreted by some researchers (e.g., Rohsenhow, 1983) as representing a stronger expectancy, when in actuality specific subscale scores reflect the number of items endorsed (specific alcohol effects experienced) rather than the strength or frequency of each of those effects.

Leigh (1989a, 1989c) expressed concerns about alcohol expectancy scales other than the AEQ, including her own Effects of Drinking Alcohol scale, or the EDA (Critchlow, 1987; Leigh, 1987). For example, she argued that the EDA was not designed to be an expectancy scale, but rather was intended to examine specific beliefs about alcohol-related social behaviors, and is thus limited in its assessment of alcohol outcome expectancies relative to other scales. She also questioned the use of bipolar scales on the Alcohol Effects Scale, or AES (Southwick et al., 1981), arguing that alcohol often produces opposite and conflicting effects. However, both effects may nevertheless be associated with alcohol (e.g., feeling happy and sad). The bipolarity of the scales used in the AES (e.g., rating alcohol's effect on a happy-sad continuum) thus makes it impossible to measure discrete outcomes, and may result in an inaccurate picture of alcohol expectancies.

Finally, Leigh (1989c) observed that cognitive-social learning theory holds that individuals drink alcohol expecting to obtain desirable outcomes and/or avoid undesirable ones. Measures of alcohol expectancy such as the AEQ appear to tap into these expectations of reinforcement. However, this appearance is deceptive. The evaluation of expected outcomes can vary across individuals. For example, two people might agree on the probability that a particular alcohol expectancy (e.g., I become lustful when I drink) will occur. However, their evaluation (desirable-undesirable) of that expectancy may differ. Thus, the probability associated with a particular expectancy and the evaluation of that expectancy reflect two very different dimensions, with the evaluation either rarely assessed or confounded with probability. This analysis is consistent with Marlatt's (1985a) description of the cognitive and motivational components of expectancy discussed in an earlier section.

The developers of the AEQ responded to several of Leigh's (1989c) criticisms. Briefly, Goldman et al. (1991) claimed that the individual AEQ subscales were never presented as completely distinct or independent, and that the intercorrelation of subscales represents the "probable relation among alcohol expectancies in the 'real world'" (Goldman

et al., 1991, p. 139). However, the intercorrelation of the subscales does not negate the fact that specific factors of the AEQ consistently have been predictive of different drinking patterns (for a full discussion of this issue and others, as well as Leigh's response, see Goldman et al., 1991, and Leigh & Stacy, 1991, respectively). Goldman et al. (1991) also questioned Leigh's argument that the number of items endorsed on a particular AEQ subscale does not provide a measure of the strength of particular expectancies. Arguing from the perspective of the "spreading activation" memory model (Collins & Loftus, 1975), Goldman et al. (1991) maintained that the more elements associated with a particular concept, the stronger is that concept. Thus, the more subscale items that are endorsed for a particular expectancy factor, the stronger and perhaps the more elaborately defined is the conceptual network represented by that expectancy factor. Finally, Goldman et al. (1991) acknowledged the predictive power of expectancy items for which the probability and desirability (incentive) conponents are distinguished. However, they questioned whether this "mental algebra" approach, that is, the probability and desirability of individual expectancies are multiplied, and the products added together, is "some ultimate standard against which other work must be judged" (Goldman et al., 1991, p. 141). Instead, they view this approach as just one of many theoretical formulations that can be used to investigate alcohol expectancies, and that it remains an empirical question as to which approach is the best.

Summary

A number of instruments have been created to measure the outcome expectancies that individuals with a wide range of drinking behaviors associate with alcohol consumption. There is evidence that specific alcohol expectancies are formed in childhood and adolescence prior to any alcohol use. It has been suggested that these expectancies may be precursors to the development of problem drinking. Alcoholics and heavy drinkers have been shown to have alcohol expectancies that are different from social drinkers. Consistent with the RP

model of alcoholism and alcohol treatment, there is evidence that alcohol expectations may affect drinking patterns following alcohol treatment. However, questions have been raised regarding the conceptual and psychometric properties of some of the instruments used to measure alcohol expectancies. It would appear that the measurement of alcohol expectancies is still largely in the beginning stages, and any conclusions regarding the association of drinking behavior and alcohol outcome expectancies as measured by these instruments must be proffered within the limits of these instruments.

Abstinence Expectancies

While a great deal of research exists on alcohol expectancies, little exists for abstinence expectancies, despite the fact that the goal of almost all alcohol treatment programs in this country is abstinence (Solomon & Annis, 1989; Solomon, personal communication, October, 1990). Some investigators have suggested that the goal of abstinence should be assessed prior to starting treatment to ascertain whether abstinence is a reasonable goal for the patient (Miller, 1989; Rollnick & Heather, 1982; Solomon & Annis, 1989). However, virtually no research exists on the relationship between the expectancies associated with that goal and drinking behavior.

Rollnick and Heather (1982) considered abstinence expectations from a self-efficacy perspective. They noted that most of the research on self-efficacy up to that point in time was with phobics, who come to treatment with favorable outcome expectations associated with treatment, and for whom there is no need to negotiate outcome expectations (e.g., engaging in previously avoided behaviors without anxiety). Such is not the case for abstinence-oriented alcohol treatment, where life-long abstinence may not necessarily be considered a favorable outcome: "The concept of outcome expectation could be essential for understanding the treatment process" (Rollnick & Heather, 1982, p. 245).

Rollnick and Heather (1982) argued that patients may enter abstinence-oriented alcohol treatment with very negative expectancies associated with abstinence. For example, some patients may associate abstinence with social isolation and estrangement from old friends. Furthermore, not all alcoholics believe that one drink will lead to a relapse, or that life-long abstinence is the appropriate solution to their problems. Rollnick and Heather (1982) argued that "it would therefore seem unwise to assume that they have uniform and favourable (abstinence) outcome expectations to begin with" (p. 245, emphasis in original).

A Measure of Abstinence Expectancies

The Outcome Expectancy Questionnaire, or OES (Solomon & Annis, 1989, 1990), is the only instrument found in the literature that was developed to assess expectancies associated with a "change in drinking" (either abstinence or reduced drinking). The OES consists of 34 items that assess both the strength of belief in various outcomes associated with a change in drinking and the evaluation of those outcomes. The use of both strength and evaluation dimensions was derived from the work of Ajzen and Fishbein (1980). An exploratory factor analysis yielded two factors that the authors labelled Cost and Benefit. The test-retest reliability coefficients for cost and benefit scales were $r = 0.48$ and $r = 0.41$, respectively. Correlations of these scales with other measures to assess its validity (e.g., self-efficacy, locus of control, hopelessness), were all less than $r = 0.24$ (Solomon & Annis, 1989).

In a study which assessed its predictive powers, the correlation between OES scores of alcoholics entering inpatient treatment and measures of their posttreatment alcohol consumption was negligible (Solomon & Annis, 1990). The investigators noted that these results supported Bandura's (1977a, 1986) argument that it is efficiacy expectancies rather than outcome expectancies that predict behavior. However, they also observed that pretreatment scores on a self-efficacy measure to resist drinking alcohol in high-risk situations

failed to predict abstinence and frequency of drinking (although the self-efficacy scores did predict average daily alcohol consumption for those subjects that did drink following treatment). Despite the absence of a correlation between change-of-drinking expectancies and outcome expectancy measures of alcohol consumption, the authors concluded that outcome expectancies are important to monitor in the case management of alcholics in order to faciliate successful treatment.

<center>Summary</center>

From the perspective of self-efficacy theory, the outcome expectancies associated with an alcohol treatment goal of life-long abstinence may have adverse consequences for some individuals. Therefore, it has been suggested that the goal of abstinence and the expectancies associated with that goal should be assessed prior to beginning alcohol treatment. Only one instrument exists that measures abstinence expectancies. However, in the only study that utilized this instrument to predict treatment outcome, the correlation between these expectancy scores and scores on a measure of posttreatment alcohol consumption was negligible.

<center>Attitude-Behavior Relations and Alcohol Expectancies</center>

In her critique of alcohol expectancy research, Leigh (1989c) stated that most of the research on alcohol expectancy has drawn little on theory, instead focusing on establishing and demonstrating the relationship between alcohol outcome expectancies and drinking behavior. She argued that efforts need to be directed toward examining how beliefs and drinking behavior are related, and suggested that it might be promising to apply research on attitude-behavior relations to alcohol expectancy. Other investigators have recognized the parallel and converging developments of attitude and expectancy research (Fazio, 1989), and have argued that "the choice of the term _attitude_ or _expectancy_ may merely reflect differing

points of emphasis in various social/cognitive models of behavior" (Goldman et al., 1991, p. 143, emphasis in original).

As an example of how research in attitude-behavior relations might be relevant to alcohol-expectancy research, Leigh (1989c) cited the well-established finding among attitude researchers that individuals vary in the strength of their attitude toward objects or concepts. As applied to alcohol expectancies and consumption, Leigh (1989c) suggested that those who believe most strongly in particular alcohol expectancies are those most likely to drink. Similarly, "expectancies that are more easily retrievable may affect intentions to drink more strongly because . . . readily retrieved instances are viewed as more probable and are relied on more in making judgments" (Leigh, 1989c, p. 370). The problem, according to Leigh, is that current alcohol expectancy questionnaires do not measure the strength, ease of retrievability, or saliency of specific expectancies. Given the likelihood that some alcohol expectancies are more important to an individual than are others, Leigh (1989c) argued that "even such a simple technique as asking respondents to list the first several alcohol effects that come to mind would illuminate the relative importance of beliefs about different effects" (Leigh, 1989c, p. 370).

Attitude-Behavior Relations and the Theory of Reasoned Action

In her American Psychological Association Centennial Feature article on social psychology and the study of attitudes, Alice Eagly (1992) described the progress in theory and research on attitude-behavior relations, particularly the contributions of Martin Fishbein and Icek Ajzen. According to Eagly, the Theory of Reasoned Action (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) is the "seminal model" of attitudes predicated upon the expectancy-value model of behavior (Feather, 1982), the central feature of which is the idea that "attitude toward a behavior is itself a function of the value one assigns to the perceived consequences

of the behavior and the subjective probablities that one attaches to these consequences"
(Eagly, 1992, p. 694).

According to the Theory of Reasoned Action, behavior directed toward a particular
target (object, person, place) is assumed to be a direct function of the intention to perform
that behavior. Behavioral intention, in turn, is a function of attitudes and subjective norms,
which themselves are a function of beliefs about the consequences of the target behavior, and
the expectations of significant others regarding engaging in that behavior, respectively. All
other variables that might affect the target behavior are thought to do so via their impact on
the cognitions or beliefs (or expectancies) that underlie both attitudes and subjective norms
(Liska, 1984). These concepts of behavior, intention, attitudes and beliefs, and subjective
norms are described below.

Behavior

Ajzen and Fishbein (1980) stated that measuring the target behavior (B) requires
careful specification of behavioral criteria or elements. First, it is necessary to distinguish
between specific behaviors and behavioral categories. Behavioral categories (e.g., dieting)
cannot be directly observed. Instead, a behavioral category must be inferred from individual
or multiple actions (e.g., avoiding sweets, skipping lunch) that are specific instances of that
behavioral category (dieting). Thus, the specific actions that represent the behavioral category
"dieting" must first be identified. Second, the target at which a behavior is directed (e.g.,
drinking alcohol as opposed to simply drinking) must be specified. Third, the context in
which behavior occurs must be considered. For example, if the behavior "dieting" is under
investigation, it is necessary to specify the context for measuring that behavior, that is, all
dieting behaviors, versus only dieting behaviors at home. Finally, a behavior or behavioral
category can occur at various times, and so the element of time must be specified. Thus, one
can measure the behavior of "drinking alcohol" in the morning, after work, or in terms of a

larger time-frame such as drinking during the next 2 weeks. The elements of action, target, context, and time all must be considered when specifying criteria for a behavior.

Behavioral Intention

According to Ajzen and Fishbein (1980), the "intention (to perform a behavior) is the immediate determinant of behavior, and when an appropriate measure of intention is obtained it will provide the most accurate prediction of behavior" (p. 41). In order to obtain the most accurate prediction of behavior from the intention to perform that behavior, the measure of behavioral intention must correspond to the behavior being investigated. Thus, a questionnaire item measuring behavioral intention (BI), like measures of behavior or behavioral category, must include the elements of action, target, context, and time (e.g., I intend to travel by airplane to Europe this summer). Furthermore, since intention can change over time, it is important to measure the intention as close in time as possible to the behavior under investigation, since external events can moderate the intention-behavior relation (e.g., the intention to travel to Europe in the summer, moderated by recent terrorist activity).

Attitude, Beliefs, and Subjective Norms

Behavioral intention, in turn, is a linear function of a person's attitude toward the target behavior (A_{act}), plus the person's subjective norm (SN) about that target behavior. For example, a woman might believe that the behavior of giving money to beggars on the street encourages future begging (attitude toward behavior), and her husband may strongly disapprove of such behavior (subjective norm). A_{act} is the sum of the products [b X e], where b is the strength of each <u>behavioral belief</u> about the consequences of behavior, and e is the <u>evaluation of each belief</u> (the term belief, as used in this model, is synonymous with expectancy). Likert-type scales that range from very likely (7) to very unlikely (1), and semantic-differential scales ranging from, say, fascinating (7) to dull (1) are used to measure b

and e, respectively. SN is the sum of the products (nB_i X Mc_i), where nB is the strength of each <u>normative belief</u> that a certain referent (i) expects one to perform the behavior, and Mc_i is the <u>motivation to comply</u> with those referents' expectations. Again, Likert-type scales and semantic differential scales are used to measure nB and Mc_i, respectively.

Questionnaire items are created to measure specific beliefs about behavior. To use the earlier example of attitude toward travelling to Europe, a specific questionnaire item might be "Travelling to Europe will increase my knowledge of history." Only the most <u>salient</u> behavioral and normative beliefs are included in the questionnaire. While a person may have a large number of beliefs about a given target behavior, it has been demonstrated that only a small number (five to nine) actually serve as determinants of a person's attitude (Ajzen & Fishbein, 1980). Typically, pilot studies using a sample from the target population are conducted to identify the most salient behavioral and normative beliefs for subsequent use in a questionnaire that is then administered to another sample from the same population.

<u>Linear Model of Attitude-Behavior Relations</u>

The relationships between behavior, behavioral intention, attitude, beliefs, and subjectives norms can be expressed as a series of equations:

$$A_{act} + SN = BI$$

Through multiple regression, the factors on the left side of the equation are weighted, yielding

$$W_1 A_{act} + W_2 SN = BI$$

More specifically,

$$W_1[\text{Sum of (b X e)}] + W_2[\text{Sum of } (nB_i \text{ X } Mc_i)] = BI$$

Behavior itself is then expressed as an equation:

$$BI + \text{error variance} = B$$

Thus, any behavior (e.g., dieting, travelling to Europe, or drinking alcohol) can be traced back to one's beliefs or expectancies about the consequences of that behavior.

<u>Evidence Supporting the Theory of Reasoned Action</u>

There is considerable evidence in support of the theory of reasoned action, in both experimental and naturalistic settings. In several meta-analyses of this research literature, it has been shown that behavior can be successfully predicted using the reasoned-action model (e.g., see Sheppard, Hartwick, & Warshaw, 1988). This theory has been used to predict a range of behaviors, including weight loss (Sejwacz, Ajzen, & Fishbein, 1980), adolescent alcohol use (Schlegel, Crawford, & Sanborn, 1977), and exercise behavior (Godin & Shephard, 1986; Riddle, 1980).

A study by Manstead, Proffitt, and Smart (1983) illustrates how this theory can be used to predict behavior, which in this instance was the method of feeding newborn children. In this investigation, Manstead et al. (1983) administered questionnaires to 250 women who were at least 24 weeks pregnant. The questionnaire was administered while the women were waiting for an appointment in an antenatal clinic. Questionnaire items were intended to assess the following areas: (a) behavioral beliefs [b] about breast and bottle feeding (e.g., Breast feeding establishes a close bond between mother and baby), plus evaluations [e] of these beliefs; (b) subjective normative beliefs [Nb] of what significant others expected the mother to do (e.g., The baby's father thinks I should breast feed), plus questions regarding motivation to comply [Mc] with those significant others; and (c) a question designed to assess intention [BI] to either bottle or breast feed. Questionnaire items were obtained from a previous study on breast or bottle feeding, and represented the modal salient beliefs for behavioral beliefs, as well as the selection of the significant others, found in that study. Attitude and subjective norm were measured by summing the (b X e) and (Nb X Mc) products, respectively. Six weeks after delivery, each mother was sent a questionnaire asking her how she had intended to feed her baby, and what method she had used each week since the child's birth. Of the original 250 mothers, 35 did not return the questionnaire, while 215 did return it to the

investigators (the two groups did not differ on any significant variables). A multiple R of .61 was obtained when intention scores were regressed on attitude and social norm scores. In addition, the investigators obtained a positive correlation of r = .82 between scores measuring intention and behavior. The investigators concluded that the findings in this study provided evidence of the utility of the theory of reasoned action.

The Theory of Planned Behavior

The theory of planned behavior (Ajzen, 1985, 1991; Schifter & Ajzen, 1985) is an extension of the theory of reasoned action that adds the concept of behavioral control. To improve the predictability of behavior over which people have "imperfect control," such as dieting or refraining from alcohol use, it was necessary to include a measure of behavioral control along with measures of behavioral and normative beliefs (Ajzen & Madden, 1986). While this is difficult to do in advance of observing a behavior, it is possible to measure control beliefs (perceived behavioral control), which is the person's belief about the difficulty of producing a behavior. Perceived behavioral control is thought to influence behavior indirectly via intentions. In other words, those who do not believe they can perform a behavior are less likely to form behavioral intentions to engage in that behavior. Perceived behavioral control also is thought to influence behavior directly "because it may be considered a partial substitute or a measure of actual control" (Ajzen & Madden, 1986, p. 459). Thus, a measure of perceived behavioral control is added to measures of behavioral and normative beliefs to predict behavioral intention. In addition, perceived behavioral control and intention combine to predict actual behavior.

Ajzen (1985, 1991) noted the similarity between control beliefs and Bandura's (1977a, 1986) concept of efficacy expectations. He considered research supporting self-efficacy as evidence of how behavior is strongly influenced by people's confidence in their ability to

perform it, that is, by their control beliefs. Ajzen and Madden (1986) claimed that the "theory of planned behavior places (efficacy theory) within a more general framework of the relations among beliefs, attitudes, intentions, and behavior" (p. 457). However, perceived behavioral control goes slightly beyond self-efficacy in that factors external to the individual that might facilitate or hinder the performance of a behavior are also integrated into this concept (Ajzen, 1985).

There is a growing body of evidence supporting the utility of the theory of planned behavior. Ajzen (1991) reviewed a number of studies that have used this theory to predict widely different behavior. These include behaviors such as class attendance and obtaining high grades (Ajzen & Madden, 1986), and weight-loss (Schifter & Ajzen, 1985). In one study using the theory of planned behavior, Godin, Valois, Lepage, and Desharnais (1992) obtained a sample of 378 subjects (out of 1,177 randomly selected from a metropolitan phone directory) who agreed to participate in a study on cigarette smoking behavior. Each subject was initially interviewed and asked to provide demographic and background information, including their current level of cigarette use, which was used as a measure of habit (H), as well as to classify subjects as smokers or nonsmokers. They also were asked to provide the following information: (a) What is the probability that you will not smoke cigarettes [BI] for the next 6 months; (b) their attitude [A_{act}] about <u>not</u> smoking cigarettes over the next 6 months, measured according to their reponses on eight semantic differential items (e.g., unpleasant-pleasant); (c) normative behavior [Sn], specifically, how strongly they believed that significant others think they should not smoke cigarettes for the next 6 months; and (d) perceived behavioral control [PBC], rated according to how easily they believed it would be to not smoke cigarettes for the next 6 months. Each subject was mailed a follow-up questionnaire 6 months later and asked to self-report their smoking behavior.

Out of the original 378 subjects, 346 completed the follow-up questionnaire. Godin et al. (1992) analyzed the data separately for smokers and nonsmokers. For smokers, a multiple

R of .61 was obtained when BI scores were regressed on Aact, SN, and PBC scores, with

PBC accounting for most of the variance. The addition of the variable H did not increase the

prediction of intention. The correlation between BI and smoking behavior was

r = .39, and this increased to approximately r = .51 with the addition of PBC. For

nonsmokers, none of the variables explained either BI or smoking behavior. The authors

expected this finding, since all nonsmokers intended not to smoke. Godin et al. (1992)

concluded by noting that the intention to smoke was not influenced by the strength of H.

Rather, the cognitive factors of Aact, SN, and especially PBC were predictive of intention to

smoke. Given that these cognitive factors can be modified, these findings were seen as

having smoking prevention implications, especially the factor of PBC, suggesting that

interventions that can increase self-efficacy may help reduce smoking behavior.

