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The Relations of Self-Efficacy, Neuropsychological Functioning, Depression, and Denial to Treatment Outcome in Alcoholism

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THE RELATIONS OF SELF-EFFICACY, NEUROPSYCHOLOGICAL FUNCTIONING, DEPRESSION, AND DENIAL TO TREATMENT OUTCOME IN ALCOHOLISM

By

Mark William Gunther

A DISSERTATION

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

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ABSTRACT

THE RELATIONS OF SELF-EFFICACY, NEUROPSYCHOLOGICAL FUNCTIONING, DEPRESSION, AND DENIAL TO TREATMENT OUTCOME IN ALCOHOLISM

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The present study examined self-efficacy (i.e., the belief in one's ability to refrain from alcohol),

neuropsychological functioning, depression, and denial as a function of in-treatment variables and relapse status at 1and 3-month follow-up. Impaired performance on the Revised Category Test was associated with shorter lengths of stay and a decreased likelihood of successful completion of an inpatient treatment program (p < .05). Poorer performance on the Rey-Osterrieth Complex Figure Test (copy, immediate, & delayed recall) was associated with shorter lengths of stay (p <.01). Impaired performance on the Trail Making Test (Part A) was related to counselor ratings of denial (p <.01)which was, in turn, related to shorter lengths of stay and an increased risk of unsuccessful completion of treatment (p <.01). Neuropsychological functioning was a significant moderating variable between abstinence-related self-efficacy (SE) and relapse rates at follow-up, with high SE associated with a higher rate of relapse for the impaired group. Results are discussed in terms of their implications for intreatment behaviors (e.g., the accuracy of self-assessment, interpersonal scanning, social judgment, the misattribution of denial), and the client-counselor relationship.

To Irene

Who has taught me so much about love and work.

During the process of writing this dissertation there were days when I was plagued by the illusion that I was alone, working on the project in isolation. Nothing could have been further from the truth. Any undertaking of this kind requires the cooperation of many individuals and I have been extremely fortunate to have had the support of the following people.

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STUR	_	Treatment gite
PACE	_	Subject race
CFY	_	Subject race
ACF	_	Subject age
MCTAT	_	Varital status
FCTAT	_	Funloyment status
FDUC	_	Level of education
DDNT	_	Devel of education Devental history of substance abuse
A MONT	_	Amount of daily consumption
FDFO	_	Number of drinking days per week
	_	Duration of substance abuse problem
	_	Dave planged between admission and assessment
MAND	_	Referral status mandated v. non-mandated
DSVCH	_	History of neuchiatric treatment
SET Z	_	History of seizures
CSAD	_	Concurrent substance abuse disorder
LOS	-	Length of stav
SUT	_	Successful v. unsuccessful treatment
MMSE	-	Score on Mini-Mental State Exam
ADS	-	Alcohol Dependence Scale
BDI	-	Beck Depression Inventory
COMP	-	Comprehension subtest
CFTC	-	Complex Figure Task - copy
CFTI	-	Complex Figure Task - immediate recall
CFTD	-	Complex Figure Task - delayed recall
DIGIT	-	Digit Symbol subtest
INCID	-	Incidental memory trial of the Digit Symbol subtest
TRLSA	-	Trail Making Test, Part A
TRLSB	-	Trail Making Test, Part B
FAS	-	Controlled Oral Word Association Test
RCAT	-	Revised (Booklet) Category Test
DRS	-	Denial Rating Scale
WAI	-	Single question from the Working Alliance Inventory
SCQA	-	Situational Confidence Questionnaire, Pretreatment
SCQB	-	Situational Confidence Questionnaire, Posttreatment
NCONA	-	No confidence ratings, Pretreatment SCQ
NCONB	-	No confidence ratings, Posttreatment SCQ
FOLLA	-	One month follow-up
FOLLB	-	Three month follow-up
AFTA	-	Participation in aftercare at one month follow-up
AFTB	-	Participation in aftercare at three month follow-up
RTOT	-	Combined 1- and 3- month follow-up relapse totals

Chapter 1

Introduction

It has been estimated that health care costs account for approximately ten percent of the U.S. gross national product (Wallace, 1985, p. 2). Much of this expenditure is directly associated with the problem of alcohol abuse. A recent study by the U.S. Department of Health and Human Services (USDHHS, 1990) estimated the total annual economic cost of alcohol abuse in the United States to be \$136.3 billion. This estimate is projected to rise to 150.0 billion in 1995. These projections are in 1983 dollars and do not include the effects of inflation. Of these yearly costs, approximately 61 percent (83 billion) is attributed loss of employment and reduced productivity, and 13 percent (18 billion) to health care costs and treatment.

Statistics pertaining to the human costs associated with alcohol abuse are equally compelling. The National Highway Traffic Safety Administration (1988) has identified motor vehicle accidents as the leading cause of injury death in the United States, and estimated that approximately onehalf of all automobile-related fatalities in the U.S. involve alcohol.

A number of studies have provided evidence suggesting that alcohol consumption is associated with an increased risk of fires and burns. In a review of studies published between 1947 and 1986, Howland and Hingson (1987) estimated

that between 37 and 64 percent of all burn victims are legally intoxicated at the time of their accident (blood alcohol content (BAC) greater than or equal to 0.10). Alcoholics are also more likely to die fire-related deaths than nonalcoholics (Schmidt & de Lint, 1972; Combs-Orme, Taylor, Scott, & Holmes, 1983).

A high proportion of suicide victims (between 20-36 percent) either have a history of alcohol abuse, or were drinking shortly before their suicides (Colliver & Malin, 1986). It has also been suggested that alcohol tends to be associated with impulsive rather than premeditated suicides (Welte, Abel, & Wieczorek, 1988). When one considers factors related to medical and psychiatric comorbidity, these figures indicate that alcohol abuse is arguably the #1 public health problem in the United States.

Problem Statement

Alcoholics receive treatment in a variety of contexts including outpatient clinics, residential treatment centers, medical detoxification units, social-support recovery programs, and custodial/domiciliary settings. The components of alcoholism treatment generally include the medical management of alcohol withdrawal syndrome, psychosocial stabilization, and education concerning the nature of alcohol dependence. Traditional treatment has focused on individual, group, family and marital therapy, and social skills training. However, in spite of staggering

expenditures and extensive research into the etiology and prevention of alcoholism, traditional therapies have had only limited success in producing significant long-term abstinence rates.

Studies that have evaluated treatment context have found little difference in outcome based on treatment setting or intensity (USDHHS, 1990). In a controlled comparison study, Miller and Hester (1986a) observed no advantage in (a) residential over nonresidential treatment, (b) longer over shorter inpatient treatment, or (c) more intensive over less intensive interventions. They concluded that treatment outcome is a function of the *content* of specific interventions, independent of the settings in which they occur.

Since traditional therapies have not yielded promising results, research on alternative models of alcoholism treatment is needed. The problem involves identifying which factors are associated with long-term abstinence rates following treatment for alcoholism. Put another way, under what circumstances does a particular type of individual best respond to a given treatment modality? Or, how can we predict which individuals will respond most favorably to conventional alcoholism treatment, and what types of alternative therapies might enhance current methods and strategies?

Differential response to treatment may be based on

variations in both patient and treatment characteristics (Miller, 1989; Miller & Hester, 1986b, 1986c). A patienttreatment matching approach involves the selective matching of client populations with appropriate treatment methods and/or facilities to enhance treatment effectiveness and improve posttreatment outcome. A variety of psychological, behavioral, and demographic variables may be associated with an individual's response to treatment (Annis, 1988). Variables associated with treatment outcome may include level of cognitive functioning, social stability, social competence (Gibbs, 1981), and psychopathology (McLellan, Luborsky, Woody, O'Brien, & Druley, 1983). Differential treatment strategies are likely to benefit clients with varying degrees of cognitive, emotional or life adjustment These considerations also parallel recent trends problems. in the area of psychotherapy outcome research (McGovern, Newman, & Kopta, 1986; Meara, Pepinsky, Shannon, & Murray, 1981; Plous & Zimbardo, 1986; Sloane, Staples, Cristol, Yorkston, & Whipple, 1976; Stiles, Shapiro, & Elliot, 1986; Stiles, Shapiro, & Firth-Cozens, 1988).