Criticisms of the Fishbein-Ajzen Theories

The theories of reasoned action and planned behavior have not been without criticism,

and there have been empirical findings unsupportive of these models. For example, Eagly

(1992) argued that expectancy-value models like those of Fishbein and Ajzen have directed

attention away from the causal impact that attitudes might have on behavior toward "objects"

or targets. She used the example of attitude towards individuals with AIDS (objects) as

opposed to attitude towards donating money for AIDS relief (behavior). While the Fishbein-

Ajzen models address the effect of attitudes toward the latter, they do not address the former,

and it is the causal impact on behavior of attitudes toward objects or targets that traditionally

interested social scientists (Eagly, 1992).

The theory of reasoned action and the subsequent theory of planned behavior also have

been criticized for the assumption that the theoretical constructs contained within these

theories were sufficient to explain behavior. For example, Knibbe, Oostveen, and Van de

Goor (1991) investigated drinking behavior in adults, and found that the amount of alcohol consumed (dependent variable) was better predicted by measures of past frequency of visiting "public drinking places" than by measures of behavioral, normative, and self-efficacy beliefs about drinking alcohol. The investigators concluded that the Fishbein-Ajzen variables were not sufficient to account for drinking behavior. The results of this study implicated the impact of past behavior on subsequent behavior. Interestingly, Triandis (1977, 1980) and Bentler and Speckart (1979) have proposed attitude-behavior models similar to the theory of reasoned action, but included the variable of habit. Ajzen (1991) acknowledged that prior behavior "has an impact on later behavior that is independent of the effects of beliefs, attitudes, subjective norms, and intentions" (p. 203). However, he suggested that past behavior should not be treated as measure of habit, but rather as a test of a theory's sufficiency. While suggesting that the construct of perceived behavioral control might correlate significantly with past behavior and mediate the effect of this variable, Ajzen concluded that "intentions and perceptions of behavioral control are useful predictors, but only additional research can determine whether these constructs are sufficient to account for all or most of the systematic variance in behavior" (Ajzen, 1991, p. 204).

Finally, a central element of the Fishbein-Ajzen theories is that attitudes are a function of beliefs about the consequences of the target behavior. Ajzen (1991) has expressed concern that in some studies, belief-based measures of attitude (the sum of b X e products) only correlate moderately with more direct global measures of attitude, such as semantic differential measures that are more affective as opposed to evaluative in nature. While Ajzen (1991) suggested that these moderate correlations may be at least partly due to inadequate scaling methods, he acknowedged that this methodological issue does not completely account for this problem.

Summary

Icek Ajzen and Martin Fishbein have made significant contributions to our understanding of attitude-behavior relations. Their Theory of Reasoned Action has been used to study the relations among beliefs, attitudes, behavioral intention, and behavior. It is assumed that any behavior can be traced back to a person's beliefs about that behavior. There is a large body of evidence that supports the utility of the theory of reasoned action for predicting a wide range of behaviors. The Theory of Planned Behavior is an extension of the Theory of Reasoned Action, incorporating measures of perceived behavioral control to predict those behaviors over which individuals have incomplete volitional control. This theory also has been successful in predicting a variety of behaviors. Both theories have been criticized for not providing a full account of behavior, as well as diverting attention from some of the more fundamental questions about attitudes, specifically, the causal impact of attitudes toward objects on behavior toward those objects.

Summation and Synthesis

In recent years, we have witnessed significant advances in our understanding of alcoholism and alcohol abuse. The disease model of alcoholism, which many saw as a significant improvement over the moral model, is giving way conceptually (if not at the treatment level) to the multidimensional biopsychosocial model of alcoholism and alcohol abuse. Along with biological, environmental, and social factors, various cognitive and behavioral constructs have been hypothesized to be causally associated with the development of alcoholism, and have lead to the recommendation of specific treatment strategies. These concepts and interventions, and the empirical literature associated with them, have been reviewed in the preceding literature review. It is within this context that the concept of abstinence expectancies take meaning.

Abstinence outcome expectancies can be defined as the anticipated consequences associated with a dramatic change in drinking patterns, specifically, abstaining from any alcohol for life, which is the goal of most treatment centers. For some people, abstaining from alcohol is the only expected change in behavior. For others, abstaining from alcohol is expected to be accompanied by any number of new overt and covert behaviors that either preclude alcohol use (e.g., engaging in physical activity), or somehow act to negate the need for its use (e.g., cognitive coping). The question becomes whether an individual beginning abstinence-oriented alcohol treatment views the expected outcomes associated with these changes in behavior favorably. For example, some may expect life without the "high" associated with alcohol to be extremely depressing and boring, even given high perceived self-efficacy to engage in productive alternative behaviors. Their history of abuse may be very limited, and without any physical symptoms of dependence. In contrast, those with a much more prolonged and destructive history of alcohol dependence may look forward to not feeling guilty about drinking, and have positive expectancies of feeling healthier and being more physically active. Conversely, those with a history of alcohol dependence might have expectancies of intense and uncomfortable cravings for alcohol. Implicit in all of these examples of abstinence expectancies are the expectancies associated with alcohol use: The two types of expectancies are likely related. In any case, it is the outcome expectancies associated with these expected changes in behavior among individuals beginning abstinence-oriented alcohol treatment, and the effect these expectancies might have on posttreatment drinking behavior, that are the focus of this study.

CHAPTER III

PURPOSE OF THE STUDY

The primary purpose of this study was to investigate the relationship between the abstinence outcome expectancies of alcoholics beginning treatment and subsequent alcohol consumption. Specifically, this study utilized the Theory of Planned Behavior to causally relate the independent and combined effects of abstinence outcome expectancies, alcohol outcome expectancies, self-efficacy expectancies (to abstain from alcohol use), and the normative beliefs of individuals beginning inpatient abstinence-oriented alcohol treatment to their level of drinking during the 90 days following treatment.

Research Hypotheses

Given a sample of individuals beginning inpatient abstience-oriented alcohol and drug treatment who have been administered a questionnaire that contained belief-based measures of (a) attitude toward alcohol use[1], (b) attitude toward abstinence from alcohol, (c) subjective norms about abstaining from alcohol, (d) perceived behavioral control to abstain from alcohol, and a (e) measure of intention to drink alcohol for the 90-day period following treatment, the following specific hypotheses were tested:

Hypothesis #1. Alcohol and Abstinence Attitude scores, obtained from corresponding measures of alcohol and abstinence beliefs, would each correlate significantly (in the practical and statistical sense) with scores obtained from a measure of intention to use alcohol during the 90-day period following treatment. These expected results follow from the Theory of

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[1]Although the goal of the treatment centers used in this study was abstinence, the target behavior described in the following research hypotheses was "using alcohol." Because a person could use varying amounts of alcohol, a dichotomous measure of alcohol use (e.g., 0=abstinence, 1=any use of alcohol) seemed to be too strict. Therefore, frequency and quantity of alcohol during the 90-day period following treatment were the actual dependent variables in this study, with abstinence equated with zero consumption.

Planned Behavior (Ajzen, 1985, 1991), in which it is assumed that beliefs about the consequences of engaging in a target behavior are causally linked to the intention to perform that behavior. In this study, it was hypothesized that beliefs about alcohol use (alcohol outcome expectancies), as well as beliefs about abstaining from alcohol (abstinence expectancies), would affect a person's intention to use alcohol following treatment.

Hypothesis #2. Subjective Norm scores, obtained from measures of normative beliefs about alcohol use and abstaining from alcohol, would correlate significantly with scores obtained from a measure of intention to use alcohol during the 90-day period following treatment. This expected result also follows from an assumption of the Theory of Planned Behavior: a person's beliefs that "significant others" expect the person to perform a behavior are causally linked to the intention to perform that behavior. In this study, it was hypothesized that a person's beliefs that "significant others" expect the person either to use alcohol or to refrain from using alcohol would affect that person's intention to use alcohol following treatment.

Hypothesis #3. Control Belief scores, obtained from measures of beliefs about personal characteristics and external factors expected to either facilitate or hinder remaining abstinent from alcohol, would correlate significantly with scores obtained from a measure of intention to use alcohol for the 90-day period following treatment. This expected result follows from another assumption of the Theory of Planned Behavior: A person's control beliefs (perceived behavioral control) that personal characteristics and external factors affect one's ability to engage or not engage in a behavior are causally linked to the intention to engage in that behavior. In this study, it was hypothesized that an individuals's control beliefs regarding his or her ability to abstain from alcohol use (self-efficacy expectations to engage in other more appropriate behaviors), as well as the person's beliefs about external factors that might facilitate or hinder abstaining from alcohol (e.g., good friends supportive of

abstinence, working in a bar), would affect that person's intention to use alcohol following treatment.

Hypothesis #4. Alcohol and Abstinence Attitude scores, Subjective Norm scores, and Control Belief scores would at least moderately correlate with scores obtained from a measure of intention to use alcohol during the 90-day period after treatment. This expected result follows from the Theory of Planned Behavior: Behavioral intention is a linear function of attitudes toward the behavior, subjective norms about the behavior, and an individual's perceived behavioral control to engage or not engage in that behavior. In this study, it was hypothesized that an individual's beliefs about alcohol use and abstinence, beliefs about the expectations of significant others, and beliefs about one's ability to change behavior (abstain from alcohol), would combine to correlate with intention to use alcohol.

Hypothesis #5. Control belief scores and scores measuring intention to use alcohol would be at least moderately predictive of alcohol consumption during the 90 days following treatment. This expected result follows from the Theory of Planned Behavior: Behavior is predicted from intention to perform that behavior, and one's control beliefs to engage or not engage in the behavior. In this study, it was hypothesized that the intention to use alcohol, and the control beliefs that one is capable of abstaining from alcohol use, would predict alcohol consumption.

CHAPTER IV

METHOD

Design

A correlational design used to investigate relationships between target variables was utilized in this study. Borg and Gall (1983) have argued that the quality of correlational studies is determined primarily by the rationale and theoretical constructs that guide the research design. In the Theory of Planned Behavior, the relationships among the target variables (beliefs, intentions to engage in a behavior, and the target behavior) are carefully specified, and multiple regression analysis is used to investigate these relationships.

For studies that use multiple regression analysis, it has been suggested that there be at least 100 subjects in the sample (Kerlinger & Pedhazur, 1973). Others have suggested that there should be 15 subjects for each variable included in the multiple regression equation (Borg & Gall, 1983). Whatever rule is adopted, the rationale of both is that the larger the random sample size, the less biased are the statistics $\underline{R}^2$ and the beta weights as estimates of corresponding population parameters. At the outset of this study, it was known that at least four variables would be included in multiple regression equations. Also, given the nature of the population, loss of subjects during the follow-up portion of this study was a concern. Therefore, the goal was to obtain a random sample of at least 100 subjects for the main study.

Target Population

The <u>target population</u> for this study was individuals (clients) beginning abstinence-oriented alcohol treatment. In order to control for variation in treatment intensity and duration, the target population was narrowed to include only clients receiving services at inpatient treatment programs. These programs are time-limited, lasting from 2 to 4 weeks,

and generally involve day-long and evening treatment activities. The most <u>accessible</u> <u>population</u> from which a sample of subjects could be obtained consisted of clients receiving inpatient services at treatment centers in Logan, Utah, and the Ogden and Salt Lake City metropolitan areas.

Locating Treatment Centers Willing to Participate

For the subjects recruited in this study to be representative of the accessible population, it was determined that clients would have to be obtained from a number of treatment centers. Sixteen inpatient treatment centers were identified from a list of alcohol and drug abuse treatment providers obtained from the Utah State Division of Substance Abuse. Each of the 16 treatment directors was sent a letter describing the purpose of the study, as well as what would be required of participating treatment centers (see Appendix A). Ten to 14 days later, follow-up phone calls were placed to each of the directors. Six directors were unavailable when first contacted, and never returned follow-up phone calls. The directors of three treatment centers refused to participate or were otherwise unenthusiastic about becoming involved. Seven directors agreed to discuss participation in this study. The primary investigator personally met with each of these treatment directors and explained the study in greater detail. All seven directors agreed to participate (in some cases, administrative approval was required).

Features of the Participating Treatment Centers

There were six adult treatment programs (ages ranged from 17 to 72) and one adolescent treatment program (ages ranged from 13 to 17). Three of the programs were located on wards in general hospitals. Three were located in facilities that provided multiple services, that is, inpatient alcohol and drug treatment as well as separate inpatient adult and

adolescent psychiatric services. There was one independent inpatient alcohol treatment hospital. All of the treatment centers were private or corporate institutions, and most were nonprofit. Most or all of the clients receiving services in these treatment centers were funded via personal, family, or employment insurance.

The maximum number of clients that each program was capable of treating at any one time ranged from 5 to approximately 30. However, the actual number of clients treated in each program fluctuated week to week. In all programs, clients had to be detoxified of alcohol or drugs before they could fully participate. The duration of inpatient treatment for the programs ranged from 2 to 4 weeks. The adolescent program differed from the adult programs in that clients participated in intensive day treatment up to 6 months following inpatient treatment. Most of the adult programs provided weekly aftercare following inpatient treatment. Some provided abbreviated inpatient care followed by 1 to 2 weeks of intensive day treatment.

All seven treatment centers provided what probably is best described as traditional abstinence-oriented drug and alcohol treatment, with heavy emphasis on the 12 Steps of Alcoholics Anonymous (Alcoholics Anonymous, 1976) and Narcotics Anonymous (Narcotics Anonymous, 1986). Generally, client treatment consisted of individual therapy sessions with certified drug and alcohol counselors, group therapy, educational groups, some family therapy, and participation in Alcoholics Anonymous and Narcotics Anonymous meetings, both inside and outside the respective treatment centers. In at least one program, some RP training was provided.

Constructing the Questionnaire

The next step in this study was to construct the questionnaire used in the main study. The first task in constructing the questionnaire was to clearly define the target behavior under

investigation according to the four parameters of behavior, target, time, and context suggested by Ajzen and Fishbein (1980). The target behavior in this study was <u>drinking alcohol</u>. The time period for drinking alcohol was the 90 days following treatment, since it has been shown that this is the period of time when people are most likely to relapse (Hunt, Barnett, & Branch, 1971). The context for drinking alcohol was the "usual times and places" that individuals drank in the past. Because the various individuals responding to the questionnaire would have a history of drinking alcohol at different times during the day and in any number of situations, it was not possible to be any more specific regarding context.

The next task was to identify the <u>modal salient beliefs</u> about drinking alcohol that would be used in belief-based measures of attitude, subjective norm, and perceived behavioral control. Following the procedures suggested by Ajzen and Fishbein (1980), these modal salient beliefs were generated from a small representative sample of the accessible target population (inpatient clients).

Subjects

Sixty-four inpatient clients (41 male, 23 female) were recruited from the seven participating treatment centers. The only criterion for inclusion was a self-reported history of alcohol abuse[2]. Because these subjects were to be involved only in generating modal salient beliefs, subjects were not asked to provide any personal or background information (the hope was that the guarantee of complete anonymity would encourage them to be more honest in their listing of beliefs).

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[2]Since the primary investigator could not review any client files during any phase of this study (such access would have significantly complicated getting permission to conduct this study), and because most clients were abusers of a variety of drugs, it was necessary to screen all subjects to ensure a history of alcohol abuse (e.g., "Was alcohol one of the drugs that got you here?").

Procedure

At each treatment center, the primary investigator scheduled a meeting with all clients currently receiving inpatient services. The meeting occurred in a group setting, and without treatment staff present. Clients were informed of the nature of the study, their role in this phase of the study, and the interest and support of the participating treatment center. Those clients who had a history of alcohol abuse were asked to participate, while the rest were excused. Generally, most of the clients acknowledged a history of alcohol abuse and participated.

Following the screening process, each subject was given a consent form, a brief set of instructions, and a written set of open-ended questions on beliefs associated with the target behavior of drinking alcohol[3] (see Appendices B, C, and D, respectively). In answering the open-ended belief questions, subjects were instructed to think about the times and places they usually drank alcohol, and to base their responses on how they thought they would feel and behave during the 90 days following treatment.

Given the target behavior drinking alcohol, the modal salient beliefs were determined for the following: (a) beliefs about drinking alcohol; (b) beliefs about not drinking alcohol; (c) normative beliefs to either drink or not drink alcohol; (d) control beliefs about one's perceived ability to not drink alcohol. Subjects were asked to complete the set of questions while sitting in the group, and to keep their responses to themselves to avoid intersubject contamination. If any subject had a question, the primary investigator answered it personally or to the whole group if necessary. To encourage honesty, the confidentiality of subjects' responses was

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[3]The primary investigator previously had met informally with small groups of clients at all seven treatment centers, and verbally presented questions on the clients' various beliefs (alcohol, abstinence, and so forth). The primary purpose of this procedure was to obtain feedback on how best to phrase these questions for use in the open-ended questionnaire (e.g., use of the expression staying sober, rather than remaining abstinent).

emphasized throughout these group meetings.

Generally, subjects were cooperative and completed the question sets in 15-20 minutes. Two subjects returned basically blank question sets, and their responses were discarded. Overall, 62 sets of target beliefs were generated.

Identifying Modal Salient Beliefs

Following the procedures of Ajzen and Fishbein (1980), a content analysis of all the responses provided by the subjects was conducted to identify the modal salient beliefs. For each belief category (e.g., alcohol beliefs, subdivided into advantages and disadvantages), the responses of every subject were transcribed onto a master list of responses. Following this, each response was then grouped according to "provisional" distinctive beliefs. These distinctive beliefs were provisional in the sense that what sometimes appeared to be simply semantic differences between responses actually represented distinctive beliefs. For example, in response to the question regarding disadvantages of using alcohol, almost every subject mentioned (in their own words) "loss of control." However, a number of subjects mentioned "less inhibited," while a large number of subjects reported "social enhancement." A close inspection of the individual responses suggested that each of these appeared to represent distinctive beliefs, with "loss of control" referring to "Having little control of my words and actions," "less inhibited" referring to "Feeling comfortable and less shy around people," and "social enhancement" referring to "Really enjoying the company of other people."

After all the responses for each belief category were grouped according to distinctive beliefs, the frequency of response for each distinctive belief was tabulated (e.g., 33 subjects reported the distinctive belief "social enhancement"). The distinctive beliefs were then ranked according to response frequency (in descending order), and the total number of responses was determined. For example, the 62 subjects generated a total of 502 alcohol responses (advantages and disadvantages) that were grouped into 23 distinctive beliefs. Following the

recommendations of Ajzen and Fishbein (1980), the modal salient beliefs were determined by selecting those distinctive beliefs that accounted for approximately 75% of all responses emitted by the subjects. Thus, out of the 23 distinctive alcohol beliefs, the top 12 beliefs accounted for 76% (380/502) of all responses cited or emitted by the 62 subjects. These 12 distinctive beliefs represented the modal salient alcohol outcome beliefs. This same procedure was followed for abstinence, normative, and behavioral control beliefs. Each belief then was rewritten in a manner that incorporated some of the language used by the subjects who generated these beliefs. All of these beliefs are listed by category in Table 1.

Construction of the Questionnaire

After identifying the modal salient beliefs, the questionnaire incorporating those beliefs was constructed according to the guidelines suggested by Ajzen and Fishbein (1980). The questionnaire was divided into the following sections.

Attitudinal beliefs. Attitudes toward alcohol and abstinence were measured in the following way. The belief strength (b) of every belief was assessed using the following seven-point bipolar scale:

likely_____|_____|_____|_____|_____|_____|_____unlikely

    extremely   quite   slightly   neither   slightly   quite   extremely

      +3   +2   +1   0   -1   -2   -3

The subjective evaluation (e) of every belief was assessed using a similar seven-point scale:

desirable_____|_____|_____|_____|_____|_____|_____undesirable

    extremely   quite   slightly   neither   slightly   quite   extremely

      +3   +2   +1   0   -1   -2   -3

A b X e product for every belief was obtained, and the products were summed to yield a total score measuring attitude. This procedure was followed to yield separate belief-based attitude measures of alcohol and abstinence, respectively.

Table 1

Modal Abstinence, Alcohol, Normative, and Control Beliefs

Alcohol Advantages

1. Having that feeling of being "high" come over me

2. Feeling very relaxed

3. Escaping all my problems

4. Really enjoying the company of other people

5. Feeling comfortable and less shy around people

Alcohol Disadvantages

1. Having little control of my words and actions

2. Having conflict with those close to me

3. Feeling physically sick

4. Accomplishing little in my daily life

5. Having problems with legal authorities

6. Having little self-respect and confidence

7. Spending too much money

Sobriety Advantages

1. Getting along better with those who are close to me

2. Having control of what I say and do

3. Being productive in my daily life

4. Feeling good about myself

5. Leading a healthier life-style

6. Thinking and remembering clearly

7.   Saving more money

8.   Rarely getting physically sick

Sobriety Disadvantages

1.   Having fewer fun times

2.   Losing an easy way to escape my problems

3.   Feeling like I don't fit in with a lot of my friends

4.   Having a hard time talking to other people

Positive Control Factors

1.   My friends who mostly don't drink or use

2.   Family support

3.   Alcoholics Anonymous

4.   My belief in myself

5.   My spiritual beliefs

6.   My willpower

7.   Support from my employers

8.   My desire to pursue personal interests

9.   My honesty

Negative Control Factors

1.   My drinking and using friends

2.   Negative or unpleasant emotions

3.   Old drinking places and hangouts

4.   My negative and self-destructive personality traits

5.   Not following through with what I have learned in treatment

6.   The stress of my personal relationships

7.   Work or school pressures

8.   Family problems

9.   Cravings for alcohol

     Significant Others

1.   Most other (nonparent) family members

2.   Friends and relatives of mine who drink and use

3.   My parents

4.   Close friends of mine

5.   My employers

Note. All categories were subdivided (e.g., Alcohol Advantages and Alcohol Disadvantages). For each subcategory, beliefs were ranked according to frequency of occurrence, and listed in descending order.