A variety of models have been applied to the study of alcoholism, its treatment, and prevention. One approach which is gaining increased acceptance is a cognitivebehavioral model that emphasizes the importance of environmental cues and the development of coping strategies designed to help individuals deal with potential relapse

situations (Marlatt & Gordon, 1980; Marlatt, 1985a). This model is closely related to social learning theory and views recovery from alcoholism as the prevention of relapse through the utilization of effective coping responses.

Albert Bandura (1977, 1986a, 1989), discusses effective coping responses in terms of self-efficacy. Self-efficacy refers to an individual's self-referential expectations concerning her/his ability to successfully perform the behaviors necessary to exercise control over specific situations. Self-efficacy expectations are thought to be influenced by past performance accomplishments, vicarious experience (modeling), verbal persuasion, and emotional arousal.

Marlatt and Gordon (1980) postulated a model in which individuals with high self-efficacy about their ability to avoid relapse are more likely to utilize effective alternative coping responses than individuals with low selfefficacy. More recently, Marlatt (1985b) has outlined a model of relapse based on five major variables. In this model, relapse is determined by (a) exposure to "high risk" situations, (b) the degree to which successful coping responses are utilized, (c) enhanced self-efficacy for coping or reduced self-efficacy for non-coping, (d) expectancies about the use of alcohol in a particular situation, and (e) the abstinence violation effect, or the individual's cognitive and affective reaction to the

ingestion of alcohol.

Potential high risk situations include both intra- and interpersonal events. Intrapersonal factors involve negative emotional states (e.g., frustration, anger, depression), negative physical states (e.g., "physical craving," illness, injury), positive emotional states (e.g., drinking to increase feelings of pleasure, joy, celebration), and testing personal control (e.g., tests of personal will power). Interpersonal factors include coping with interpersonal conflict, and the direct social pressure to drink.

Purpose of Study

An individual's ability to utilize effective coping strategies when faced with potential relapse situations should depend on her/his self-efficacy beliefs. In addition, self-efficacy beliefs concerning one's ability to abstain from alcohol should change systematically during treatment, and affect treatment outcome (e.g., abstinence rates, compliance with aftercare). If so, then treatment strategies that increase a individual's repertoire of coping skills and enhance perceptions of self-efficacy will prove useful in the prevention of alcoholic relapse.

This problem is relevant to counseling psychology in several ways. In the most general sense it is concerned with factors related to treatment outcome. Empirical support for the application of self-efficacy theory has been

found in a number of health-related areas including tobacco smoking, weight control, contraceptive behavior, exercise behavior, anxiety disorders, pain management, cardiac rehabilitation, depression, motivation, and achievement (Strecher, DeVellis, Becker, & Rosenstock, 1986). Selfefficacy theory may provide a useful model within which to understand health behavior change, having relevance for the field of counseling psychology in general, and particularly those counseling psychologists interested in health psychology.

Research on self-efficacy and addictive behaviors (especially tobacco smoking), suggests that as self-efficacy increases, the likelihood of relapse decreases. Also, high self-efficacy during treatment is predictive of positive post-treatment outcome (DiClemente, 1986). However, much less research has been conducted with alcohol abusers.

A recent study by Burling, Reilly, Moltzen, and Ziff (1989) has created a counter-intuitive gap in our understanding about the relationship between relapse selfefficacy and treatment outcome. These authors found that low intake self-efficacy (the perceived ability to avoid alcohol relapse) was more predictive of abstinence at follow-up than high intake self-efficacy for a group of male veterans. They suggested that high intake self-efficacy may be indicative of inaccurate self-appraisal which is, in turn, the result of psychological denial.

Several questions are raised by this finding. Is selfefficacy a predictor of treatment outcome in alcoholism? Under what circumstances does increased (or decreased) selfefficacy increase the likelihood of long-term abstinence? Is high pre-treatment self-efficacy related to psychological denial? Are alcoholics similar to other groups (e.g., tobacco smokers) with regard to self-efficacy, or is this population somehow different? Having been stimulated by the Burling et al. (1989) article, I wish to pose an additional set of questions.

Recent research on intermediate-duration (subacute) organic mental disorder in alcoholism suggests that the cognitive impairment experienced by many alcoholics is a slowly resolving abstinence-related process (Grant, 1987; Grant, Adams, & Reed, 1986). While such functions as verbal I.Q. and language skills tend to be preserved in even the most severe alcoholics, chronic alcoholics often exhibit deficits in a number of areas including (a) maintenance of cognitive set, (b) flexibility of thinking, (c) adaptive problem-solving, (d) planning capacity, (e) ability to profit from errors, (f) spatial scanning, and (g) complex perceptuomotor abilities (Lezak, 1983; Parsons, 1987; Walsh, 1990). Both Lezak (1983) and Walsh (1990) attributed the alcoholics' apparent inability to make abstractions to slowed perceptual processing and a general cognitive impersistence.

The conceptual model guiding this study is one in which neuropsychological impairment gives rise to self-assessment "deficits." For example, psychological denial, the inability or unwillingness to appreciate the severity of one's substance abuse problem, will be conceptualized as a deficit in self-appraisal. In this model, errors in selfappraisal are also expected to manifest as the unrealistically positive evaluation of one's ability to remain abstinent posttreatment (i.e., self-efficacy).

Neuropsychologically intact individuals are expected to be more accurate self-assessors. As a group, these individuals are likely to be more depressed as a result of their relatively more reliable evaluation of personal circumstances. Inaccurate self-appraisals, as evidenced by increased denial or overly positive assessments of selfefficacy, should lead to increased rates of relapse. Additionally, these neuropsychologically-based, selfassessment deficits are expected to affect a variety of intreatment behaviors (e.g., premature dropout rate, circumstances surrounding discharge).

The purpose of this study is to investigate the extent to which neuropsychological deficits are related to the ability to accurately evaluate high-risk relapse situations. To what extent is the accuracy of self-appraisal (such as self-efficacy estimates) affected by neuropsychological impairment? Is self-efficacy for continued abstinence

related to (a) planning capacity, (b) "abstracting" ability, (c) motivational skills, (d) approach to problem-solving, or (e) effective error utilization? Put another way, do high and low self-efficacy patients reflect significantly different functioning on measures of cognitive and motivational processing, particularly with regard to the ability to generate constructive alternative solutions to problems? If so, are they differentially responsive to conventional treatments which assume that patients have the requisite ability to profit from the largely cognitive and psychosocial therapies that currently predominate the field of alcoholism treatment? How would group differences in cognitive functioning affect the choice of interventions and patient-treatment matching strategies?

Research Questions

Overall, three main research questions will be addressed in this study:

- To what extent are alcoholics' denial and cognitive functioning related to their self-reported selfefficacy to refrain from drinking?
- 2. Do self-efficacy, cognitive functioning, or denial relate to premature dropout or unsatisfactory discharge?
- 3. To what extent does self-efficacy, cognitive functioning, and denial influence posttreatment abstinence rates?

The following study was designed to address these issues and to clarify the conceptual and methodological issues inherent in this type of counseling research. A review of the relevant literature will be followed by a set of research questions and hypotheses, and details concerning the study's methodology and results.

Chapter 2

Literature Review

The goal of this chapter is to provide an historical overview of relevant theory and research literature. An attempt will be made to review past research and to clarify the underlying logic supporting the present study's purposes, questions and hypotheses. The chapter will begin with a general overview of self-efficacy theory and the rationale for its application in the field of addictive behaviors. This will be followed by a review of recent research on self-efficacy and health behavior change and a brief section on self-assessment. Next, relevant literatures in the areas of neuropsychological impairment, depression, and denial will be presented in an attempt to outline why these variables may be moderating the ability of self-efficacy to predict treatment outcome. The chapter will close with a summary of conclusions, theoretical assumptions, and hypotheses.