Bipolar scales (+3 to -3) to measure both belief strength and belief evaluation were used per the recommendation by Ajzen and Fishbein (1980) that this method has a distinct advantage over unipolar scaling. By using bipolar scales, the product of a belief that is considered both unlikely and undesirable contributes positively to the overall attitude score (e.g., -3 X -3 = +9), in the same way that the product of a belief that is considered both likely and desirable (e.g., +3 X +3 = +9) would contribute positively. In other words, the strong belief that a particular behavior does not lead to undesirable consequences becomes a positive evaluation of that behavior.

Finally, following the suggestion of Ajzen and Fishbein (1980) and Ajzen and Madden (1986), a series of semantic differential scales was used to obtain more direct measures of alcohol and abstinence attitudes. The following thirteen pairs of adjectives represented the end-points of each corresponding seven-point semantic differential scale: (a) good-bad; (b) wise-foolish; (c) beneficial-harmful; (d) happy-sad; (e) rewarding-punishing; (f) useful-useless; (g) pleasant-unpleasant; (h) attractive-unattractive; (i) valuable-worthless;

(j) strong-weak; (k) deep-shallow; (l) nice-awful; (m) honest-dishonest.

Normative beliefs. Normative beliefs about abstinence and alcohol use were assessed for belief strength (nB) in the same manner that belief strength was measured for alcohol and abstinence (+3 to -3). Ajzen and Fishbein (1980) suggested that the dimension motivation to comply (Mc) be rated on a unipolar scale (0 to +3) since people are unlikely to do the opposite of what significant others think they should do. However, in order to tap into any oppositionality that might be displayed by some of the subjects, and to adjust for the one (out of five) modal salient normative belief that dealt with pressure to continue drinking alcohol (friends and family who still used alcohol), it was decided to use a bipolar scale (+3 to -3). A nB X Mc product for every normative belief was obtained, and the products were summed to yield a total score measuring subjective norm. Also, following the recommendation of Ajzen and Fishbein (1980), the very general normative belief "Most people who are important to me" was added to the scale.

Control beliefs. Control beliefs (c) about internal and external factors that affect one's ability to remain abstinent were assessed for belief strength in the same manner that belief strength was measured for alcohol and abstinence (+3 to -3). These control beliefs also were evaluated according to the perceived power (p) of the control factors to benefit or harm (+3 to -3) a person's efforts to remain sober. While Ajzen (1991; Ajzen & Madden, 1986) suggested that control beliefs be rated only on the dimension of belief strength (perceived likelihood or frequency of occurrence), the evaluative dimension was added in this study following the suggestion of Leigh (1989c) that the evaluation of expectancies may differ significantly across subjects. A c X p product for every control belief was obtained, and the products were summed to yield a total score measuring perceived behavioral control.

Following the recommendation of Ajzen and Madden (1986), two direct measures of behavioral control also were included in the final questionnaire. On one item, the subject was

asked how easy it would be to stay sober, while on the other item, the subject was asked to indicate how much control he or she would have when it comes to staying sober. Both items were rated on a 10-point scale (easy to hard, and complete control to no control, respectively).

Intention. Two questionnaire items were used to measure intention to drink alcohol. These two items specified time and context (drinking alcohol at the usual times and places during the 90 days following treatment) so that they corresponded to the target behavior, as well as corresponding to the various alcohol, abstinence, normative, and control beliefs. On one item, subjects were asked if they intended to return to previous levels of drinking, while on the other they were asked if they intended to drink "some amount of alcohol." These two items were rated on a seven-point scale of likelihood (extremely likely to extremely unlikely), and the scores on these two items summed to yield a total intention to drink alcohol score.

Two questionnaire items were used to measure intention to abstain from alcohol (stay sober) during the 90 days following treatment. These two items were included primarily as additional measures of intention that perhaps would correspond more closely to abstinence beliefs, control beliefs (to abstain from alcohol), and normative beliefs (to abstain from alcohol), and written so that they corresponded to the time and context of the target behavior. On one item, subjects were asked if they intended to stay sober, while on the other item subjects were asked if they intended "to try" to stay sober. These items were rated on a seven-point scale of likelihood, and the scores on these two items were summed to yield a total intention to remain abstinent score. Because "remaining abstinent" is the reciprocal of drinking alcohol, these two items can be viewed as an indirect measure of intention to drink alcohol. Therefore, these two items were summed with the two intention to drink alcohol items (the numerical valence for the two intention to remain abstinent items was reversed) to yield a total intention to drink alcohol score.

Organizing the Final Questionnaire

By following the procedures of Ajzen and Fishbein (1980), the Abstinence and Alcohol questionnaire was structured and organized in the following manner. The first few pages of the questionnaire contained instructions on how to fill out the questionnaire. These instructions were followed by the actual belief and intention items. Each set of beliefs (e.g., alcohol beliefs) was listed twice in the questionnaire, with each listing rated according to belief strength and subjective evaluation (or motivation to comply in the case of normative beliefs). The two listings of each belief set were placed in different parts of the questionnaire. Interspersed among the belief sets were the four intention items, the two sets of semantic differential adjectives directly measuring attitude toward alcohol and abstinence, and the two direct measures of behavioral control. All items contained the time and context cues of For the 90 days following treatment and At the times or places I usually drink, respectively. A complete copy of the questionnaire is presented in Appendix E.

Main Study

Subjects

Following completion of the questionnaire, the main portion of this study was conducted. The initial plan for recruiting subjects was to have treatment directors and staff of the participating treatment centers approach all newly admitted clients and describe the study, stating that this was a survey about alcohol and sobriety beliefs, and asking for their participation (see Appendix F). Out of those who agreed to participate, a random sample of 100 + subjects would then be selected. With the treatment director and staff emphasizing their interest in the clinical utility of this study, the hope was that most clients would be willing to participate, thus minimizing any selection bias that likely would occur if clients were simply asked to volunteer (all subjects used in this study had the right to withdraw at

any time, as required by the Institutional Review Board at Utah State University, and the Ethical Principles of the American Psychological Association [American Psychological Association, 1992]).

As it turned out, only one of the seven treatment centers consistently followed this procedure. Over the course of this study, most (90%-95%) consecutively admitted clients at this facility who were approached by staff agreed to participate. For a variety of reasons, primarily turnover and illness among treatment directors, the other treatment centers did not follow this planned procedure. To obtain a sufficient number of subjects, it became necessary for the primary investigator to visit these treatment centers on a weekly basis and ask newly admitted patients to participate in the study. This procedure lasted 5 months, and approximately 50% of those approached were willing to participate. As described earlier, the primary investigator did not have access to patient records, and all potential subjects had to be screened for a history of alcohol abuse.

One hundred thirteen subjects were recruited for this study. Two adult subjects subsequently were dropped because they reported no alcohol use (despite the screening process), and one adult subject was dropped for not completing most of his questionnaire. Thus, the final total was 110 subjects, including 95 adult and 15 adolescent clients (subject characteristics are fully described in a later section of this dissertation).

<div align="center">Procedure</div>

Adminstration of the Admission Packet

All subjects were given an admission packet during their first week in treatment. This packet contained a cover sheet with the name of the specific treatment center (see Appendix G), a letter to the subject in which the study was described and confidentiality was emphasized, (see Appendix H), a Consent Form specific for this part of the study (see

Appendix I), a two-page pretreatment assessment questionnaire divided into demographic and alcohol/drug use information (see Appendix J), and the Abstinence and Alcohol questionnaire. Subjects were instructed to read the letter, complete both questionnaires within the next few days, and then place the materials in a sealed envelope. The envelopes were later picked up by the primary investigator.

Obtaining Follow-up Information

Thirty and 90 days following discharge from inpatient treatment, subjects were mailed a follow-up questionnaire (see Appendix K) with a preaddressed stamped return envelope. Subjects were asked to report any alcohol or drug use (the three drugs used the most) for the two time periods being assessed (the first 30 days, and the 2nd and 3rd months following discharge, respectively). A frequency X quantity method of measuring alcohol and drug use, similar to the procedure used in the pretreatment assessment, was used to assess alcohol and drug use during these follow-up periods. Subjects also were asked to describe any positive or negative changes in several specific life areas (e.g., relationship with with family menbers, physical health) for the same time periods.

If subjects did not return a follow-up questionnaire within 2 weeks, a second questionnaire was sent, accompanied by a letter encouraging them to return the enclosed questionnaire (see Appendix L). If the second questionnaire was not returned within 10 days, the primary investigator called the subject to obtain follow-up information. All phone contacts occurred in the early evening. No messages were left on telephone answering machines. If someone other than the subject answered the phone and the subject was not available, the primary investigator stated that he would call back at a later time. If asked the nature of the call, the primary investigator stated only that it had to do with a study being conducted by Utah State University. This was to ensure confidentiality of the subjects.

Monetary incentives were used to encourage rapid return of the follow-up questionnaires. At the very outset of the study (see Appendix H), subjects were informed that three names would be randomly selected from a list of those who returned 30-day questionnaires. Three names also would be selected from a list of those who returned 90-day questionnaires. Each of the 6 selected subjects would win $150 ($100 if they were contacted by phone). These monetary awards were sent to subjects following the completion of the study.

Measures

Pretreatment Asssessment Questionnaire

Subjects were asked to provide information regarding a variety of demographic variables, including age, education, income, and so on. In addition, a number of other variables specific to past alcohol and drug use were included (e.g., number of DUIs, days of work missed), many of which have been found to be useful for assessing alcohol dependence (Vuchinich, Tucker, & Harllee, 1988). Careful consideration was given to how best to assess previous alcohol and drug use. It often has been assumed that alcoholics underreport their drinking and other related problem behaviors. However, there is evidence that these types of self-report data are surprisingly valid (Brown, Kranzler, Del Boca, 1992; Polich, 1982), especially if the self-reports are conducted in a clinical or research setting, if the individuals are alcohol-free at the time of the assessment, and if confidentiality is assured (Sobell & Sobell, 1990). In a number of studies, obtained correlations between alcoholics' self-report measures of alcohol use and collateral (significant others) measures have been relatively high (Miller, Crawford, & Taylor, 1979; Sobell & Sobell, 1975). Stacy, Widaman, Hays, and DiMatteo (1985) reported on the validity of using a "quantity-frequency" self-report measure of past drinking behavior. This measure was used in a study by Stacy, Widaman, and Marlatt

(1990) and found to correlate $r = 0.80$ with a measure of drinking obtained from a collateral source (a friend).

A procedure similar to the one used by Stacy et al. (1985) was used in this study. Subjects were instructed to estimate the number of days per week they were consuming alcohol (frequency of drinking) 1 year prior to treatment, and for the 3-month period leading up to treatment, and to estimate how many drinks they consumed per day at those times (quantity of drinking). As can be seen in Appendix I, a "drink" varied according to specific amounts of different types of alcoholic beverages (e.g., 1.0 ounces of 80 proof liquor is equivalent to 5 ounces of 24 proof table wine). The use of "standard drinks" as a way of assessing alcohol consumption has been used by a number of investigators (e.g., Sanchez-Craig, Annis, Bornet, & MacDonald, 1984). The ounces-per-beverage ratios used in this study were consistent with ratios used in other studies.

Subjects also were asked to list what drugs, if any, they were using 1 year prior to treatment, and for the 3-month period leading up to treatment. They were instructed to report the frequency of drug use, as well as "how much you used daily" as a way of estimating drug quantity.

Follow-Up Measures

Given the target behavior of alcohol use in this study, and consistent with the measures used to assess treatment outcome reported in other drug and alcohol studies (e.g., Monti et al., 1993), the following dependent (Follow-Up) measures of alcohol use were used in this study: (a) number of days alcohol was used, or Frequency; (b) estimated number of drinks each day, or Quantity; and (c) Total Drinks (frequency X quantity). The three alcohol measures were used for the first 30 days following treatment (Follow-Up 1), the 2nd and 3rd months following treatment (Follow-Up 2), and the two follow-up periods combined (Combined Follow-Up). Thus, there were nine Follow-Up alcohol outcome variables.

Given the prevalence of drug abuse and addiction among the subjects in this study, drug use also was assessed. On the follow-up questionnaire, subjects had been asked to report the three most frequently used drugs. A review of all the follow-up questionnaires indicated that marijuana and cocaine were the most frequently used drugs (in that order). Therefore, three categories of drugs were established: marijuana (Drug1), cocaine (Drug2), and "other" (Drug3).

It was difficult to determine a "standard" measure of drug use. Therefore, the measure of drug use was confined to the number of days that Drug1, Drug2, and Drug3 were used. To keep the number of measures to a tolerable level, the actual dependent measures of drug use were as follows: (a) number of days any of Drug1, Drug2, and Drug3 were used, or Frequency; and (b) minimum total instances of usage (total number of days for Drug1, Drug2, and Drug3 combined), or Total Use. The first measure was intended to be a broad measure of any drug use. The second was intended to be a more sensitive measure. By totalling all of the "drug days" (number of days that Drug1, Drug2, and Drug3 were used), it was possible to approximate a measure of drug use quantity. For example, if a person used marijuana on 10 days, and cocaine on five days, three of which overlapped with marijuana use, the person's score on the Total Use measure would be 15, since on three days there were at least two "instances" of drug use. Because a person could use each drug many times per day, this approach represented a "minimum" estimate of total drug use.

Analyses

The problems in subject recruitment described earlier posed significant sampling problems, and begged the question of whether the subjects used in the main study could be considered a random sample of the accessible target population. This is a crucial question, for the statistical tests of significance planned for this study (or any study) would only make

logical sense given that the data used in those tests were obtained from a random sample of the target population. To address this issue and provide some justification for the use of inferential statistics in the planned analyses, subjects were divided into two groups: Consecutive Subjects and Volunteer Subjects. The subjects from the one treatment center that followed the original recruitment procedure approximated a random sample, because virtually all of the clients "consecutively admitted" to this facility participated in the study. Thus, there was no systematic bias in obtaining this sample, other than the fact that these subjects received treatment at a particular treatment center. However, this treatment center did not appear to differ in any significant way from the other adult treatment centers in the study, or from other treatment centers in the geographical region. These Consecutive Subjects were compared to the Volunteer Subjects from the other treatment centers to determine if any pretreatment differences existed on demographic variables and past alcohol/drug use variables as a function of recruitment method. If no systematic differences were found between the two groups, this would provide some evidence for treating the total subject sample as "functionally" if not methodologically equivalent to a random sample, and therefore using the total subject sample in the planned analyses.

For continuous pretreatment variables, means and standard deviations were computed, and mean effect sizes were computed for each comparison. Percentages were compared for frequency or categorical variables. To provide an additional metric and perspective for evaluating between-group differences, the Consecutive Subjects and Volunteer Subjects were treated as random samples, and tests of statistical significance were conducted. For continuous variables, t tests of statistical significance were conducted. For categorical variables, chi-square tests of statistical significance were conducted. Effect sizes for percentage data were then computed by converting the chi-square statistic to a t value (see Footnote A in Table 2 for the conversion formula). Similar procedures were followed to

compare subjects who did not report Follow-Up information to those who did provide Follow-Up information.

Multiple regression analysis was used to test the five research hypotheses. More specifically, this data analytic procedure was used to predict Behavioral Intention from attitude toward Abstinence and Alcohol, Subjective Norm, and Perceived Behavioral Control, and to predict Alcohol and Drug Use from Behavioral Intention and Perceived Behavioral Control. Multiple regression typically has been used in studies on the Theory of Planned Behavior, and the earlier Theory of Reasoned Action (see Ajzen, 1991; Ajzen & Fishbein, 1980). In addition, correlations between pretreatment variables (e.g., income, age), and the Follow-Up measures were conducted to determine if any pretreatment variable or combination of variables correlated with the Follow-Up variables. These variables could then be added as a separate step in a hierarchical multiple regression equation.

To assess the internal reliability of some of the measures used in this study, the coefficient alpha (Cronbach, 1951) was computed. This is a variation of the Kuder-Richardson formula for measuring interitem consistency that is used on test items for which there are more than two response options (Anastasi, 1988).

Finally, all statistical analyses in this study were computed using SPSS/PC+, Version 3.0 (Norusis/SPSS INC., 1988). Data were stored on a commerically available database program. A 10% reliability check of total stored data was conducted by an independent judge, and a 97% rate of agreement was obtained.

CHAPTER V

RESULTS

Representativeness of the Sample

Demographic information for all subjects is presented in Table 2. Information also is provided for the separate Consecutive and Volunteer subject groups. While no large between-group differences existed for gender, ethnicity, or marital status, Consecutive Subjects were significantly older and had more education. However, these differences conceivably were age-related, due to the fact that all the adolescents were Volunteer subjects. When the adolescents were excluded from the Volunteer group and the between-group comparisons recomputed, there were no major between-group differences, as evidenced by small effect sizes and no statistically significant differences (at the .05 level).

Subject reports of frequency and quantity of alcohol use are presented in Table 3, along with information on various drinking- and drug-related variables. The percentage of subjects who used any drugs 1 year before treatment, and for the 3-month period leading up to treatment, also is presented Table 3, along with the mean number of drugs used by subjects. This is followed by the percentage of subjects who used the most frequently reported drugs during the same time periods.

It can be seen in Table 3 that, for a number of variables, there were significant between-group differences, as evidenced by moderate to large effect sizes and statistically significant differences. To determine if these differences somehow might have been age-related, due to the fact that all the adolescents were Volunteer subjects, between-group comparisons were recomputed. When the adolescents were excluded from the Volunteer group, moderate to large effect sizes and statistically significant between-group differences no longer existed for the following variables:

Table 2

Subjects' Characteristics[a]

Variable	All Subjects ($\underline{N}$ = 110)	Consecutive Subjects ($\underline{n}$ = 36)	Volunteer Subjects ($\underline{n}$ = 74)	$\underline{p}$[b]	Effect Size[c]
Age:					
$\underline{M}$	33.2	38.0	30.8		
$\underline{SD}$	12.3	14.2	10.6	.01	+0.60
Male:	70%	72%	69%	.89	+0.07
Caucasian:	93%	94%	92%	.63	+0.10
Marital status:					
married	42%	47%	38%		
single	36%	33%	39%		
divorced	18%	17%	19%		
other	4%	3%	4%	.90	-.-[d]
Education:					
$\underline{M}$	12.4	12.9	12.1		
$\underline{SD}$	2.1	2.1	2.0	.06	+0.39

[a]For some variables, a few subjects failed to provide information. Mean values were used in place of the missing data. [b]The probability of the $\underline{t}$ and chi-square statistics generated from corresponding between-group tests of statistical significance. [c]Because of unequal group sizes, mean effect sizes (ES) were estimated as follows: ES = $\underline{t}$ * square root of ($1/N_1$ + $1/N_2$). Positive ESs were for differences in favor of Group 1 (Consecutive Subjects). For percentage data, the obtained chi-square statistic was converted to a $\underline{t}$ value, which was then used to estimate an ES according to the above formula. [d]ESs are not reported for variables with multiple levels of percentage data because of difficulty in interpretation.