Self-Efficacy: Theoretical Overview

Self-efficacy theory has grown out of the social learning approach to the study of human behavior, and is most often associated with the work of Albert Bandura (1977, 1989). Bandura (1989) described the (relabeled) social cognitive approach as a model that ascribes to the notion of "emergent interactive agency". That is, individuals are agents in a system of "triadic reciprocal causation" and can

be understood in terms of their self-generated action and its impact on the interaction between environment events and personal factors. "Self-efficacy is concerned with judgments about how well one can organize and execute courses of action required to deal with prospective situations that contain many ambiguous, unpredictable, and often stressful elements" (Bandura, 1981, p. 200-201). Concerning the exercise of human agency through selfefficacy Bandura (1989) has stated:

Among the mechanisms of personal agency, none is more central or pervasive than people's beliefs about their capabilities to exercise control over events that affect their lives. Self-efficacy beliefs function as an important set of proximal determinants of human motivation, affect, and action. They operate on action through motivational, cognitive, and affective intervening processes. Some of these processes, such as affective arousal and thinking patterns, are of considerable interest in their own right and not just as intervening influencers of action (p. 1175).

It is important to note that self-efficacy as conceptualized by Bandura is not a global characteristic or trait (e.g., self-confidence, self-esteem), but highly specific to the behavior or set of behaviors under consideration. Self-efficacy is to be understood as an intervening variable between personal factors, environmental events, and the particular behavior under question. Selfefficacy expectations refer to beliefs about a person's ability to successfully complete a specific task. A related consideration concerns outcome expectations, or the belief that a specific behavior will result in a certain consequence or set of consequences. Outcome expectations are best understood as mediating variables between specific behavior and actual outcome.

Bandura (1977, 1986b) proposed a close conceptual link between self-efficacy beliefs and outcome expectations. Outcome expectations are "a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p. 193). Outcome expectations concern the anticipated effects of engaging in a specific behavior and, as such, are dependent on self-efficacy beliefs. However, "It is because expected outcomes are highly dependent on self-efficacy judgments that expected outcomes may not add much on their own to the prediction of behavior" (Bandura, 1986b, p. 392-393). Two studies on alcoholism have found only a weak relationship between self-efficacy beliefs and outcome expectations, lending support to Bandura's contention that they are relatively independent constructs (Solomon & Annis, 1989, 1990).

Self-efficacy expectations are acquired in four basic ways:

- performance accomplishments, through direct personal experience.
- vicarious experience, by the observation of models.
- social persuasion, resulting from verbal encouragement.

4. emotional arousal, dependent on situational variables.

The routes by which self-efficacy expectations are acquired are presented in order of importance; with performance accomplishments being the most powerful means by which a person may develop judgements concerning their capabilities. Perceptions concerning self-efficacy are constantly influenced by new information from the environment; these perceptions then influence human behavior.

Self-efficacy expectations also vary along three dimensions:

- Level This dimension refers to the degree of difficulty of the tasks that the individual feels capable of attempting, and is postulated to influence the type of behaviors that are either attempted or avoided.
- 2. Strength This dimension reflects the person's confidence in higher ability, and is postulated to influence the persistence of behavior when the individual is confronted with obstacles.
- Generality The degree to which expectations of personal efficacy transfer to different behavioral domains.

Self-efficacy beliefs may have either a positive or negative influence on behavior. That is, a person's expectations concerning their capabilities may either enhance or inhibit performance. In general, persons with high self-efficacy are likely to seek out those situations in which they feel competent and are able to exert their skills on the demands of a particular task without undue doubts. Persons with low self-efficacy, on the other hand, tend to avoid situations that they believe exceed their capabilities and tend to perceive the task as more difficult than it really is. Frequent negative self-appraisals can create a state of emotional arousal that impedes performance.

Bandura (1981) has illustrated the importance of successes and failures experienced in coping with high-risk situations:

Successes raise efficacy appraisals; repeated failures lower them, especially if the failures occur early in the course of events and do not reflect lack of effort or adverse external circumstances. After a strong sense of efficacy is developed through repeated success, occasional failures are unlikely to have much effect on judgments of one's capabilities. Indeed, failures that are overcome by determined effort can instill robust percepts of self-efficacy through experience that one can eventually master even the most difficult obstacles (p. 203).

While vicarious experiences, social persuasion, and physiological arousal all exert an importance influence, Marlatt (1985c) agreed with Bandura and stated that the most significant source for inferring self-efficacy judgments concerns the individual's performance accomplishments. In Marlatt's model of relapse prevention the likelihood of relapse decreases as the individual is able to execute "effective cognitive or behavioral coping response[s]"
(Marlatt, 1985a, p. 40). The individual who copes
successfully with a high risk relapse situation is likely to
experience an enhanced sense of personal control or mastery.
As perceived control (self-efficacy) increases, the
likelihood of effective coping responses also increases and
the probability of relapse decreases. Accordingly, if the
individual is unsuccessful in her/his attempt to cope with a
high risk situation, the person is likely to experience a
decrease in self-efficacy and the probability of relapse
increases.

Marlatt has outlined a model of the relapse process that emphasizes the balance between perceived control (selfefficacy) and high risk situations. In this context, a high risk situation is any situation that poses a threat to the individual's sense of control, thereby increasing the probability of relapse. Although Marlatt and his colleagues (Marlatt & Gordon, 1980; Cummings, Gordon, & Marlatt, 1980) have identified a total of eight high risk situations, or relapse determinants, they found that nearly 75% of all relapses were associated with three categories - negative emotional states, interpersonal conflict, and social pressure. Furthermore, these investigators found that these three high risk categories were frequently associated with relapse regardless of the particular problem behavior (e.g., alcohol abuse, drug addiction, smoking, gambling,

overeating).

Self-Efficacy and Health Behavior Change

In their review of the literature on self-efficacy and health behavior change, Strecher, DeVellis, Becker, and Rosenstock (1986) found self-efficacy to be a consistent predictor of short- and long-term success. Experimental manipulations of self-efficacy generally supported Bandura's assertion that efficacy expectations reflect a person's perceived, rather than actual, capabilities. The authors concluded that it is these perceptions and not one's true abilities that often influence behavior.

Research on addictive behaviors (e.g., alcohol consumption, tobacco smoking, eating behaviors) has also supported several critical theoretical assumptions of Bandura's self-efficacy construct. DiClemente (1986) has concluded that the construct of self-efficacy can be applied to addictive behaviors with minimal distortion. Selfefficacy evaluations not only appear to predict successful abstinence, but may also be related to coping behaviors that are necessary for abstinence maintenance

Research also suggests that a diminished sense of personal control or self-efficacy is related to performance deficits (e.g., on problem-solving and psychomotor tasks) and to a greater likelihood of relapse into addictive behaviors (Clifford, 1983). These findings suggest that treatment strategies which improve clients' coping skills,

develop their sense of personal control, and enhance perceptions of self-efficacy may be potent interventions to reduce the risk of alcoholic relapse.

Clifford (1983) argued that conventional alcoholism treatment relies heavily on both the enlightenment and medical models of responsibility attribution (see Brickman et al., 1982 for discussion). Both of these models may undermine self-efficacy expectations by implicitly suggesting that the client has minimal control over her/his drinking behavior. Although receiving help from experts, support groups and divine forces ("higher powers") is often appropriate, Clifford has asserted that interventions need to be provided in such a way as to minimize dependency and maximize confidence in personal control.