Table 3

Alcohol and Drug Use Variables[a]

Variable	All Subjects (N = 110)	Consecutive Subjects (n = 36)	Volunteer Subjects (n = 74)	p[b]	Effect Size[c]
	Clinically Related Variables				
Family history of substance abuse:	83%	81%	84%	.67	-0.15
Pressured into treatment:					
none	61%	69%	57%		
family	21%	11%	26%		
employer	6%	0%	10%		
other	8%	12%	6%		
multiple	4%	8%	1%	.05	-.-d
Past drug/ alcohol treatment:	36%	53%	28%	.02	+0.62

(table continues)

Variable	All Subjects ($\underline{N}$ = 110)	Consecutive Subjects ($\underline{n}$ = 36)	Volunteer Subjects ($\underline{n}$ = 74)	$\underline{p}$	Effect Size
Past psychiatric treatment:	26%	39%	20%	.06	+0.54
Detoxified before treatment:	54%	56%	53%	.78	+0.07
Age when alcohol first used:					
$\underline{M}$	15.5	16.8	14.8		
$\underline{SD}$	5.9	6.9	5.3	.09	+0.34
Years of drinking:					
$\underline{M}$	15.8	18.3	14.5		
$\underline{SD}$	10.5	13.0	8.9	.07	+0.37
Years of problem drinking:					
$\underline{M}$	8.8	9.0	8.8		
$\underline{SD}$	7.0	6.7	7.1	.88	+0.03

Variable	All Subjects (N = 110)	Consecutive Subjects (n = 36)	Volunteer Subjects (n = 74)	p	Effect Size
Work days missed in past year[e]:					
M	10.9	9.7	11.4		
SD	21.4	24.9	19.6	.69	-0.08
Jobs lost[e]:					
M	0.6	0.4	0.6		
SD	1.7	0.8	2.0	.48	-0.15
Lifetime DUIs:					
M	1.2	1.6	1.1		
SD	2.0	2.5	1.7	.22	+0.25
Arrests[e]:					
M	1.3	0.9	1.5		
SD	2.1	1.5	2.4	.20	-0.26

(table continues)

Variable	All Subjects ($\underline{N}$ = 110)	Consecutive Subjects ($\underline{n}$ = 36)	Volunteer Subjects ($\underline{n}$ = 74)	$\underline{p}$	Effect Size

Alcohol Use One Year Before Treatment

Frequency[f]:					
$\underline{M}$	3.6	3.8	3.6		
$\underline{SD}$	2.1	2.0	2.2	.61	+0.11
Quantity[g]:					
$\underline{M}$	11.2	11.8	10.9		
$\underline{SD}$	8.1	7.7	8.4	.58	+0.11

Alcohol Use During 3-Month Period Before Treatment

Frequency[f]:					
$\underline{M}$	4.6	4.7	4.6		
$\underline{SD}$	1.9	2.1	1.8	.81	+0.05
Quantity[g]:					
$\underline{M}$	13.9	14.8	13.5		
$\underline{SD}$	11.0	11.0	11.0	.56	+0.12

Variable	All Subjects (N = 110)	Consecutive Subjects (n = 36)	Volunteer Subjects (n = 74)	p	Effect Size
		Drug Use One Year Before Treatment			
Any use of drugs:	46%	33%	53%	.06	-0.47
Number of drugs used:					
Mode	0	0	0		
M	0.7	0.4	0.9		
SD	1.0	0.6	1.0	.02	-0.48
Specific drugs used:					
cocaine	18%	14%	20%	.42	-0.20
marijuana	29%	17%	35%	.05	-0.53
heroin	1%	0%	1%	.48	0.00
LSD	8%	3%	11%	.15	-0.44
stimulants	8%	8%	8%	.97	0.00
methadone	0%	0%	0%	.---	0.00
other	8%	0%	12%	.03	-0.82

(table continues)

Variable	All Subjects ($\underline{N}$ = 110)	Consecutive Subjects ($\underline{n}$ = 36)	Volunteer Subjects ($\underline{n}$ = 74)	$\underline{p}$	Effect Size
	Drug Use During 3-Month Period Before Treatment				
Any use of drugs:	53%	33%	62%	.01	-0.70
Number of drugs used:					
Mode	0	0	0		
$\underline{M}$	0.9	0.5	1.0		
$\underline{SD}$	1.0	0.8	1.0	.01	-0.55
Specific drugs used:					
cocaine	26%	14%	31%	.05	-0.52
marijuana	35%	17%	43%	.01	-0.73
heroin	3%	0%	4%	.22	-0.32
LSD	6%	6%	5%	.97	+0.10
stimulants	7%	3%	10%	.21	+0.14
methadone	1%	3%	0%	.15	+0.60
other	10%	8%	11%	.68	-0.07

(table continues)

[a]For some variables, a few subjects failed to provide information. Mean values were used in place of the missing data. [b]The probability of the t and chi-square statistics generated from corresponding between-group tests of statistical significance. [c]Because of unequal group sizes, mean effect sizes (ES) were estimated as follows: ES = t * square root of ($1/N_1$ + $1/N_2$). Positive ESs were for differences in favor of Group 1 (Consecutive Subjects). For percentage data, the obtained chi-square statistic was converted to a t value, which was then used to estimate an ES according to the above formula. [d]ESs are not reported for variables with multiple levels of percentage data because of difficulty in interpretation. [e]Alcohol or drug related. [f]Number of days per week that alcohol was consumed. [g]Number of "standard" drinks per day.

(a) age when alcohol was first used; (b) years of drinking; (c) drug use of any kind one year before treatment; (d) number of drugs used one year before treatment; (e) marijuana use one year before treatment.

Differences continued to exist between groups for other variables. Specifically: (a) proportionally more Consecutive subjects had a previous history of psychiatric and alcohol/drug treatment; (b) proportionally more Volunteer subjects reported drug use of any kind during the 3-month period preceding treatment; (c) volunteer subjects used a greater number of drugs during the 3-month period preceding treatment; (d) for the 3-month period preceding treatment, proportionally more Volunteer subjects reported cocaine and marijuna use; (e) 1 year before treatment, only Volunteer subjects had used "Other drugs," which was a catch-all category that included drugs such as sedatives, tranquilizers, cough syrup, and so on.

Reliability of the Abstinence and Alcohol Questionnaire

The coefficient alpha was computed for each of the belief-based measures, and the total measure of behavioral intention. The standardized alpha coefficient values and the number of items in each scale are presented below in Table 4, along with the mean, standard deviation, and range of these measures. Descriptive statistics on specific scale items are

Table 4

Descriptive and Reliability Statistics for Questionnaire Measures

Variable	M	SD	Range	Standardized Alpha	No. of Items
Alcohol Attitude	-9.8	29.4	-75 to +87	.68	12
Sobriety Attitude	44.6	27.7	-22 to +108	.77	12
Subjective Norm	37.1	36.4	-30 to +42	.62	5
Behavioral Control	10.8	13.9	-81 to +129	.71	18
Total Intention	2.2	2.9	0 to 24	.64	4

presented in Appendix M.

Correlation of Belief-Based Measures with Behavioral Intention

Zero-order correlations among the measures of Sobriety Attitude, Alcohol Attitude, Subjective Norm, and Behavioral Control are presented in Table 5, while the results of the regression analysis used to account for behavioral intention are presented in Table 6. Given that the Consecutive and Volunteer subjects differed on only a few variables, the statistics presented are based on the total sample of 110 subjects. It can be seen that Sobriety Attitude and Behavioral Control were correlated with one another, and also yielded significant regression coefficients in the multiple regression equation with Intention. Alcohol Attitude and Subjective Norm contributed little to the multiple regression equation, despite the fact that Sobriety and Alcohol Attitudes were moderately correlated.

Table 5

Zero-Order Correlation Coefficients among Predictor Variables, Total Sample

Variable	1.	2.	3.	4.
1. Alcohol Attitude	.--			
2. Sobriety Attitude	-.33*	.--		
3. Subjective Norm	-.12	.19	.--	
4. Behavioral Control	-.17	.35*	.22[a]	.--

* $\underline{p} < .05$

Table 6

Multiple Correlation of Belief Measures with Intention Using Total Sample[a]

Dependent Variable			Multiple	Adjusted
Predictor Variables[b]	beta	$\underline{r}$	$\underline{R}$	$\underline{R}^2$
Intention				
Alcohol Attitude	-.08	.06		
Sobriety Attitude	-.23*	-.33*		
Subjective Norm	-.05	-.16		
Behavioral Control	-.34*	-.42*	.47	.19

[a]$\underline{N} = 110$. [b]All predictor variables were entered simultaneously into a standard multiple regression equation.
* $\underline{p} < .05$

Because all subjects did not participate in the Follow-Up portion of this study ($\underline{n}$ = 96 for the 30-day Follow-Up, or 89%; $\underline{n}$ = 84 for the 90-day Follow-Up, or 76%), the correlation and regression analyses were recomputed to see if the obtained values changed as a function of the sub-sample used. Across all variables, there were minimal differences in the obtained values. These analyses are presented in Appendix N (zero-order correlations) and Appendix O (multiple regression analyses).

Prediction of Behavior

Given that the Consecutive and Volunteer subjects differed on only a few variables, the statistics presented here are based on all subjects who provided follow-up data. In the regression analyses used to predict the target behavior of alcohol use, scores obtained from the two predictor variables (Total Intention and Perceived Behavioral Control) did not significantly correlate with any of the scores obtained from the three alcohol outcome variables (Frequency of alcohol use, Quantity of alcohol use, and [Frequency X Quantity]) for any of the three time periods (the 1st month after treatment, the 2nd and 3rd months after treatment, and all 3 months combined). When these two variables were combined into a multiple regression equation to predict the nine alcohol outcome variables, all of the multiple correlation coefficients were small. The largest multiple correlation coefficient obtained was $\underline{r}$ = .21 (Quantity during the entire 90 days). Most of the obtained coefficients were $\underline{r}$ = .15 or less. Finally, none of the corresponding regression coefficients in any of these regression equations was statistically significant. These analyses are presented in Appendix P.

Multiple regression analyses were conducted using the same predictor variables with outcome measures of drug use (plus one alcohol and drug combined). The results from the

analysis of the Total Follow-Up period are presented in Table 7 (the results for the other two Follow-Up periods were virtually identical, and are presented in Appendix Q). It can be seen that, while neither predictor variable by itself correlated significantly with any of the outcome variables (the zero-order correlation of Total Intention with Perceived Behavioral Control was $r = -.45$), when placed in a multiple regression equation, the regression coefficients were statistically significant. While the obtained multiple correlation coefficients obtained in these analyses were significantly higher than those obtained for the alcohol outcome measures, the proportion of variance explained by the predictor variables (R^2) remains small.

The possibility existed that some of the pretreatment variables (e.g., years drinking) would contribute to the prediction of drinking and drug use behavior, even though none of these variables had been hypothesized to do so. To examine this possibility, all of the pretreatment variables were correlated with the various alcohol and drug outcome measures, and the correlations plotted. While a number of significant correlations were obtained (e.g., number of drugs used during the 3-month period prior to treatment, and number of days alcohol was consumed for the entire 90-day Follow-Up period), close inspection of the plotted correlations indicated that most of these relationships were spurious. One or two outlying scores were responsible for the obtained moderate to large correlation coefficients. An example of such a spurious relationship can be seen in Figure 2, where a scatterplot showing the relationship between number of drinks per drinking day one year prior to treatment, and number of days alcohol was consumed during the entire 90-day Follow-Up period is presented, with the numbers in the scatterplot representing the number of cases at that particular data point. While it can be seen that there is little or no systematic association between these two variables, nevertheless, the obtained correlation coefficient was $r = +0.26$. This was due to the one outlying case in the upper right-hand corner. When this one case was removed from the data, a correlation coefficient of $r = -0.13$ was obtained.

Table 7

Prediction of Drug Use, Total 90 Days[a]

Dependent Variables			Multiple	Adjusted
Predictor Variables[b]	beta	$\underline{r}$	$\underline{R}$	$\underline{R}^2$
Number of Days Drug Use				
Total Intention	-.24*	-.14		
Behavioral Control	-.24*	-.13	.25	.04
Total Use				
Total Intention	-.25*	-.13		
Behavioral Control	-.26*	-.15	.27	.05
Total Drug/Alcohol Days[c]				
Total Intention	-.24*	-.13		
Behavioral Control	-.24*	-.15	.25	.04

[a]$\underline{N}$ = 84. [b]Both predictor variables were entered simultaneously into a standard multiple regression equation for each outcome variable. [c]This variable combined total days alcohol was used, plus total days any drugs were used.
* $\underline{p}$ < .05

The only pretreatment variables that did show some systematic relationship with the alcohol and drug outcome variables were gender and age, with gender moderately correlated with most drug and alcohol outcome variables, and age moderately correlated with several of the drug outcome variables. Both of these variables also correlated moderately with several pretreatment variables, such as age when alcohol was first used, and years of problem drinking. When both of these variables were combined with the variables of Intention and

```
     +
        |
Number  |                                                    1
  of  40+
 Days   |
Alcohol |
Consumed,|
 Total  |
  90  20+
 Days   |
        |
        |1   22   1       1   1
        |1 1    1  1     2    1   1 2               1
      0+4  5  8  17  4  786  123 3 2      11           1
      +----+----+----+----+----+----+----+----+----+
       0         9        18        27        36

            Number of Drinks per Drinking Day,
                       One Year Ago
```
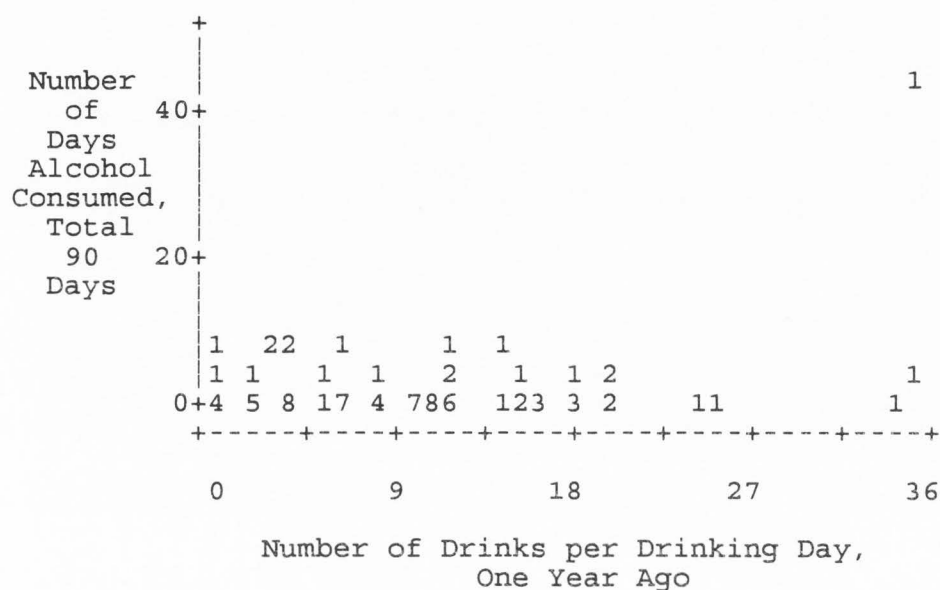
Figure 2. Scatterplot of correlation between intensity of drinking one year prior to treatment and frequency of drinking during total 90-day follow-up period.

Behavioral Control into multiple regression equations used to predict alcohol and drug use, significant increases in the size of some multiple correlation coefficients were obtained. This was especially true for the drug use outcome variables, with R = .38, R = .39, and R = .37 for the number of days any drug was used, the minimum number of times drugs were used, and the number of days either drugs or alcohol were used, respectively, during the entire 90-day Follow-Up period. Similar but less significant increases were obtained for the alcohol outcome variables.

Subject Attrition

Despite the relatively high Follow-Up rate of participation, there was concern that those who partipated in the entire study differed in significant ways from those who could not be contacted during the Follow-Up portion of this study. Therefore, subjects were divided into Responders ($\underline{n}$ = 96) and Nonresponders ($\underline{n}$ = 14), with the latter defined as those lost to

the study since discharge from inpatient care.   The two groups were then compared on the pretreatment demographic and alcohol/drug-use variables presented in Tables 2 and 3. A full description of these results is presented in Appendix R and S, respectively. Briefly, for most pretreatment variables, there were no statistically significant differences between the groups. However, some statistically significant differences were obtained, as follows: (a) Nonresponders had lower mean income than Responders (18,333 vs. 28,500, respectively); (b) Nonresponders had previously received more alcohol and drug treatment (71% vs. 31%); (c) more Nonresponders were pressured into treatment by legal authorities (21% vs. 6%), although this is somewhat an artifact of the small number of Nonresponders, a few of whom skewed this proportion; (d) more Nonresponders reported some type of drug use 1 year before treatment (71% vs. 43%) and for the 3-month period preceding treatment (85% vs. 48%); (e) Nonresponders reported using a greater number of drugs during the 3 months preceding treatment (means of 1.4 vs. 0.8); (f) more Nonresponders reported cocaine use 1 year before treatment (36% vs 16%) and for the 3-month period preceding treatment (57% vs. 21%).

Responders and Nonresponders also were compared on scores obtained from the Abstinence and Alcohol questionnaire. No group differences on any measures were obtained. A full description of these results is presented at the end of Appendix S.

CHAPTER VI

DISCUSSION

In this chapter, the key features of this study are first summarized, including the purpose of the study, the research hypotheses, method, and the major findings that were obtained. This summary is followed by a more in-depth discussion of the various results obtained in this study. Specifically, the variability of scores on individual questionnaire items and on the various scales is described, and the implications discussed. Next, a description and brief analysis of the internal consistency of the Abstinence and Alcohol Questionnaire is presented. Concerns about the external validity of the main study are discussed. The major findings of this study are then examined in more detail, including the relationship of various belief-based measures to behavioral intention, the prediction of alcohol consumption and drug-use behavior, and the implications for the Theory of Planned Behavior of using pretreatment variables to predict target behavior. Recommendations for future research are then presented, followed by some final comments and conclusions.

Summary of Study

The purpose of this study was to investigate the relationship between the abstinence outcome expectancies of alcoholics beginning abstinence-oriented inpatient treatment, and their posttreatment level of drinking. An attempt was made to investigate this relationship within the context of other variables that proponents of RP models of alcohol abuse and treatment have found to be relevant to treatment outcome, namely, alcohol expectancies and perceived behavioral control beliefs (self-efficacy expectancies) to abstain from alcohol use. The Theory of Planned Behavior (Ajzen, 1991) was used to investigate whether: (a) Alcohol and Abstinence Attitudes correlated with Intention to use alcohol following treatment (Hypothesis #1); (b) Subjective Normative Beliefs correlated with Intention to use alcohol following

treatment (Hypothesis #2); (c) Control (Self-Efficacy) Beliefs correlated with Intention to use alcohol following treatment (Hypothesis #3); (d) Alcohol and Abstinence, Subjective Normative, and Control Beliefs together at least moderately correlated with Intention to use alcohol following treatment (Hypothesis #4); (e) Control Beliefs and Intention to Use Alcohol correlated with actual alcohol use following treatment (Hypothesis #5).

One hundred ten adults and adolescents receiving services at seven Utah inpatient alcohol and drug treatment centers were used in this study. All subjects acknowledged that their use and abuse of alcohol was one of the reasons they were receiving treatment. At the outset of treatment, subjects were administered a questionnaire containing items that had been generated by a separate sample of subjects from the same seven treatment centers who had responded to open-ended questions about the above alcohol-related variables. The Abstinence and Alcohol questionnaire included belief-based measures of (a) attitude toward alcohol, (b) attitude toward abstinence, (c) social normative pressure to either use or abstain from alcohol, (d) one's perceived behavioral control to abstain from alcohol, plus (e) a measure of behavioral intention to use alcohol during the three months following treatment. Thirty and 90 days after discharge from inpatient treatment, subjects were sent brief questionnaires (or contacted by telephone) and asked to report any alcohol or drug use. Eighty-nine percent of the 110 subjects ($\underline{n}$ = 96) provided 30-day follow-up information, and 76% ($\underline{n}$ = 84) provided information for the entire 90-day follow-up period.

Analysis of the results indicated that scores obtained from the belief-based measure of perceived behavioral control, and scores from the belief-based measure of attitude toward abstinence were moderately and negatively correlated with scores obtained from a measure of intention to drink alcohol following treatment, and that these correlations were statistically significant at the .05 level. Thus, those that scored lower on both the measure of perceived behavioral control and the measure of attitude toward sobriety tended to score higher on the measure of intention to drink. Alcohol attitude scores and subjective norm scores were

minimally correlated with intention to drink scores. When all four measures were combined in a multiple regression equation used to predict Intention to Drink, a multiple R of .47 was obtained, with the beta coefficients for Attitude toward Abstinence and Control Beliefs both statistically significant.

When scores obtained from measures of intention to use alcohol and behavioral control were combined in a multiple regression equation used to predict actual drinking behavior for the entire 90-day Follow-Up period, multiple Rs of .20, .11, and .15 were obtained for number of days alcohol was consumed, number of drinks per drinking day, and total drinks, respectively. None of the beta coefficients in these three equations was statistically significant. The results for the other two Follow-Up time periods (the 1st month, and the 2nd and 3rd months following treatment) were virtually identical.

When intention and behavioral control scores were combined in a multiple regression equation used to predict drug use for the entire 90-day Follow-Up period, multiple Rs of .25, .27, and .25 were obtained for the number of days any drug was used, the minimum number of times drugs were used, and the number of days either drugs or alcohol were used, respectively. All of the beta coefficients in these three equations were statistically significant. A similar pattern of findings was obtained for the other two Follow-Up time periods.

Hypothesis #1 (Alcohol and Abstinence attitudes correlate with Intention to use alcohol following treatment) was partially supported, with Attitude toward Abstinence significantly correlated with Intention to Drink ($r = -.33$), while Attitude toward Alcohol was not significantly correlated with Intention. Hypothesis #3 (Control or Self-Efficacy beliefs correlate with Intention to use alcohol following treatment) was supported, with Control Beliefs significantly correlated with Intention to Drink ($r = -.42$). Hypothesis #4 (Alcohol and Abstinence attitudes, Subjective Normative beliefs, and Conrol Beliefs combined correlate with Intention to Drink following treatment) was supported, although this correlation was due primarily to the effects of Attitude toward Abstinence and Control Beliefs.

Hypothesis #2 (Subjective Normative beliefs correlate with Intention to use alcohol) was not supported, since this correlation was small. Also, Hypothesis #5 (Intention to Drink and Control Beliefs correlate with actual alcohol use) was not supported, given that Intention to Drink and Control Beliefs together yielded only small multiple correlation coefficients that were basically not predictive of any of the alcohol outcome variables. However, these two variables combined were moderately predictive of the drug use outcome variables, including number of days either alcohol or drugs were used.

Analyses of Results

The Abstinence and Alcohol Questionnaire

One of the more interesting results obtained in this study was the finding that the ratings of the strength and evaluation of the various beliefs used in the questionnaire varied significantly across subjects. For example, the Alcohol Belief Really enjoying the company of other people, ostensibly a positive alcohol consequence (see Table 1), had a mean net (b X e) rating of +0.33, with a range of -9 to +9, which covers the possible range of net ratings. The mean evaluation rating for this item was +1.32, with a possible and obtained range of -3 to +3, while the mean belief strength rating was -.64, with a possible and obtained range of -3 to +3. With a few exceptions, the evaluation ratings of all alcohol and abstinence beliefs ranged from -3 to +3, and the belief strength ratings of every belief ranged from -3 to +3. The same pattern was found for Control beliefs (c and p ratings) and Normative beliefs (Nb and Mc ratings). The net rating of every Alcohol, Abstinence, Normative, and Control belief ranged from -9.00 to +9.00, with those values representing the potential extreme ratings (the mean ratings and the range of values of each questionnaire item for all four belief categories, as well as the Intention items, are listed in Appendix R). Thus, the observation of Leigh

(1989c) that the evaluation of expected outcomes associated with alcohol expectancies can vary across individuals was strongly supported in the present study. Furthermore, this pattern held for abstinence beliefs, normative beliefs, and control beliefs. All of these findings are consistent with the Theory of Reasoned Action and the Theory of Planned Behavior, and support the recommendation by Leigh (1989c) that research on attitude-behavior relations might be applicable to the area of alcohol expectancies.

Internal Consistency

Alpha coefficients obtained as measures of interitem consistency for the four belief-based measures and the measure of intention to drink alcohol ranged from .62 to .77. These values were below what is considered desirable for reliability, which generally is a value in the .80s or .90s (Anastasi, 1988). However, these values are consistent with values obtained in other studies on the Theory of Planned Behavior using belief-based measures of attitude, subjective norms, and behavioral control (e.g., Schifter & Ajzen, 1985; Ajzen & Madden, 1986). It should be pointed out that the smallest alpha coefficients were obtained for Subjective Normative Beliefs and Total Intention, with those scales having only five and four items, respectively. Reliability coefficients are usually lower when there are only a few items in a scale. In addition, errors of measurement tend to reduce the size of correlation coefficients, with the correlation between the obtained scores tending to be less than the correlation between "true" scores (Ferguson, 1981). It is interesting that, in most studies on the Theory of Planned Behavior, including the present study, measures of intention usually consist of only a few items. If a genuine and strong relationship exists between Behavioral Intention and Attitude toward that behavior, the correlation between scores obtained from measures of these variables will underestimate this relationship if the measures are not reliable. In future studies, measures of intention with more items might be considered.

The internal consistency of these measures also might have been greater had there been closer supervision of the administration of these questionnaires, and a greater "value" placed on the Abstinence and Alcohol questionnaire. Most subjects in this study were administered a variety of psychological tests and inventories as part of their specific treatment program. The Abstinence and Alcohol questionnaire and the pretreatment assessment questionnaire had to be completed by subjects during their limited free time, and many subjects complained about this. It was apparent that some subjects completed this questionnaire very quickly. The information obtained from both questionnaires was confidential and not released to treatment staff. Therefore, staff members were not available to review the questionnaires for any obvious discrepancies or errors. The primary investigator attempted to perform this function for the first few subjects, but this proved impossible given the differences in schedules.

<u>External Validity</u>

One can validly generalize research findings obtained from a sample to an accessible target population only if the units or members in the sample were randomly selected from that population (Borg & Gall, 1983). There is some evidence that the external validity of this study was compromised by the refusal of some treatment centers to participate in this study, by the nonrandom recruitment method used to obtain most (67%) of the subjects from the participating treatment centers, and finally by the loss of subjects through attrition. Regarding recruitment method, if the <u>Consecutive</u> subjects from the one treatment center that administered the questionnaires to almost all of their patients are considered a best approximation of a random sample of the accessible target population, then the pretreatment demographic and alcohol/drug characteristics of these subjects were likely similar to the

corresponding characteristics of the accessible target population. For most pretreatment variables, the Volunteer subjects from the other treatment centers did not differ from Consecutive subjects. However, Volunteer subjects were less likely to have had any previous alcohol/drug or psychiatric treatment, and more likely to have used drugs in the months preceding treatment, especially marijuana and cocaine. It is unknown whether these differences were simply by chance, or were artifacts of the recruitment method.

For those who remained in the study for at least the first 30 days following treatment (Responders), and for those lost to the study immediately upon discharge from inpatient treatment (Nonresponders), there were no differences on most pretreatment variables. However, in comparison to Responders, Nonresponders had lower mean income, a greater percentage had previous alcohol and drug treatment, more were pressured by legal authorities to obtain alcohol/drug treatment, and there was greater pretreatment drug use. As with the differences between Consecutive and Volunteer subjects, it is not known if these were simply chance discrepancies between Responders and Nonresponders, or if they were indicative of distinctive subpopulations.

Despite the above concerns about sampling, the pretreatment characteristics (e.g., age, education, years of alcohol abuse) of the subjects used in this study are relatively comparable to characteristics of subjects used in other alcohol and drug studies (see Sanchez-Craig et al., 1984; Monti et al., 1993). For example, the subjects in the study by Sanchez-Craig et al. (1984) on controlled drinking were outpatients, and described as being "socially stable," having "relatively short" histories of problem drinking, and consuming approximately 9.5 drinks per drinking day for the 3 months preceding treatment. In the study by Monti et al. (1993), the subjects were male inpatients at a Veterans Administration hospital who consumed approximately 12.1 drinks per drinking day for the 6 months preceding treatment, as

measured by a Time-Line Follow-Back Interview, or TLFB (Sobell & Sobell, 1980). The

inpatient subjects in this study reported consuming approximately 13.9 drinks per drinking

day for the 3 months preceding treatment. This amount is comparable to the inpatient

subjects used in the Monti et al. (1993) study, and significantly greater than the number of

drinks consumed on drinking days by the outpatient subjects in the Sanchez-Craig et al.

(1984) study, as would be expected. The comparability of pretreatment alcohol consumption

between subjects in this study and those in the Monti et al. (1993) study is noteworthy. The

TLFB used in the Monti study is a time-intensive interview procedure that has been found to

be a highly valid measure of past alcohol consumption (Vuchinich et al., 1988). While such

an in-depth procedure was not used in this study, the comparability of pretreatment alcohol

consumption per drinking day between the two studies suggests that the subjects in this study

probably reported their alcohol use pretty accurately. At the very least, there is no strong

evidence that the subjects in this study as a group were clearly biased in their reporting of

past alcohol consumption.

Given that there was no evidence of broad systematic bias in the obtained sample used

in this study, the decision was made to use inferential statistics for the primary planned

analyses, that is, the multiple regression analyses. This decision was predicated on the

assumption that the subjects in this study might at least be considered a "functional" random

sample. However, conclusions from this study will need to be considered in light of the fact

that the sample was not obtained using genuine random sampling procedures.

Correlation of Belief-Based Measures with Behavioral Intention

When the four belief-based measures were combined in a multiple regression equation

and correlated with Intention to Drink, a multiple $\underline{R}$ of .47 was obtained. This value is well

below the average multiple correlation of .71 described by Ajzen (1991) in his review of studies utilizing the Theory of Planned Behavior, but within the range of obtained multiple correlation coefficients that he listed (.43 to .94). Interestingly, Ajzen (1991) observed that, in most studies, attitudes and behavioral control generally make the most significant contributions to prediction of intention, while the effect of subjective norm is mixed. The correlations obtained in this study were generally consistent with this finding, and supportive of this aspect of the Theory of Planned Behavior. While attitude toward alcohol did not correlate with intention, attitude toward abstinence and perceived behavioral control did contribute to the multiple correlation with intention, with subjective norm having no real effect.

From the perspective of self-efficacy theory (Bandura, 1977a, 1978), it is very interesting that Control Beliefs produced the largest correlation with Intention to Drink (r = -.42), followed by Attitude toward Abstinence (r = -.33). This is consistent with Bandura's (1978) argument that it is self-efficacy expectations (Control Beliefs) rather than outcome expectations (Attitude toward Abstinence) that are most predictive of behavior. While the behavior in this case is only verbal (written) reports of Intention to engage in a behavior (consume alcohol), nevertheless, self-efficacy expectations were the best predictor of behavior.

Prediction of Behavior

Scores obtained from measures of Intention to Drink and Behavioral Control, combined in a multiple regression equation, were minimally predictive of scores obtained from the alcohol outcome measures for the entire 90-day Follow-Up period. Multiple correlation coefficients ranged from .11 to .20, and the beta coefficients associated with

Intention to Drink and Behavioral Control were not statistically significant. Similar results were obtained for the other two Follow-Up periods. Thus, this aspect of the Theory of Planned Behavior was not supported.

One of the most surprising findings in this study was that Intention to Drink and Behavioral Control, when combined into a multiple regession equation, were more predictive of the drug use variables, with correlation coefficients ranging from $r = .25$ to $r = .27$. These are modest correlations. Nevertheless, these values are within the range of multiple correlation coefficients (.23 to .84) reported by Ajzen (1991) in his review of a series of studies using the Theory of Planned Behavior.

On the one hand, this finding is surprising since subjects were never asked about their intention to use any drugs during the 90-day Follow-Up period. However, this finding may be less surprising given recent evidence that expectancies for certain drugs overlap with those of alcohol, and the fact that younger alcoholics are not infrequently poly-drug abusers. Schafer and Brown (1991) created a Marijuana Effects Expectancy Questionnaire (MEEQ) and a Cocaine Effects Expectancy Questionnaire (CEEQ) using a format comparable to the Alcohol Expectancy Questionnaire (AEQ). These instruments were administered to 704 college students. Following a principal components factor analysis, the investigators identified six marijuana expectancy factors, and five cocaine expectancy factors. Schafer and Brown (1991) noted that four of the MEEQ factors overlapped with similar AEQ factors, specifically, Social and Sexual Facilitation, Tension Reduction, Cognitive and Behavioral Impairmnent, and Cognitive Enhancement. The investigators also observed that two of the CEEQ factors were very similar to factors identified on the AEQ and the MEEQ, specifically, Global Positive Effects, and Relaxation and Tension Reduction. The latter was unexpected given the stimulating nature of cocaine. However, Schafer and Brown (1991) suggested that

certain expectancies are associated with recreational use of "any" drug through social learning experiences. Thus, it may be that the "tension reduction" associated with cocaine use may in fact reflect a broader "emotional diversion" that occurs when using any drug.

The above findings suggest a possible explanation for the moderate prediction of drug use found in this study. It will be recalled that most of the subjects in the treatment centers had a history of poly-drug use, and that marijuana and cocaine were the most frequently used drugs prior to treatment and during the 90-day Follow-Up period. When the first sample of subjects was asked to respond to open-ended questions regarding alcohol, their responses might have been generalized drug expectancies or beliefs that would apply not just to alcohol, but other drugs such as marijuana and cocaine that are used with alcohol. Similarly, when subjects in the main study were asked to respond to questionnaire items regarding beliefs associated with alcohol, and abstinence from alcohol, their responses may have been based upon the outcome expectancies associated with alcohol combined with other drugs. Thus, not only does alcohol generate expectancy outcomes of "relaxation" and a "means of escape," but so do marijuana and cocaine, because use of these drugs is frequently concurrent with alcohol use for some individuals. Similarly, not only does abstinence from alcohol generate expectancy outcomes such as "having fewer fun times," but so might abstinence from marijuana and cocaine. It may be that, for some people, the unique effects of a drug are never experienced since the drug is always used in combination with other drugs, producing a generalized alcohol/drug expectancy. Thus, ratings of intention to use alcohol would correspond to intention to use other drugs. While all of this is speculation, it would account for the small to moderate prediction of drug use obtained in this study. However, because prediction of drug use was not expected or planned, the fact that Intention to Drink and

Control Beliefs were moderately predictive of drug use probably cannot be used as evidence in support of this aspect of the Theory of Planned Behavior.

Using Pretreatment Variables as Predictors of Intention and Behavior

One of the criticisms of the Theory of Planned Behavior is that the factors in this model are not sufficient to predict behavior. As discussed earlier, Ajzen (1991) argued that prior behavior often impacts later behavior in a manner that is independent of attitudes, subjective norms, and intentions, and that the effects of past behavior can be considered a test of the theory's sufficiency.

It was noted in the Results chapter that several variables reflecting "past behavior," such as years of alcohol use, correlated with the alcohol and drug outcome variables. Many of these correlations appeared spurious, or the correlations were inconsistent across the outcome variables. However, the variable of gender was systematically if moderately correlated with the alcohol and drug outcome variables, while age correlated with several of the drug outcome variables, although the latter correlations were not statistically significant. It is noteworthy that these two variables appeared to covary with variables of past behavior. For example, statistically significant positive correlations were obtained between age and years of alcohol use, years of problem drinking, number of days alcohol was consumed prior to treatment, and age at which alcohol was first used. Similarly, statistically significant correlations were obtained between gender and number of DUIs, years of alcohol use, years of problem drinking, and the number of days alcohol was consumed prior to treatment, with females reporting lower values on those variables than males (e.g., fewer DUIs, fewer years drinking).

When the factors of gender and age were entered as a first step in a hierarchical multiple regression equation used to predict alcohol outcome variables, and Intention and Behavioral Control added in the second step, the multiple $\underline{R}$s increased to .32, .17, and .25 for number of days alcohol was consumed, number of drinks per drinking day, and total drinks, respectively. Despite the increase in the multiple $\underline{R}$, the beta coefficients for the predictor variables remained statistically nonsignificant (with the exception of the beta coefficient associated with gender, for the outcome variable of total number of days alcohol was consumed).

When the factors of age and gender were entered as a first step in a hierarchical multiple regression equation used to predict drug use outcome variables, with Intention and Behavioral Control added in the second step, the multiple $\underline{R}$s increased to .38, .39, and .37 for the number of days any drug was used, the minimum number of times drugs were used, and the number of days either alcohol or drugs were used, respectively. The beta coefficients continued to remain statistically significant for Intention and Behavioral Control, with the beta coefficient for the factor of age also significant across all three drug outcome measures. For the drug use outcome variables, the amount of variance accounted for (Adjusted $\underline{R}^2$) increased from 4% to over 10% by adding the factors of age and gender to the multiple regression equation, a relatively significant increase.

When the factors of age and gender were entered as a first step in a hierarchical multiple regression equation used to predict Intention to Drink, and Attitude toward Alcohol, Attitude toward Abstinence, Subjective Norms, and Control Beliefs added in the second step, the multiple correlation coefficient increased to $\underline{R} = .59$. The beta coefficients for age, gender, Attitude toward Abstinence, and Control Beliefs all were statistically significant.

Interestingly, while females reported greater intention to drink during the 90-day Follow-Up period than males, the actual alcohol consumption (mean number of days alcohol was used, number of drinks per drinking day, and total drinks) and drug use (number of days any drug was used, minimum number of instances of drug use, and number of days either alcohol or drugs were used) of women was less than men during the 90-day Follow-Up period. A number of interpretations are possible for this finding. It may be that alcohol and drug use, as measured by both frequency and quantity, is less among women. Alternatively, women may be more willing to acknowledge their intention at the outset of treatment and work through this during treatment. Conversely, women may be less likely, at least shortly after treatment, to act on their intentions. In any case, by adding the factors of age and sex to the multiple regression equation for predicting Intention to Drink, the amount of variance increased from 19% to 31% (Adjusted $\underline{R}^2$), a significant increase.

The fact that the amount of explained variance for both Intention and Behavior could be increased by including variables other than those included in the Theory of Planned Behavior suggests either that the theory was not sufficient for predicting drinking (and drug-use behavior), the measures of these theoretical constructs in this study were inadequate, or both. In Ajzen's 1991 review of studies using the Theory of Planned Behavior, it is noteworthy that the smallest multiple correlation coefficient for predicting behavior was for weight loss ($\underline{R}$ = .23). It may be that certain behaviors, such as food and alcohol consumption, are complex biopsychosocial behaviors that even the Theory of Planned Behavior cannot predict with much precision.

Recommendations for Future Research

A few general recommendations are suggested for future investigations on the

relationship between abstinence and alcohol expectancies and subsequent drinking behavior.

First, to ensure external validity and justify any use of inferential statistics, it is imperative

that subjects used in future studies be randomly selected. Even before a decision is made to

conduct an investigation, it would be prudent to determine what percentage of accessible

treatment centers is willing to participate in research. If a significant percentage is unwilling

to do so, it would then be apparent that a random sample of subjects is not possible, and

alternative locations or methods for obtaining subjects should be considered. After the

decision was made to conduct this study, it was determined that a number of treatment centers

were unwilling to participate, or had no interest. Thus, despite the fact that subjects in this

study were obtained from seven different treatment centers, which increased the rate at which

subjects were recruited and reduced the bias introduced by using subjects from only one

location, the fact that some treatment centers were unwilling to participate immediately

introduced concerns about the randomness of the subjects that subsequently were selected.

If treatment centers agree to participate, it still may not be possible to implement

random sampling procedures. In this study, there was significant turnover among the

treatment directors who initially supported this study, and who were instrumental in securing

subjects. Most of the new treatment directors had no vested interest in this study, and subject

procurement became the responsibility of the primary investigator, with the net result being

that most subjects were volunteers. One way to avoid this problem would be to hire on-site

staff members at participating treatment centers to assist in the identification and selection of

subjects. Within the guidelines of their job responsibilities, these staff members could

approach randomly selected subjects and encourage their participation. An added benefit of

having on-site staff members would be that they could assist in such tasks as administering and collecting questionnaires, answering questions that subjects might have, and checking to ensure that questionnaires were properly completed. By having on-site staff to perform these functions, the questionnaires might be completed with greater accuracy and honesty, thus possibly increasing the internal consistency of the measures. Ideally, these on-site staff members also could obtain diagnostic information about participating subjects. One of the weaknesses of this study was not having formal diagnostic data with which to better judge severity of alcohol abuse. While obtaining such information quite possibly would have resulted in even fewer participating treatment centers, such information would have been very helpful in comparing participating subjects to those in other studies. Finally, given the relatively high rate of Follow-Up participation in this study, the use of large monetary incentives dispersed via a lottery system to encourage Follow-Up participation is recommended. This minimizes the bias introduced by a large attrition rate.

A second general recommendation for future investigations is to include additional measures of the constructs being investigated. For example, it would have been interesting in this study to compare Attitude toward Alcohol scale scores with scores from the Alcohol Expectancy Questionnaire (Brown et al., 1980). The Attitude toward Alcohol scale consisted of 12 items, representing the modal salient beliefs of a representative sample of inpatient alcoholics. Seven of these items ostensibly were expected disadvantages of alcohol use. The AEQ, in contrast, includes only generalized positive expectancies. It will be recalled that the developers of this scale included only positive expectancies in order to link alcohol use with motivation for drinking. Also, questionnaire items were generated by a wide sample of subjects, of which only a relatively small number were active alcoholics (Brown et al., 1980). The fact that the majority of items on the Attitude toward Alcohol scale were negative raises

some interesting questions, especially since this scale did not correlate with Behavioral Intention. For example, while the majority of modal salient beliefs among inpatient alcoholics may be negative, do positive expectancies nevertheless correlate better with Behavioral Intention and/or drinking behavior? This could have some interesting treatment implications, as evidenced by comments made by some patients during the early phase of this study when questionnaire items were being generated. A number of subjects stated that staff told them not to discuss the positive expectancies of alcohol, that such discussion was deemed "euphoric recall." Others commented that discussion of positive alcohol expectancies was "scary," for it caused them to think about drinking. Anecdotal though these statements may be, was this "treatment injunction" to not discuss the positive aspects of drinking the reason that the majority of modal salient alcohol beliefs were negative? Might frank discussion of positive expectancies assist individuals to better cope with urges to drink that are precipitated by positive alcohol expectancies? Conversely, does emphasis on negative alcohol expectancies during treatment keep a person focused on the long-term adverse consequences of alcohol abuse? Multiple measures of alcohol expectancies might provide the breadth of assessment to better understand the differential impact on drinking behavior of various alcohol expectancies.

Finally, it is recommended that abstinence beliefs and beliefs associated with other radical changes in drinking behavior continue to be investigated in regards to their effect on the drinking behavior of alcoholics. In this study, it was found that Abstinence and Behavioral Control beliefs were correlated with one another, and both were related to Intention to Drink, with Behavioral Control slightly more so. This is consistent with other findings on the relationship between efficacy plus outcome expectations and behavior (e.g., see Desharnais et al., 1986) and confirms Bandura's insistence that efficacy expectations are the better predictors of behavior. However, assessment of abstinence outcome expectancies

may serve to identify outcomes that are of most concern to an individual (e.g., losing an easy escape), and ultimately identify that person's most severe behavior deficits. According to the RP model, such deficits would produce low self-efficacy expectations, and hence increase the risk of relapse.

Conclusions

In recent years, it has been determined that alcohol expectancies may play a significant role in the development and treatment of alcoholism. The purpose of this study was to examine whether expectancies associated with the common treatment goal of abstinence from alcohol also may be related to drinking behavior. The Theory of Planned Behavior was used to explore this relationship within the context of other cognitive variables associated with alcohol consumption, including alcohol expectancies and self-efficacy expectancies to refrain from alcohol use.