Similarly, Rollnick and Heather (1982) suggested that self-efficacy theory may also explain why some treatment methods might be more effective than others. They stated that both self-efficacy beliefs and outcome expectations have positive and negative aspects, and that alcoholics are routinely given mixed messages concerning their personal mastery. They contend that a failure to differentiate between the positive and negative components of these two constructs may explain the poor results of conventional alcoholism treatment. "Thus, attention is directed at developing the alcoholic's feelings of personal mastery at being able to remain abstinent, yet an expectation is also

created that stresses the person's weakness and inability to cope with further drinking" (Rollnick & Heather, 1982, p. 244). Therefore, while enhanced self-efficacy beliefs may promote abstinence, certain treatment approaches may create negative outcome expectancies that unwittingly precipitate relapse.

Annis and Davis (1988, 1989) have described a relapse prevention training program based on self-efficacy theory. In this program the client is gradually exposed to relevant high-risk situations. The therapeutic process is geared toward developing the client's repertoire of coping strategies for dealing successfully with these situations posttreatment. The program made use of the Situational Confidence Questionnaire (SCQ) (Annis, 1987), as a measure of self-efficacy. The SCQ is based on the eight determinants of relapse outlined by Marlatt and Gordon (1980) (see Appendix A), and has been found to have satisfactory internal consistency and test-retest reliability (Annis & Graham, 1988).

This instrument has also received independent clinical validation and appears to have promising psychometric properties for future research. Miller, Ross, Emmerson, and Todt (1989) found that subjects with at least one year of abstinence scored significantly higher than newly abstinent subjects on seven of the eight SCQ sub-scales (p <.001). A Swedish version of the SCQ (Sandahl, Lindberg, & Ronnberg, 1990) has also been found to have satisfactory test-retest reliability, internal consistency, and scale specificity (i.e., the eight factors appear to be independent).

In a recent study by Sitharthan and Kavanagh (1990) self-efficacy was used to predict outcome for a controlled drinking program. Self-efficacy was found to predict posttreatment alcohol consumption at a six month follow-up. However, self-efficacy was no more predictive of posttreatment outcome than current consumption (i.e., consumption during treatment). The authors suggested that very high posttreatment self-efficacy scores might account for this finding. One of the explanations offered is that the participants had difficulty assessing the limits of their capabilities at the end of treatment. It may be that individuals who are unrealistically confident about their abilities decrease their concern about exposure to high-risk situations. If so, then alcoholics may be more vulnerable to relapse when their self-efficacy is high. This is consistent with the clinical observation that clients who are overconfident about their ability to remain abstinent are "setting themselves up" for relapse. Additionally, if a subset of individuals demonstrate self-assessment "deficits," then this would reduce the overall positive impact of higher self-efficacy on treatment outcome.

These observations are compatible with the results of the Burling et al. (1989) study mentioned above which were

as follows: (a) self-efficacy increased during treatment and was higher for abstainers than relapsers at follow-up, (b) low self-efficacy at intake was related to longer inpatient treatment stays and more positive conditions of discharge, (c) abstainers had slightly lower self-efficacy scores than relapsers at intake and increased their self-efficacy nearly two-fold over relapsers during the course of treatment, and (d) contrary to previous research on tobacco smoking, selfefficacy ratings at discharge were not related to substance abuse at follow-up. These results suggest that *low* pretreatment self-efficacy may be related to positive treatment outcome under certain circumstances. Additionally, high pretreatment self-efficacy may be related to self-appraisal "deficits" and/or psychological denial.

Along these lines, in a study that examined the posttreatment adjustment of psychiatric patients, Lent, Lopez, Mikolaitis, Jones, and Bieschke (1992) found that self-efficacy (the perceived ability to perform adaptive behaviors in the post-hospital environment) contributed significantly to the prediction of symptom severity and adjustment motivation. Outcome expectations (beliefs about the instrumentality of various behaviors) also contributed to the variation in patients' adjustment motivation.