As predicted, those who generated higher scores on a measure of Attitude toward Abstinence (abstinence expectancies) and a measure of Control Beliefs (self-efficacy expectations) to refrain from alcohol use tended to score lower on a measure of Intention to Drink alcohol. Attitude toward Alcohol (alcohol expectancies) and Subjective Normative Beliefs were not significantly related to Intention to Drink alcohol. Control Beliefs and Intention to Drink alcohol were minimally predictive of alcohol use, while somewhat more predictive of drug and drug plus alcohol use. While there is no clear explanation of the latter finding, it may be that expectancies and intentions associated with alcohol and drugs are closely related as a function of their concurrent use by many individuals. Nevertheless, the findings are consistent with the Theory of Planned Behavior, namely, that Intention and Perceived Behavioral Control are predictive of behaviors for which people have "imperfect" control.

The findings of this study must be considered exploratory, because sampling problems precluded any firm generalizations to the larger target population. However, these findings were supportive of the contention by some drug and alcohol researchers that expectancies associated with the goal of abstinence may be related to the drinking behavior (or drug use in this study) of alcoholics following abstinence-oriented treatment.

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APPENDICES

Appendix A.

Introductory Letter to Treatment Center

UTAH STATE UNIVERSITY

COMMUNITY CLINIC
Department of Psychology
Logan, Utah 84322-2810
Telephone (801) 750-3401

February 14, 1991

Dear Program Director:

Several faculty in the Department of Psychology at Utah State University are involved in research on addictive behaviors. We are interested in collaborating with eating disorder and chemical dependency treatment programs in these research efforts.

One line of research, coordinated by David Stein, Ph.D., concerns the effects of alcoholics' expectations on drinking behavior. Another line of research coordinated by Tamara Ferguson, Ph.D., concerns how alcoholic parents' ideals for their children and disciplinary behaviors affect a child's tendency to internalize feelings of guilt and shame.

Dr. Stein is ready to implement the aforementioned study that concerns the effects of both alcohol and abstinence expectancies on drinking behavior. Clinicians working with alcoholics are well aware of the fears and hopes that clients have regarding a future of abstinence. However, the effects of abstinence expectancies on treatment outcome have never been investigated empirically.

The actual time and resource commitment for treatment centers willing to collaborate with us on this project would be minimal. Procedures would be roughly as follows: clients would be presented with a brief description of the study as part of a consent form. They would be asked to complete a confidential questionnaire that will inquire about their alcohol beliefs, abstinence beliefs, beliefs about what significant others think about drinking or not drinking, and then beliefs about their ability to remain abstinent for the next year. This questionnaire will be presented to them just after being admitted for treatment (following detoxification if necessary). Prior to discharge, the same questionnaire will be readministered. Thirty days following discharge, a questionnaire will be sent to the client by the investigator, with questions about any drinking behavior for the past thirty days. Ninety days following discharge, a second questionnaire will be sent, again asking the client about any drinking behavior. Phone calls will be placed to clients who do not return the questionnaires (see the accompanying release form that will be given to all participating clients).
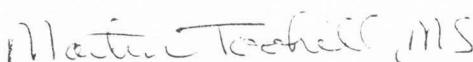
The only responsibility of the collaborating facilities would be to present the consent form and administer the questionnaires. Upon completion of the study, we would share the overall results and implications of the study with each participating facility. We are confident that this project will have very practical clinical implications that can be readily utilized by those involved in the treatment of alcoholism. We also would acknowledge the participation of the collaborating facilities at regional and national conferences when we present our findings, and in publications that result from this study.

February 14, 1991
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Thank you for your time and consideration. We will call in the next few weeks to discuss this project further.

Sincerely,

David M. Stein, Ph.D.
Associate Professor and Director
Utah State University Community Clinic

Martin Toohill, M.S.
Research Associate

P.S. Attached is a draft of the consent form that we would use for this study.

Appendix B.

Consent Form for Preliminary Phase of Study

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UTAH STATE UNIVERSITY

COMMUNITY CLINIC
Department of Psychology
Logan, Utah 84322-2810
Telephone (801) 750-3401

I, _____, agree to participate in a study being conducted by the Department of Psychology at Utah State University. Specifically, I will complete a questionnaire on the following:

1. What I believe about <u>using</u> and <u>not using</u> alcohol;
2. My beliefs about what others think of using and not using alcohol;
3. What I believe about my ability to not use alcohol.

The information obtained from this study will allow the investigators to examine the relationship between what people believe about alcohol and how these beliefs affect drinking behavior. This information potentially can be used to help individuals who have drinking problems.

I will be administered this questionnaire at the beginning of treatment. The questionnaire will take approximately 15-30 minutes to complete. I also agree to provide feedback to one of the investigators in the study regarding the questionnaire.

My responses to this questionnaire are confidential and <u>will not be used for treatment purposes</u>, but rather only for the research purposes of Utah State University. However, I agree to allow the <u>overall</u> findings of this study to be released to St. Benedict's ACT Program, to be published in scientific journals, and to be presented at scientific conferences. However, <u>at no time will my name be released</u>.

I UNDERSTAND THAT <u>PARTICIPATION</u> IN THIS STUDY <u>IS COMPLETELY VOLUNTARY</u>. REFUSAL TO PARTICIPATE WILL INVOLVE NO PENALTY OR HAVE NO EFFECT ON THE TREATMENT I RECEIVE. IN ADDITION, I CAN WITHDRAW FROM THIS STUDY AT ANY TIME, AND SUCH WITHDRAWAL WILL NOT AFFECT MY TREATMENT.

Any questions regarding this study can directed to Dr. David Stein, Department of Psychology, Utah State University, Logan, Utah.

Study Participant_____

Witness_____

Appendix C.

Instructions for Open-Ended Questionnaire Used

to Elicit Modal Salient Beliefs

UTAH STATE UNIVERSITY

The Dayspring Program at Logan Regional Hospital, in cooperation with the Department of Psychology at Utah State University, is conducting a study on alcoholism. We need your help. We would like you to answer some questions about drinking, along with some questions about staying sober. We would like you to answer these questions as truthfully and honestly as possible. All of your answers will remain confidential and will not affect your treatment. Your participation is voluntary and greatly appreciated (please sign the Permission Form).

Individuals beginning alcohol treatment often have very mixed feelings about using and not using alcohol. Even though you are in a program for alcoholism and are well aware that drinking alcohol causes many problems, there may still be times when drinking seems like something you might want to do. This is natural. Similarly, the idea of staying sober can be both appealing and unappealing. This, too, is natural. Choosing to drink or not to drink can be a tough choice, and we would like to know your feelings and beliefs about both sides of this struggle.

The following seven open-ended questions are concerned with drinking and staying sober. Each question will require some thought on your part. **Please do not discuss the questions with others until you have finished all of the questions. We want your individual responses**.

Finally, drinking does not occur in a vacuum, but rather usually occurs at certain times and in certain places. Some of the questions will emphasize time and place. Please try to answer accordingly.

Again, thank you very much for your support in this study.

Appendix D.

Open-Ended Questionnaire Used to

Elicit Modal Salient Beliefs

Please answer all of the following questions according to how you think you will feel <u>during the 90 days following treatment</u>. The focus of these questions is on <u>drinking alcohol</u>, rather than the use of other substances.

Think of the places and the times (time of day or day of the week) you usually drink alcohol. Try to be as specific as you can and list these places and times

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

QUESTION ONE: Think of the places or times you usually
drink alcohol. Now, with these in mind, what are the
advantages of drinking? In other words, why is drinking
desirable? List as many reasons as you can.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

QUESTION TWO: Think of the places or times you usually drink alcohol. Now, with these in mind, what are some of the disadvantages of drinking? In other words, why is drinking undesirable? Think of as many reasons as you can.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

QUESTION THREE: Think of the places or times you usually drink alcohol. Now, with these in mind, what are the advantages of staying sober? In other words, why is staying sober desirable? Think of as many reasons as you can.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

QUESTION FOUR: Think of the places or times you usually drink alcohol. Now, with these in mind, what are the disadvantages of staying sober? In other words, why is staying sober undesirable? Think of as many reasons as you can.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

QUESTION FIVE: If you considered continuing to drink alcohol, there may be individuals or groups in your life who would think you should or should not do so. If any such people come to mind when you consider continuing to drink, please list them below.

SHOULD

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

SHOULD NOT

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

QUESTION SIX: What specific internal factors will help you avoid a relapse? In other words, what specific personal skills or qualities do you have that will increase your chances of staying sober at those times or places you usually drink? Think of as many as you can.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

QUESTION SEVEN: What specific internal factors might cause you to relapse? In other words, what specific personal shortcomings or qualities do you have that will decrease your chances of staying sober at those times or places you usually drink? Think of as many as you can.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

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QUESTION EIGHT: What specific external factors will help
you avoid a relapse? In other words, what is it about your
daily world or environment that will increase your chances
of staying sober at those times or places you usually
drink? Think of as many as you can.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

QUESTION NINE: What <u>specific external factors</u> might cause you to relapse? In other words, what is it about <u>your daily world</u> or environment that will <u>decrease your chances of staying sober</u> at those times or places you usually drink? Think of as many as you can.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Appendix E.

Abstinence and Alcohol Questionnaire

Introduction

In this survey on alcohol and sobriety, there are statements which make use of <u>rating scales</u> with <u>seven</u> places. For most questions, you are to circle the number <u>that best describes your opinion</u>. As an example, suppose you were asked to fill out a survey on "The Weather in Salt Lake City". One statement about Salt Lake City weather might be **Being Cold and Chilly** and would look like:

desirable___	: ___	: ___	: ___	: ___	: ___	: ___undesirable
extremely	quite	slightly	neither	slightly	quite	extremely

Being Cold and Chilly   7   6   5   4   3   2   1

If you think "Being Cold and Chilly" is <u>extremely desirable</u>, then you would circle number 7:

desirable___	: ___	: ___	: ___	: ___	: ___	: ___undesirable
extremely	quite	slightly	neither	slightly	quite	extremely

Being cold and chilly.   (7)   6   5   4   3   2   1

If you think "Being Cold and Chilly" is <u>quite undesirable</u>, then you would circle number 2:

Being cold and chilly.   7   6   5   4   3   (2)   1

If you think "Being Cold and Chilly" is <u>neither desirable nor undesirable</u>, you would circle number 4:

Being cold and chilly.   7   6   5   (4)   3   2   1

You also will be asked to rate certain statements as <u>beneficial</u> or <u>harmful</u>. For example, if you were asked to rate the statement "The Effect of Dressing Carefully for The Weather in Salt Lake City", it would appear as follows:

beneficial___	: ___	: ___	: ___	: ___	: ___	: ___harmful
extremely	quite	slightly	neither	slightly	quite	extremely

The Effect of Dressing Carefully for the Weather in Salt Lake City is   7   6   5   4   3   2   1

If you think that it is <u>slightly beneficial</u> to Dress Carefully for The Weather in Salt Lake City, you would circle number 5:

The Effect of Dressing Carefully for the Weather in Salt Lake City is   7   6   (5)   4   3   2   1

Finally, you will be using a rating scale with <u>likely</u> and <u>unlikely</u> as endpoints. This scale is to be marked in the same way. For example, if you were asked to rate the statement "The Weather in Salt Lake City is Cold and Chilly in January" on such a scale, it would appear as follows:

likely_____:_____:_____:_____:_____:_____:_____unlikely

	extremely	quite	slightly	neither	slightly	quite	extremely
Salt Lake City is Cold and Chilly in January.	7	6	5	4	3	2	1

If you think it is <u>quite likely</u> that The Weather in Salt Lake City is Cold and Chilly in January on such a scale, you would circle 6:

Salt Lake City is Cold and Chilly in January. 7 (6) 5 4 3 2 1

In making your ratings, please remember the following points:

1. Circle only <u>one number</u>:

                  This   Not This

Salt Lake City is Cold and Chilly in January. 7 (6) 5 4 (3 2) 1

2. Be sure you <u>answer all the items</u>: do not omit any.

While it is possible to drink alcohol in lots of places and at lots of times, most people drink <u>at usual times and/or in the usual places</u>. Some of the questions will ask you about drinking or staying sober at the times or places you usually drink alcohol (for example, "**at 5 P.M after work**", or "**in my car**"). You don't have to specify these times and places for each question, <u>just keep them in mind</u>. To get you to think about these, **please list the times or places you usually drink:**

1. _____   2. _____

3. _____   4. _____

5. _____   6. _____

7. _____   8. _____

9. _____   10. _____

If you have any questions, please ask the staff member who gave you this questionnaire. Thank you.

A. The following statements have to do with the effects of alcohol. Rate them according to <u>what best describes your opinion</u>.

desirable_____:_____:_____:_____:_____:_____:_____undesirable

	extremely	quite	slightly	neither	slightly	quite	extremely

	extremely	quite	slightly	neither	slightly	quite	extremely
Feeling comfortable and less shy around people.	7	6	5	4	3	2	1
Having that feeling of being "high" come over me.	7	6	5	4	3	2	1
Spending too much money.	7	6	5	4	3	2	1
Escaping all of my problems.	7	6	5	4	3	2	1
Feeling physically sick.	7	6	5	4	3	2	1
Having problems with legal authorities.	7	6	5	4	3	2	1
Really enjoying the company of other people.	7	6	5	4	3	2	1
Accomplishing little in my daily life.	7	6	5	4	3	2	1
Feeling very relaxed.	7	6	5	4	3	2	1
Having little self-respect and confidence.	7	6	5	4	3	2	1
Having little control of my words and actions.	7	6	5	4	3	2	1
Having conflict with those close to me.	7	6	5	4	3	2	1

B. The following statements have to do with staying sober. Rate them according to <u>what best describes your opinion</u>.

	extremely	quite	slightly	neither	slightly	quite	extremely
desirable_____:_____:_____:_____:_____:_____:_____undesirable							
Leading a healthier life-style.	7	6	5	4	3	2	1
Having a hard time talking to other people.	7	6	5	4	3	2	1
Being productive in my daily life.	7	6	5	4	3	2	1
Getting along better with those who are close to me.	7	6	5	4	3	2	1
Feeling like I don't fit in with a lot of my friends.	7	6	5	4	3	2	1
Rarely getting physically sick.	7	6	5	4	3	2	1
Thinking and remembering clearly.	7	6	5	4	3	2	1
Saving more money.	7	6	5	4	3	2	1
Losing an easy way to escape my problems.	7	6	5	4	3	2	1
Having fewer fun times.	7	6	5	4	3	2	1
Having control of what I say and do.	7	6	5	4	3	2	1
Feeling good about myself.	7	6	5	4	3	2	1

C. Please answer the following questions:

1.

likely_____:_____:_____:_____:_____:_____:_____unlikely

	extremely	quite	slightly	neither	slightly	quite	extremely

I intend to stay sober
at the times or places
I usually drink alcohol
during the 90 days
following treatment.

	7	6	5	4	3	2	1

2. How much control do you think you will have when it comes to staying sober at the times or places you usually drink alcohol during the 90 days following treatment?

Circle the number on the scale that best describes you.

Complete   No
Control   10 9 8 7 6 5 4 3 2 1 0   Control

3. For the following set of items, place an "X" in the place that best describes your opinion. To use the Salt Lake Weather example again, if you think "Being Cold and Chilly" is extremely desirable, then you would place your "X" as follows:

Being Cold and Chilly

desirable __X___:_____:_____:_____:_____:_____:_____undesirable

	extremely	quite	slightly	neither	slightly	quite	extremely

Be sure to place the "X" in the middle of the space, and place only one "X".

Staying sober at the times or places I usually drink alcohol during the 90 days following treatment is:

good _____:_____:_____:_____:_____:_____:_____bad

	extremely	quite	slightly	neither	slightly	quite	extremely

wise _____:_____:_____:_____:_____:_____:_____foolish

	extremely	quite	slightly	neither	slightly	quite	extremely

beneficial _____:_____:_____:_____:_____:_____:_____harmful

	extremely	quite	slightly	neither	slightly	quite	extremely

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Staying sober at the times or places I usually drink alcohol during the 90 days following treatment is:

| happy | ___ : ___ : ___ : ___ : ___ : ___ : ___ | sad |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| rewarding | ___ : ___ : ___ : ___ : ___ : ___ : ___ | punishing |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| useful | ___ : ___ : ___ : ___ : ___ : ___ : ___ | useless |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| pleasant | ___ : ___ : ___ : ___ : ___ : ___ : ___ | unpleasant |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| attractive | ___ : ___ : ___ : ___ : ___ : ___ : ___ | unattractive |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| valuable | ___ : ___ : ___ : ___ : ___ : ___ : ___ | worthless |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| strong | ___ : ___ : ___ : ___ : ___ : ___ : ___ | weak |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| deep | ___ : ___ : ___ : ___ : ___ : ___ : ___ | shallow |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| nice | ___ : ___ : ___ : ___ : ___ : ___ : ___ | awful |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| honest | ___ : ___ : ___ : ___ : ___ : ___ : ___ | dishonest |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

Drinking alcohol at the usual times or places during the 90 days following treatment is:

| good | ___ : ___ : ___ : ___ : ___ : ___ : ___ | bad |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| wise | ___ : ___ : ___ : ___ : ___ : ___ : ___ | foolish |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

| beneficial | ___ : ___ : ___ : ___ : ___ : ___ : ___ | harmful |
| | extremely   quite   slightly   neither   slightly   quite   extremely | |

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<u>Drinking alcohol</u> at the usual times or places during the 90 days following treatment is:

happy _____:_____:_____:_____:_____:_____:_____ sad
     extremely   quite   slightly   neither   slightly   quite   extremely

rewarding _____:_____:_____:_____:_____:_____:_____ punishing
     extremely   quite   slightly   neither   slightly   quite   extremely

useful _____:_____:_____:_____:_____:_____:_____ useless
     extremely   quite   slightly   neither   slightly   quite   extremely

pleasant _____:_____:_____:_____:_____:_____:_____ unpleasant
     extremely   quite   slightly   neither   slightly   quite   extremely

attractive _____:_____:_____:_____:_____:_____:_____ unattractive
     extremely   quite   slightly   neither   slightly   quite   extremely

valuable _____:_____:_____:_____:_____:_____:_____ worthless
     extremely   quite   slightly   neither   slightly   quite   extremely

strong _____:_____:_____:_____:_____:_____:_____ weak
     extremely   quite   slightly   neither   slightly   quite   extremely

deep _____:_____:_____:_____:_____:_____:_____ shallow
     extremely   quite   slightly   neither   slightly   quite   extremely

nice _____:_____:_____:_____:_____:_____:_____ awful
     extremely   quite   slightly   neither   slightly   quite   extremely

honest _____:_____:_____:_____:_____:_____:_____ dishonest
     extremely   quite   slightly   neither   slightly   quite   extremely

D. Please answer the following question:

likely_____:_____:_____:_____:_____:_____:_____unlikely
     extremely   quite   slightly   neither   slightly   quite   extremely

I intend <u>to try</u> to stay   7   6   5   4   3   2   1
completely sober
at the times or places
I usually drink alcohol
during the 90 days
following treatment.

E. Rate the following factors or characteristics on **how beneficial or harmful** their effect will be on **you staying sober** at the times or places you usually drink during **the 90 days** following treatment.

beneficial_____:_____:_____:_____:_____:_____:_____harmful

	extremely	quite	slightly	neither	slightly	quite	extremely
The effect of my honesty.	7	6	5	4	3	2	1
The effect of old drinking places and hangouts.	7	6	5	4	3	2	1
The effect of my negative and self-destructive personality traits.	7	6	5	4	3	2	1
The effect of work or school pressures.	7	6	5	4	3	2	1
The effect of support from my employers.	7	6	5	4	3	2	1
The effect of cravings for alcohol.	7	6	5	4	3	2	1
The effect of family problems.	7	6	5	4	3	2	1
The effect of negative or unpleasant emotions.	7	6	5	4	3	2	1
The effect of my spiritual beliefs.	7	6	5	4	3	2	1
The effect of my drinking and using friends.	7	6	5	4	3	2	1
The effect of my belief in myself.	7	6	5	4	3	2	1
The effect of my desire to pursue personal interests.	7	6	5	4	3	2	1

	beneficial	:	:	:	:	:	:	harmful
	extremely	quite	slightly	neither	slightly	quite	extremely	

The effect of my willpower.	7	6	5	4	3	2	1
The effect of the stress of my personal relationships.	7	6	5	4	3	2	1
The effect of family support.	7	6	5	4	3	2	1
The effect of my friends who mostly don't drink or use.	7	6	5	4	3	2	1
The effect of Alcoholics Anonymous.	7	6	5	4	3	2	1
The effect of not following through with what I have learned in treatment.	7	6	5	4	3	2	1

F.   The following items focus on **what others think about you staying sober**. Rate these statements on <u>how likely or unlikely</u> it is <u>that significant others think you should stay sober</u> at the times or places you usually drink during the 90 days following treatment.

	likely	:	:	:	:	:	:	unlikely
	extremely	quite	slightly	neither	slightly	quite	extremely	

Most people who are important to me.	7	6	5	4	3	2	1
My parents.	7	6	5	4	3	2	1
Most other family members.	7	6	5	4	3	2	1
Friends and relatives of mine who drink or use.	7	6	5	4	3	2	1
Close friends or mine.	7	6	5	4	3	2	1
My employer (present or future).	7	6	5	4	3	2	1

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G. Please answer the following question:

likely_____:_____:_____:_____:_____:_____:_____unlikely

	extremely	quite	slightly	neither	slightly	quite	extremely

I intend to drink <u>some</u>
<u>amount of alcohol</u>
at the times or places
I usually drink alcohol
during the 90 days
following treatment.

	extremely	quite	slightly	neither	slightly	quite	extremely
I intend to drink some amount of alcohol...	7	6	5	4	3	2	1

H. For the following items, rate how likely or unlikely it is that <u>drinking alcohol</u> would produce these effects or consequences <u>for you</u> at the times or places you usually drink alcohol during the 90 days following treatment.

likely_____:_____:_____:_____:_____:_____:_____unlikely

	extremely	quite	slightly	neither	slightly	quite	extremely
My drinking alcohol would let me feel comfortable and less shy around people.	7	6	5	4	3	2	1
My drinking alcohol would let that feeling of "being high" come over me.	7	6	5	4	3	2	1
My drinking alcohol would result in my spending too much money.	7	6	5	4	3	2	1
My drinking alcohol would help me escape all of my problems.	7	6	5	4	3	2	1
My drinking alcohol would make me feel physically sick.	7	6	5	4	3	2	1
My drinking alcohol would cause me to have problems with legal authorities.	7	6	5	4	3	2	1
My drinking alcohol would let me really enjoy the company of other people.	7	6	5	4	3	2	1

| | likely : : : : : : unlikely | | | | | | |
	extremely	quite	slightly	neither	slightly	quite	extremely
My drinking alcohol would result in my accomplishing little in my daily life.	7	6	5	4	3	2	1
My drinking alcohol would allow me to feel very relaxed.	7	6	5	4	3	2	1
My drinking alcohol would result in my having little self-respect and confidence.	7	6	5	4	3	2	1
My drinking alcohol would result in my having little control of my words and actions.	7	6	5	4	3	2	1
My drinking alcohol would cause me to have conflict with those close to me.	7	6	5	4	3	2	1

I. For the following items, rate how likely or unlikely it is that staying sober would produce these effects or consequences for you at the times or places you usually drink alcohol during the 90 days following treatment.

| | likely : : : : : : unlikely | | | | | | |
	extremely	quite	slightly	neither	slightly	quite	extremely
My staying sober would help me lead a healthier life-style.	7	6	5	4	3	2	1
My staying sober would result in my having a hard time talking to other people.	7	6	5	4	3	2	1
My staying sober would allow me to be productive in my daily life.	7	6	5	4	3	2	1

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	likely____:____:____:____:____:____:____unlikely						
	extremely	quite	slightly	neither	slightly	quite	extremely
My staying sober would let me get along better with those who are close to me.	7	6	5	4	3	2	1
My staying sober would make me feel like I don't fit in with a lot of my friends.	7	6	5	4	3	2	1
My staying sober would mean rarely getting physically sick.	7	6	5	4	3	2	1
My staying sober would let me think and remember clearly.	7	6	5	4	3	2	1
My staying sober would allow me to save more money.	7	6	5	4	3	2	1
My staying sober would result in my losing an easy way to escape my problems.	7	6	5	4	3	2	1
My staying sober would result in my having fewer fun times.	7	6	5	4	3	2	1
My staying sober would let me have control of what I say and what I do.	7	6	5	4	3	2	1
My staying sober would let me feel good about myself.	7	6	5	4	3	2	1

J. For the following items, rate how likely or unlikely it is that these factors or qualities would occur at the times or places you usually drink alcohol during the 90 days following treatment.

	likely	:	:	:	:	:	:	unlikely
	extremely	quite	slightly	neither	slightly	quite	extremely	

	extremely	quite	slightly	neither	slightly	quite	extremely
I will be honest	7	6	5	4	3	2	1
I will be around the old drinking places and hangouts.	7	6	5	4	3	2	1
I will experience my negative and self-destructive personality traits.	7	6	5	4	3	2	1
I will feel the pressure from work or school.	7	6	5	4	3	2	1
I will feel support from my employers.	7	6	5	4	3	2	1
I will crave alcohol.	7	6	5	4	3	2	1
I will experience family problems.	7	6	5	4	3	2	1
I will feel negative and unpleasant emotions.	7	6	5	4	3	2	1
I will be in touch with my spiritual beliefs.	7	6	5	4	3	2	1
I will be around my drinking and using friends.	7	6	5	4	3	2	1
I will believe in myself.	7	6	5	4	3	2	1
I will have willpower.	7	6	5	4	3	2	1

	likely____:____:____:____:____:____:____unlikely						
	extremely	quite	slightly	neither	slightly	quite	extremely
I will have the desire to pursue my personal interests.	7	6	5	4	3	2	1
I will feel the stress of my personal relationships.	7	6	5	4	3	2	1
I will experience family support.	7	6	5	4	3	2	1
I will be around friends who mostly don't drink or use.	7	6	5	4	3	2	1
I will be exposed to Alcoholics Anonymous.	7	6	5	4	3	2	1
I will feel like not following through on what I learn in treatment.	7	6	5	4	3	2	1

K. Please answer the following questions:

1.

	likely____:____:____:____:____:____:____unlikely						
	extremely	quite	slightly	neither	slightly	quite	extremely
I intend to drink alcohol like I normally do at the times or places I usually drink alcohol during the 90 days following treatment.	7	6	5	4	3	2	1

2. How easy do you think it will be when it comes to staying sober at the times or places you usually drink alcohol during the 90 days following treatment?

Circle the number on the scale that best describes you.

Very Easy 10 9 8 7 6 5 4 3 2 1 0 **Very Hard**

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L. This last set of items focuses on how willing you are to go along with **what others think** you should do. Rate these statements on **how likely or unlikely** it is that **you will go along with the wishes of significant others.**

likely_____:_____:_____:_____:_____:_____:_____unlikely

	extremely	quite	slightly	neither	slightly	quite	extremely
Generally speaking, I will do what <u>most</u> <u>people who are important</u> <u>to me</u> think I should do.	7	6	5	4	3	2	1
Generally speaking, I will do what <u>my</u> <u>parents</u> think I should do.	7	6	5	4	3	2	1
Generally speaking, I will do what <u>most</u> <u>other family members</u> (include spouse and children if applicable) think I should do.	7	6	5	4	3	2	1
Generally speaking, I will do what <u>friends</u> <u>and relatives of mine</u> <u>who drink and use</u> think I should do.	7	6	5	4	3	2	1
Generally speaking, I will do what <u>close</u> <u>friends of mine</u> think I should do.	7	6	5	4	3	2	1
Generally speaking, I will do what <u>my</u> <u>employers</u> (present & future) think I should do.	7	6	5	4	3	2	1

PLEASE TAKE A FEW MOMENTS TO SEE IF YOU SKIPPED ANY ITEMS.

AND THANKS AGAIN FOR YOUR HELP

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Appendix F.

Staff Instructions

INSTRUCTIONS FOR STAFF

Dear Staff Member,

First of all, <u>thank you</u> for assisting in this phase of our study on alcohol and sobriety expectations. With your support for this study, we hopefully can obtain some valid and useful information.

INSTRUCTIONS

1. Explain to the <u>new patient</u> (Note: it is assumed that the patient either has been formally diagnosed with one of the alcohol disorders, or that alcohol is one of the drugs that they clearly abuse) that we are conducting a <u>scientific survey on alcohol and sobriety beliefs</u>, and <u>we need their help</u>. Ask the patient **"Would you be willing to participate in a scientific survey on alcohol and sobriety beliefs conducted by Utah State University and our Treatment Unit? The questions in this survey were generated by patients just like yourself. We will be using the results from this survey to improve treatment and better understand new patients like you, so we could use your help. It will only require you to spend approximately 45 minutes completing a Questionnaire and some background information. You will do this now** (today or in the next few days, that's up to you guys). **Then, just before you are discharged, you will fill out the Questionnaire only. EVERYTHING IS COMPLETELY CONFIDENTIAL"**.

2. At this point, show the patient the Questionnaire packet, especially the <u>second page</u> (with the palm tree) which explains the study. Also show them the <u>Consent Form</u>.

3. If they agree to participate, <u>have them sign the Consent Form</u>.

4. Then continue: **"Finally, as explained in the Questionnaire and Consent Form, 30 and 90 days after you are discharged, a member of the Research Team at Utah State University will send you a one-page preaddressed and stamped questionnaire, which you need to mail back. If you forget to mail it back, someone will call you at home. As a bonus, for those who <u>fully participate</u>** (this means those people who return the 30 day and 90 day followup questionnaires or respond via telephone), **there is a chance to win some money** ($150 who return the followup questionnaire, $100 who respond via telephone). **Do you have any questions?"**

Again, thanks for your help.

Appendix G.

Treatment Center Cover Sheet

Alcohol and Sobriety:

A Survey

HIGHLAND RIDGE AND UTAH STATE UNIVERSITY

AND <u>YOU</u>

Appendix H.

Open Letter to Participating Subjects

Dear Friend,

Welcome to Highland Ridge Hospital. We know beginning alcohol treatment is tough. Much is being asked of you right now. So we greatly appreciate your time and assistance.

To better understand why people use and abuse alcohol, we are conducting a scientific survey. We are asking a sample of 200 individuals like yourself, newly admitted to alcohol treatment, to tell us about yourself and what you think about drinking and staying sober. Your responses will be kept **completely confidential**. No one here at Highland Ridge will see your responses (please see Informed Consent form).

For the results of this survey to accurately reflect the people who receive alcohol treatment, it is very important that you, as a member of the sample, complete all materials. At this time, you need to fill out a questionnaire and a brief background history. Then, just before you are discharged, you will fill out the questionnaire once again. A member of the Utah State University research team will mail you a **very** short followup questionnaire 30 days after discharge, and then 90 days after discharge. If the questionnaire is not returned, we will call you on the telephone.

The overall findings from this survey will be available to those who develop alcohol treatment policies, including the Treatment Director at Highland Ridge. If you are interested in the results, please contact the Director of Treatment at Highland Ridge.

We would like to send everyone who fully participates in this study to a nice tropical island, but we cannot. However, for those individuals who return their followup questionnaires at 30 days, their names will be placed in a hat, 3 names will be drawn, and **those individuals will receive $150** ($100 if we need to call: AT&T is not cheap!). We will do the same thing for the 90 day followup. Thus, if an individual returns both the 30 and 90 day followup questionnaires, their chances of winning $150 are about 1 in 33. This is the best we can offer for your help.

Well, not quite . .

Again, we greatly appreciate your cooperation and thank you in advance for you time and consideration in responding to our questionnaire.

Sincerely,

David Stein, Ph.D.
Associate Professor of Psychology
Utah State University

Martin Toohill, M.S.
Psychology Specialist
Utah State University

Appendix I.

Consent Form for Main Study

UTAH STATE UNIVERSITY

I, _____, agree to participate in a study being conducted by the Department of Psychology at Utah State University. Specifically, I will complete a questionnaire on the following:

1. What I believe about _using_ and _not using_ alcohol;

2. My beliefs about what others think of using and not using alcohol;
3. What I believe about my ability to not use alcohol.

The information obtained from this study will allow the investigators to examine the relationship between what people believe about alcohol and how these beliefs affect drinking behavior. This information potentially can be used to help individuals who have drinking problems.

I will be administered this questionnaire at the beginning of treatment and just before I am discharged. The questionnaire will take approximately 45 minutes to complete. I also agree to complete a 30-day and 90-day follow-up assessment of my drinking behavior. These follow-up questionnaires will take approximately 5-10 minutes to complete. These pre-stamped questionnaires will be sent to me at my home residence through the mail. If necessary, I would agree to a brief interview about my drinking behavior on the phone. Thus, I agree to allow the investigators to have my _home address_ and my _home phone number_. This information is completely confidential, will be used only for this study and for the purposes already stated, and will be destroyed upon completion of the study.

The results of these questionnaires and followup assessments are confidential and _will not be used for treatment purposes_, but rather only for the research purposes of Utah State University. However, I agree to allow the _overall_ findings of this study to be released to the **ACT Program at St. Benedict's Hospital**, to be published in scientific journals, and to be presented at scientific conferences. However, _at no time will my name be released_.

I UNDERSTAND THAT _PARTICIPATION_ IN THIS STUDY _IS COMPLETELY VOLUNTARY_. REFUSAL TO PARTICIPATE WILL INVOLVE NO PENALTY OR HAVE NO EFFECT ON THE TREATMENT I RECEIVE. IN ADDITION, I CAN WITHDRAW FROM THIS STUDY AT ANY TIME, AND SUCH WITHDRAWAL WILL NOT AFFECT MY TREATMENT.

Any questions regarding this study can directed to Dr. David Stein, Department of Psychology, Utah State University, Logan, Utah.

Study Participant _____

Witness _____

Appendix J.

Pretreatment Assessment Questionnaire

CONFIDENTIAL INFORMATION: FOR RESEARCH PURPOSES ONLY

General Background Information

1. Your Name_____ 2. Date of Admission_____

3. Mailing Address_____ Zip_____

4. Phone Number_(____)_____ 5. Date of Birth_____ 6. Sex___

7. What is your race or ethnicity (Circle One) White Black Asian Hispanic American Indian Other_____

8. Marital Status (Circle One) Single Married Divorced Separated Widow(er) 9. No. of dependents____

10. Years of Education (Circle One) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17+

11. Job Title_____ 12. Kind of Work_____

13. Which of the following best describes your Gross Household Income last year? (Circle One)

   1. less than $10,000   8. 40,000 to 44,999
   2. 10,000 to 14,999   9. 45,000 to 49,999
   3. 15,000 to 19,999   10. 50,000 to 54,999
   4. 20,000 to 24,999   11. 55,000 to 59,999
   5. 25,000 to 29,999   12. 60,000 to 69,999
   6. 30,000 to 34,999   13. 70,000 to 79,999
   7. 35,000 to 39,999   14. 80,000 or over

14. Please list Major Stressful Life Events in the past year (e.g., the death of a spouse, loss of job)

   _____

   _____

Alcohol and Drug History

1. Relatives with alcohol/drug problems (Circle) Father Mother Brother Sister Other_____

2. Pressured into treatment by (Circle) No one Family Member Employer Legal Authorities Other_____

3. Did you require detoxification before entering treatment? (Circle One) Yes No

4. Have you been treated before for alcohol or drug problems? (Circle One) Yes No
   If Yes, Inpatient?_____ How often?_____ Outpatient?_____ How often?_____

5. Have you been treated before for any psychological problems? (Circle One Yes No
   If Yes, Inpatient?_____ How often?_____ Outpatient?_____ How often?_____

6. What kind of alcohol or drug related injuries have you had?_____

   _____

7. What kind of illnesses have you had directly related to alcohol or drug use?_____

   _____

8. How many work days missed (past year) due to alcohol/drug use?_____

9. How many jobs have you lost directly because of alcohol/drug use?_____

10. No. of DUIs (Lifetime):_____ 11. No. of other alcohol/drug-related arrests (Lifetime):_____

12. Has your alcohol/drug use caused major problems in any of these areas?
    Family_____ Work_____ Financial_____ Legal_____

13. Other alcohol/drug related problems?_____

14. Age you first got intoxicated on alcohol_____ 15. Years of drinking____

16. Age you first used drugs to get high?_____ 17. Years of drug use____

18. Years of problem drinking_____ 19. Years of problem drug use____

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Frequency and Intensity of Alcohol and Drug Use

For the next two questions, <u>one drink</u> = approximately 1 of the following:

1.0 oz. 80 proof (40%) **liquor**	12 oz. **beer** (24oz. of 3.2% beer)
5 oz. 24 proof (12%) **table wine**	<u>3 oz. 40 proof (20%) fortified wine</u>

<u>NO</u>TE: Use the following as a rough guide for counting drinks:

liquor	24 proof (12%) table wine
13 drinks per 375 ml. (pint)	5 drinks per 750 ml. (fifth)
25 drinks per 750 ml. (fifth)	10 drinks per 1500 ml. (just under 1/2 gallon)
34 drinks per 1000 ml. (quart)	20 drinks per 3000 ml. (just under a gallon)

1. About how many days a week did you drink for the past 3 months? (Circle one)

    1   2   3   4   5   6   7

    And about how many drinks did you have each day you drank? (Circle One)

    2   4   6   8   10   12   14   16   18   20
    22   24   26   28   30   35+   40+   45+   50+   60+

2. About how many days a week did you drink roughly one year ago? (Circle one)

    1   2   3   4   5   6   7

    And about how many drinks did you have each day you drank? (Circle One)

    2   4   6   8   10   12   14   16   18   20
    22   24   26   28   30   35+   40+   45+   50+   60+

3. Have you had any of the following symptoms the past year?

    Seizures/convulsions_____   How many?____

    Blackouts____   How many?____

    Delirium Tremens (DTs)____   How many?____

4. How many alcohol <u>binges</u> (drunk more than 48 hrs) during the past year?_____

5. List **all mind and mood altering drugs** you have **ever used** (include relaxants, sleeping pills, pain medications)?_____

6. What drugs have you **abused** in the <u>past 3 months</u>?

List drugs	How many days a week? (Circle)	Describe how much you used daily.
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____

7. What drugs did you **abuse** roughly <u>one year ago</u>?

List drugs	How many days a week (Circle)?	Describe how much you used daily.
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____
_____	1 2 3 4 5 6 7	_____

8. How long have you known you had an alcohol or drug problem?_____

9. How often have you tried to quit alcohol or drugs the past year?_____ Past 10 Years?_____

10. What is your longest period of alcohol sobriety the past year?_____ Longest period ever?_____

11. What is your longest period of being drug-free the past year?_____ Longest period ever?_____

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Appendix K.

Follow-Up Questionnaire

Dear

Greetings from Utah State University. Enclosed is the brief followup questionnaire for the Utah State Survey you completed during treatment. It should take about 5 minutes to complete. As promised, when you send this back in the enclosed envelope, you will be eligible to win $150.00. To repeat, you responses to this questionnaire are completely confidential. Only the investigators at Utah State University will see this information, and it will be destroyed after the study is completed.

We greatly appreciate your assistance and cooperation. We ask that you respond as accurately and honestly as possible to the following questions. Thank you.

1. Compare the following areas of your life for the past 30-days to the three-month period just before you entered treatment.

improved	:	:	:	:	:	:	worsened
	extremely	quite	slightly	neither	slightly	quite	extremely

Your relationship with most family members.	7	6	5	4	3	2	1
Your relationship with your spouse or "significant other" (if applicable).	7	6	5	4	3	2	1
Your relationship with close friends.	7	6	5	4	3	2	1
Your relationship with friends who still drink/use.	7	6	5	4	3	2	1
Your feelings about work or school (if applicable).	7	6	5	4	3	2	1
Your use of free time.	7	6	5	4	3	2	1
Your physical health.	7	6	5	4	3	2	1
Your feelings about yourself.	7	6	5	4	3	2	1
Your overall feelings about life.	7	6	5	4	3	2	1

2. Did you drink at all during the past 30 days?   Yes or No (Circle one)

If Yes, how many of those 30 days did you drink?   And about how many drinks each day you drank?
1 2 3 4 5 6 7 8 9 10+   2 4 6 8 10 12 14 16 18 20
                                        22 24 26 28 30 35+ 40+ 45+ 50+ 60+

one drink = 1 of the following: 1.0 oz. 80 proof (40%) liquor   12 oz. beer (24oz. of 3.2% beer)
                                  5.0 oz. 24 proof (12%) table wine   3oz. 40 proof (20%) fortified wine

3. Did you use any drugs during the past 30 days?   Yes or No (Circle one)

If yes, list the 3 drugs you used the most.

List drugs	How many days did you use? (Circle)	Describe how much you used daily.
_____	1 2 3 4 5 6 7 8 9 10+	_____
_____	1 2 3 4 5 6 7 8 9 10+	_____
_____	1 2 3 4 5 6 7 8 9 10+	_____

Appendix L.

Follow-Up Letter

UTAH STATE UNIVERSITY

COMMUNITY CLINIC
Department of Psychology
Logan. Utah 84322 2810
Telephone (801) 750-3401

April 24, 1992

Dear Alvin,

    Greetings from Utah State University. We hope you are still willing to participate in our study. We are anxious to know how you are doing. Included herein is the 30-day followup questionnaire. We did not receive the first 30-day questionnaire that we sent you, so we are sending you another one. Please fill this out (it just takes a few minutes) and mail it back.

    Thanks again for your interest in this study. We really appreciate your help.

Best regards,

Martin Toohill, M.S

Martin Toohill, M.S.

Appendix M

Descriptive Statistics for Individual Questionnaire Scale Items

Descriptive Statistics for Questionnaire Items

Alcohol	Belief rating		Evaluation rating	
Beliefs	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$
1. Comfortable, less shy[a]	+1.6	1.1	-0.2	2.3
2. Feeling of being "high"	+1.8	1.3	+0.6	2.3
3. Spend too much money	-0.7	2.1	+1.6	2.0
4. Escape problems	+1.5	1.6	-1.2	2.2
5. Physically sick	-1.3	1.7	+0.9	2.0
6. Problems with legal authorities	-1.5	1.9	+1.2	2.0
7. Enjoy company of other people	+1.3	1.5	-0.6	2.1
8. Accomplish little in daily life	-0.6	2.1	+1.9	1.6
9. Feel very relaxed	+1.8	1.2	-0.5	2.1
10. Little self-respect	-0.9	2.1	+1.7	1.9
11. Little control of words, actions	-0.7	2.0	+1.7	1.7
12. Conflict with those close to me	-1.1	2.1	+2.1	1.6

(table continues)

Sobriety Beliefs	Belief rating		Evaluation rating	
	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$
1. Leading healthier life	+2.5	1.2	+2.7	1.0
2. Hard time talking to others	-0.6	1.9	-0.8	1.9
3. Productive in daily life[a]	+2.3	1.2	+2.6	1.0
4. Get along with close others[a]	+2.3	1.2	+2.4	1.2
5. Feel I don't fit in with friends	-0.6	1.8	0.0	2.0
6. Rarely get physically sick	+1.6	1.8	+1.5	1.9
7. Think and remember clearly[a]	+2.3	1.3	+2.4	1.2
8. Save more money	+2.3	1.2	+2.5	1.2
9. Lose way to escape problems	+0.2	2.1	+0.5	2.3
10. Have fewer fun times	-0.7	1.8	-0.8	2.0
11. Control what I say and do	+2.1	1.4	+2.3	1.3
12. Feel good about self	+2.5	1.1	+2.5	1.2

Normative Beliefs about	Belief rating		Motivation to Comply	
Pressure (to stay sober)	M	SD	M	SD
1. My parents	+2.4	1.3	+0.9	1.7
2. Other family members	+2.5	1.0	+1.5	1.5
3. Friends et al. who drink/use	+0.9	2.0	-1.4	1.8
4. Close friends of mine	+1.8	1.6	+0.2	1.9
5. My employer (current/future)	+2.2	1.4	+1.3	1.5

Behavioral	Belief rating		Evaluation of Power rating	
Control Beliefs	M	SD	M	SD
1. Honesty	+2.1	1.4	+2.2	1.5
2. Old drinking places	-1.0	2.1	-0.8	2.2
3. Self-destructive traits	-0.2	2.0	-0.4	2.4
4. Work/school pressures	+0.1	2.1	+0.8	1.9
5. Support from employers	+1.3	1.9	+1.6	1.7
6. Cravings for alcohol	+0.6	1.9	-0.7	2.1
7. Family problems	+0.1	2.0	+0.2	2.1
8. Negative emotions	+0.4	1.9	-0.3	2.2
9. Spiritual beliefs	+1.1	1.9	+1.6	1.7
10. Drinking/using friends	-0.7	2.0	-0.6	2.1

Behavioral	Belief rating		Evaluation of Power rating	
Control Beliefs	M	SD	M	SD
11. Belief in myself	+1.7	1.7	+1.9	1.7
12. Pursuing personal interests	+1.6	1.7	+2.0	1.6
13. My willpower	+2.0	1.5	+1.8	1.9
14. Stress of relationships	+0.9	1.8	0.0	2.1
15. Family support	+2.0	1.6	+2.0	1.6
16. Friends who don't drink/use	+1.0	1.9	+1.5	1.8
17. Alcoholics Anonymous	+1.8	1.9	+2.2	1.5
18. Not using treatment information	-1.6	1.9	-1.3	2.4

Behavioral	Intention rating	
Intention	M	SD
1. To stay sober[b]	0.7	1.1
2. To try to stay sober[c]	0.4	0.7
3. To drink some amount of alcohol[d]	0.6	1.3
4. To drink like I normally do[d]	0.5	1.0

Note. The minimum and maximum values for all questionnaire items are -3 to +3, unless otherwise indicated.
[a]The minimum value was -2. [b]The values ranged from 0 to +6. [c]The values ranged from 0 to +4. [d]The numerical valence was reversed. The values then ranged from 0 to +6.

Appendix N.

Zero-Order Correlation Coefficients among Predictor Variables

for Subjects Returning 30-Day Follow-Up Data, and Subjects

Returning 30- through 90-Day Follow-Up Data

Zero-Order Correlation Coefficients among Predictor Variables,

Subjects Returning 30-Day Follow-Up Data[a]

Variable	1.	2.	3.	4.
1. Alcohol Attitude	.--			
2. Sobriety Attitude	-.36*	.--		
3. Subjective Norm	-.07	.20	.--	
4. Behavioral Control	-.18	.33*	.17	.--

[a]$\underline{N}$ = 96
* $\underline{p}$ < .05

Zero-Order Correlation Coefficients among Predictor Variables,

Subjects Returning 90-Day Follow-Up Data[a]

Variable	1.	2.	3.	4.
1. Alcohol Attitude	.--			
2. Sobriety Attitude	-.37*	.--		
3. Subjective Norm	-.06	.20	.--	
4. Behavioral Control	-.15	.33*	.16	.--

[a]$\underline{N}$ = 84
* $\underline{p}$ < .05

Appendix O.

Multiple Correlation Statistics For Belief-Based Measures and Intention,

Subjects Returning 30-Day Follow-Up Data, and Subjects

Returning 30- through 90-Day Follow-Up Data

Prediction of Intention with Subjects Returning 30-Day Follow-Up Data[a]

Dependent Variable			Multiple	Adjusted
Predictor Variables[b]	beta	r	R	R^2
Intention				
Alcohol Attitude	-.06	.06		
Sobriety Attitude	-.15	-.27*		
Subjective Norm	-.10	-.19		
Behavioral Control	-.36*	-.42*	.46	.17

[a]$N = 96$. [b]All predictor variables were entered simultaneously into a standard multiple regression equation.

* $p < .05$

Prediction of Intention with Subjects Returning 30- through 90-Day Follow-Up Data[a]

Dependent Variable Predictor Variables[b]	beta	r	Multiple R	Adjusted R^2
Intention				
Alcohol Attitude	-.06	.05		
Sobriety Attitude	-.10	-.24		
Subjective Norm	-.11	-.19		
Behavioral Control	-.41[c]	-.45[c]	.47	.19

[a]N = 84. [b]All predictor variables were entered simultaneously into a standard multiple regression equation.

* $p < .05$

Appendix P.

Multiple Regression Statistics for Prediction of Alcohol Use,

30-Day Follow-Up Period, 30- through 90-Day

Follow-Up Period, and Total Follow-Up Period

Prediction of Alcohol Use for the 30-Day Period

following Inpatient Treatment

Dependent Variables			Multiple	Adjusted
Predictor Variables[a]	beta	r	R	R^2
Frequency[b]				
Total Intention	-.05	.07		
Behavioral Control	-.04	-.07	.08	-.01
Quantity[c]				
Total Intention	-.04	-.06		
Behavioral Control	-.06	-.07	.08	-.01
Total Drinks[d]				
Total Intention	-.03	-.06		
Behavioral Control	-.06	-.08	.08	-.01

Note. None of the above statistics are statistically significant.
[a]Both predictor variables were entered simultaneously into a standard multiple regression equation for each outcome variable. The zero-order correlation of Total Intention and Behavioral Control was -0.42. [b]Number of days alcohol was used. [c]Estimated number of drinks consumed each drinking day. [d]Frequency X Quantity

Prediction of Alcohol Use for the 30- through 90-Day

Period following Inpatient Treatment

Dependent Variables			Multiple	Adjusted
Predictor Variables[a]	beta	r	R	R^2
Frequency[b]				
Total Intention	-.18	.09		
Behavioral Control	-.21	-.13	.21	.02
Quantity[c]				
Total Intention	-.13	-.09		
Behavioral Control	-.09	-.03	.12	-.01
Total Drinks[d]				
Total Intention	-.20	-.12		
Behavioral Control	-.18	-.09	.20	.02

Note. None of the above statistics are statistically significant.
[a]Both predictor variables were entered simultaneously into a standard multiple regression equation for each outcome variable. The zero-order correlation of Total Intention and Behavioral Control was -0.45. [b]Number of days alcohol was used. [c]Estimated number of drinks consumed each drinking day. [d]Frequency X Quantity.

Prediction of Alcohol Use for the Total 90-Day

Period following Inpatient Treatment

Dependent Variables			Multiple	Adjusted
Predictor Variables[a]	beta	$\underline{r}$	$\underline{R}$	$\underline{R}^2$
Frequency[b]				
Total Intention	-.19	.10		
Behavioral Control	-.20	-.11	.20	.02
Quantity[c]				
Total Intention	-.13	-.11		
Behavioral Control	-.03	-.02	.11	-.01
Total Drinks[d]				
Total Intention	-.16	-.12		
Behavioral Control	-.11	-.04	.15	.00

Note. None of the above statistics are statistically significant.
[a]Both predictor variables were entered simultaneously into a standard multiple regression equation for each outcome variable. The zero-order correlation of Total Intention and Behavioral Control was -0.45. [b]Number of days alcohol was used. [c]Estimated number of drinks consumed each drinking day. [d]Frequency X Quantity

Appendix Q.

Multiple Regression Statistics for Prediction of Drug Use, 30-Day

Follow-Up Period, and 30- through 90-Day Follow-Up Period

Prediction of Drug Use for the 30-Day

Period following Inpatient Treatment

Dependent Variables			Multiple	Adjusted
Predictor Variables[a]	beta	r	R	R^2
Number of Days Drug Use				
Total Intention	-.19	-.10		
Behavioral Control	-.23*	-.15	.23	.03
Total Use				
Total Intention	-.20	-.11		
Behavioral Control	-.23*	-.15	.24	.04
Total Drug/Alcohol Days[b]				
Total Intention	-.16	-.12		
Behavioral Control	-.10	-.04	.15	.00

[a]Both predictor variables were entered simultaneously into a standard multiple regression equation for each outcome variable. The zero-order correlation of Total Intention and Behavioral Control was -0.42. [b]This variable combined total days alcohol was used, plus total days any drugs were used.

* $p < .05$

Prediction of Drug Use for the 30- through 90-Day

Period following Inpatient Treatment

Dependent Variables			Multiple	Adjusted
Predictor Variables[a]	beta	r	R	R^2
Number of Days Drug Use				
Total Intention	-.24*	-.14		
Behavioral Control	-.23	-.12	.25	.04
Total Use				
Total Intention	-.25*	-.13		
Behavioral Control	-.26*	-.15	.27	.05
Total Drug/Alcohol Days[b]				
Total Intention	-.23	-.12		
Behavioral Control	-.23	-.13	.24	.03

[a]Both predictor variables were entered simultaneously into a standard multiple regression equation for each outcome variable. The zero-order correlation of Total Intention and Behavioral Control was -0.42. [b]This variable combined total days alcohol was used, plus total days any drugs were used.

* $p < .05$

Appendix R.

Demographic Characteristics of

Responders vs. Nonresponders

Demographic Characteristics of Responders vs. Nonresponders[a]

Variable	All Subjects ($\underline{N} = 110$)	Responders ($\underline{n} = 96$)	Nonresponders ($\underline{n} = 14$)	$\underline{p}$[b]	Effect Size[c]
Age:					
$\underline{M}$	33.2	33.6	29.6		
$\underline{SD}$	12.3	14.6	9.6	.25	+0.33
Male:	70%	69%	79%	.45	-0.20
Caucasian:	93%	93%	93%	.94	0.00
Marital status:					
married	42%	47%	38%		
single	36%	33%	39%		
divorced	18%	17%	19%		
other	4%	3%	4%	.90	-.-[d]
Education:					
$\underline{M}$	12.4	12.4	12.5		
$\underline{SD}$	2.1	2.1	1.6	.80	-0.07

Variable	All Subjects ($\underline{N} = 110$)	Responders ($\underline{n} = 96$)	Nonresponders ($\underline{n} = 14$)	$\underline{p}$	Effect Size
Income:					
$\underline{M}^e$	28,100	28,500	18,333		
$\underline{SD}$	15,000	15,000	9,000	.02	+0.67

[a]For some variables, a few subjects failed to provide information. Mean values for these variables were used in place of the missing data. [b]The probability of the $\underline{t}$ and chi-square statistics generated from corresponding between-group tests of statistical significance. [c]Because of unequal group sizes, mean effect sizes (ES) were estimated as follows: ES = $\underline{t}$ * square root of ($1/N_1$ + $1/N_2$). Positive ESs were for differences in favor of Group 1, which represented "Responders." For percentage data, the obtained chi-square statistic was converted to a $\underline{t}$ value, which was then used to estimate an ES according to the above formula. [d]ESs are not reported for variables with multiple levels of percentage data because of difficulty in interpretation. [e]Income data was obtained from all adult subjects and 3 of the 15 adolescents. The rest of the adolescents did not earn an income. All of the adolescents were Volunteer Subjects.

Appendix S.

Alcohol and Drug Use Characteristics

of Responders vs. Nonresponders

Alcohol and Drug Use Characteristics of Responders vs. Nonresponders[a]

Variable	All Subjects ($\underline{N} = 110$)	Responders ($\underline{n} = 96$)	Non-Responders ($\underline{n} = 14$)	$\underline{p}$[b]	Effect Size[c]
	Clinically Related Variables				
Family history of substance abuse:	83%	81%	93%	.48	-0.18
Pressured into treatment:					
none	61%	69%	57%		
family	21%	11%	26%		
employer	6%	0%	10%		
other	8%	12%	6%		
multiple	4%	8%	1%	.05	-.-d
Past drug/ alcohol treatment:	36%	31%	71%	.01	-0.79
Past psychiatric treatment:	26%	25%	36%	.39	-0.27

(table continues)

Variable	All Subjects ($\underline{N}$ = 110)	Responders ($\underline{n}$ = 96)	Non-Responders ($\underline{n}$ = 14)	$\underline{p}$	Effect Size
Detoxified before treatment:	54%	53%	57%	.78	-0.06
Age when alcohol first used:					
$\underline{M}$	15.5	15.7	13.9		
$\underline{SD}$	5.9	6.2	2.5	.31	+0.29
Years of drinking:					
$\underline{M}$	15.8	15.8	15.8		
$\underline{SD}$	10.5	10.8	8.2	.99	0.00
Years of problem drinking:					
$\underline{M}$	8.8	8.6	10.6		
$\underline{SD}$	7.0	6.8	8.2	.32	-0.29

Variable	All Subjects ($\underline{N}$ = 110)	Responders ($\underline{n}$ = 96)	Non-Responders ($\underline{n}$ = 14)	$\underline{p}$	Effect Size
Work days missed in past year[e]:					
$\underline{M}$	10.9	9.8	18.2		
$\underline{SD}$	21.4	17.6	38.6	.17	-0.39
Jobs lost[e]:					
$\underline{M}$	0.6	0.6	0.7		
$\underline{SD}$	1.7	1.7	1.3	.84	-0.06
Lifetime DUIs:					
$\underline{M}$	1.2	1.1	2.0		
$\underline{SD}$	2.0	2.0	2.0	.15	-0.41
Arrests[e]:					
$\underline{M}$	1.3	1.3	1.5		
$\underline{SD}$	2.1	2.2	1.9	.68	-0.12

Variable	All Subjects ($\underline{N} = 110$)	Responders ($\underline{n} = 96$)	Non-Responders ($\underline{n} = 14$)	$\underline{p}$	Effect Size
Alcohol Use One Year Before Treatment					
Frequency[f]:					
$\underline{M}$	3.6	3.6	3.7		
$\underline{SD}$	2.1	2.1	2.3	.87	-0.04
Quantity[g]:					
$\underline{M}$	11.2	10.8	13.7		
$\underline{SD}$	8.1	8.3	6.9	.22	-0.35
Alcohol Use During 3-Month Period Before Treatment					
Frequency[f]:					
$\underline{M}$	4.6	4.6	4.5		
$\underline{SD}$	1.9	1.9	1.9	.86	+0.05
Quantity[g]:					
$\underline{M}$	13.9	13.7	15.4		
$\underline{SD}$	11.0	11.4	7.4	.59	-0.16

Variable	All Subjects ($N = 110$)	Responders ($n = 96$)	Non-Responders ($n = 14$)	p	Effect Size
		Drug Use One Year Before Treatment			
Any use of drugs:	46%	43%	71%	.04	-0.52
Number of drugs used:					
Mode	0	0	0		
M	0.7	0.7	0.9		
SD	1.0	1.0	0.7	.42	-0.23
Specific drugs used:					
cocaine	18%	16%	36%	.07	-0.51
marijuana	29%	27%	43%	.22	-0.35
heroin	1%	0%	1%	.70	-0.26
LSD	8%	8%	7%	.88	+0.11
stimulants	8%	8%	7%	.88	+0.11
methadone	0%	0%	0%	.---	0.00
other	8%	9%	0%	.23	+0.26

Variable	All Subjects ($\underline{N}$ = 110)	Responders ($\underline{n}$ = 96)	Non-Responders ($\underline{n}$ = 14)	$\underline{p}$	Effect Size
	Drug Use During 3-Month Period Before Treatment				
Any use of drugs:	53%	48%	86%	.01	-0.68
Number of drugs used:					
Mode	0	0	0		
$\underline{M}$	0.9	0.8	1.4		
$\underline{SD}$	1.0	1.0	0.9	.05	-0.56
Specific drugs used:					
cocaine	26%	21%	57%	.01	-0.82
marijuana	35%	32%	50%	.19	-0.36
heroin	3%	2%	7%	.28	-0.46
LSD	6%	5%	7%	.77	-0.25
stimulants	7%	8%	0%	.26	+0.10
methadone	1%	0%	7%	.01	-0.73
other	10%	10%	7%	.70	+0.04

(table continues)

Variable	All Subjects ($\underline{N}$ = 110)	Responders ($\underline{n}$ = 96)	Non-Responders ($\underline{n}$ = 14)	$\underline{p}$	Effect Size
		Questionnaire Measures			
Alcohol Attitude					
$\underline{M}$	-9.9	-9.8	-10.5		
$\underline{SD}$	29.4	29.6	28.8	.93	+0.03
Sobriety Attitude					
$\underline{M}$	44.6	44.0	48.1		
$\underline{SD}$	27.7	28.3	24.2	.61	-0.15
Subjective Norm					
$\underline{M}$	37.1	36.4	41.3		
$\underline{SD}$	36.4	37.3	30.3	.64	-0.13
Behavioral Control					
$\underline{M}$	10.8	10.3	14.3		
$\underline{SD}$	13.9	13.8	14.8	.32	-0.29

[a]For some variables, a few subjects failed to provide information. Mean values were used in place of the missing data. [b]The probability of the $\underline{t}$ and chi-square statistics generated from corresponding between-group tests of statistical significance. [c]Because of unequal group sizes, mean effect sizes (ES) were estimated as follows: ES = $\underline{t}$ * square root of $(1/N_1 + 1/N_2)$. Positive ESs were for differences in favor of Group 1, which represented "Responders." For percentage data, the obtained chi-square statistic was converted to a $\underline{t}$ value, which was then used to estimate an ES according to the above formula. [d]ESs are not reported for variables with multiple levels of percentage data because of difficulty in interpretation. [e]Alcohol or drug related. [f]Number of days per week that alcohol was consumed. [g]Number of "standard" drinks per day.

VITA

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Candidate for the Degree of

Doctor of Philosophy

Dissertation: Alcohol, Abstinence, Efficacy, and Social Normative Expectancies: The Effect on Alcoholics' Level of Drinking Following Inpatient Treatment

Major Field: Psychology

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Personal Data: Born in St. Louis, Missouri, November 20, 1950, son of Martin and Mary Teresa Toohill

Education: Received the Bachelor of Arts degree in Psychology from College of St. Thomas, St. Paul, Minnesota, 1972; received the Master of Science degree in Psychology from New Mexico Highlands University, Las Vegas, New Mexico, 1984; in 1994 completed the requirements for the Doctor of Philosophy degree in Psychology from Utah State University, Logan, Utah.

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Presentations and Publications: Toohill, M. (1994). Community prevalence studies of childhood suicidal behaviors: A critical review. Paper presented at the 64th Annual Convention of the Rocky Mountain Psychological Association, April 23, 1994. Glomb, N. K., & Toohill, M. J. (1993). Does dual certification make a difference? Paper presented at the 16th Annual Teacher Education Division of the Council for Exceptional Children Conference, Orlando, Florida. Toohill, M. (1991). Early Intervention with Medically Fragile Children: Results of Three Randomized Trials. Presentation at the Council for Exceptional Children's, Division for Early Childhood, International Early Childhood Conference on Children with Special Needs, November 15, 1991, St. Louis, Missouri. Worthen, B. R., Anderton, G. M., Mondfrans, A. V., Moss, V. D., Toohill, M. J., & Cook, R. W. (1990). Statewide Evaluation of

Utah's Productivity Project Studies Program. Submitted to the Utah State Office of Education by Research and Evaluation Methodology Program, Department of Psychology, Utah State University, Logan, Utah. Haring, K., & Toohill, M. J. (1989). Belleville Project: Mildly to Severely Handicapped Children -- Treatment versus no Treatment. 1989 Annual Report of the Early Intervention Research Institute, Developmental Center for Handicapped Persons, Utah State University, Logan, Utah.