While these findings support the notion that selfefficacy is negatively related to psychological distress, the authors caution that the relationship between self-
efficacy and symptom severity is not a simple one. The predictive utility of a patients' self-efficacy was moderated by her/his reality-testing capacities. Correlations between self-efficacy and symptom severity were much lower for patients with more severe symptoms (i.e., those requiring involuntary hospitalization, or with psychotic v. nonpsychotic diagnoses). This suggests that self-efficacy beliefs may be moderated by cognitive factors that affect the accuracy of self-appraisal.

Self-Assessment

Until recently, accurate self-appraisal has been considered an essential component of mental health. However, new findings indicate that exaggerated perceptions of control and mastery, and unrealistic optimism are a common feature of normal human thought. In a review of the literature in this area, Taylor and Brown (1988) argued persuasively that overly positive self-evaluations not only promote other qualities usually associated with mental health, but may represent useful cognitive strategies that are necessary for optimum functioning.

The authors reviewed evidence indicating that individuals who are low in self-esteem, moderately depressed, or both are better able to make accurate selfappraisals. Specifically, these individuals (a) tend to recall positive and negative information with equal frequency, (b) are more fair in their attribution of

responsibility, (c) make self-evaluations that are more consistent with those of objective raters, (d) have more realistic beliefs about their ability to control their environment, and (e) entertain more balanced assessments of their future circumstances.

In short, it appears to be not the well-adjusted individual but the individual who experiences subjective distress who is more likely to process selfrelevant information in a relatively unbiased and balanced fashion...Realistic perceptions of personal control thus appear to be more characteristic of individuals in a depressed affective state than individuals in a nondepressed affective state (Taylor & Brown, 1988, p. 196).

Furthermore, positive biases or "illusions" about the self and the future may be especially apparent under circumstances of threat (Greenberg, Pyszczynski, & Solomon, 1986; Taylor, 1983; Becker, 1976). Under adverse circumstances these positive illusions may foster perseverance, helping the individual overcome setbacks and counter potential threats to self-esteem. This is consistent with the research of Strecher et al. (1986), mentioned above, who concluded that it is perceptions and not one's actual capacities that often influence behavior. These findings are also compatible with a large body of literature on the conceptual link between cognition and motivation and research on the relationship between selfconcept and behavior (see Dweck and Leggett, 1988 for discussion). On the other hand, unrealistic self-appraisal may induce people to persist in unhealthy behaviors (JanoffBulman & Brickman, 1982), ignore important health risks (Weinstein, 1982), or disregard important sources of information (Isen & Means, 1983).

These findings are relevant to the problem under consideration for at least two reasons. The fact that alcoholics in the early stages of recovery often experience significant depression has been well documented. If moderately depressed people tend to be more accurate selfappraisers, how might this affect ratings of self-efficacy? Additionally, is it possible that a once "adaptive" (though exaggerated) sense of personal control has now become a "maladaptive" mechanism whereby the alcoholic can dismiss relevant information (i.e., denial)? Another possibility is that neuropsychological impairment among alcoholics is the cause of self-appraisal deficits.

Neuropsychological Impairment

In a review of the literature on the neuropsychological consequences of alcoholism, Parsons (1987) has noted that the deficits found in alcoholics are typically observed among samples that fall in the "intermediate stage of alcoholism." These individuals tend to exhibit cognitive and behavioral deficits in the absence of clinically diagnosable organic brain syndrome. He found that measures of alcohol intake (i.e., quantity, frequency, and duration of alcoholism) were not consistently related to neuropsychological impairment. While duration appears to

have a particularly unpredictable relationship with test performance, the toxic effect of frequent high doses of alcohol may result in neuropsychological deficits.

In general, alcoholics have been found to have I.Q.s within the normal range (Fitzhugh, Fitzhugh, & Reitan, 1965; Jones & Parsons, 1971). However, detoxified alcoholics tend to perform poorly on neuropsychological measures of abstract reasoning and hypotheses testing, problem-solving ability, and complex perceptuomotor tasks (Ron, 1987; Tarter & Ryan, 1983). A consistent pattern of impairment has emerged with alcoholics performing poorly on tests such as the Category, Tactual Performance, and Trail Making Tests of the Halstead-Reitan Neuropsychological Battery, and the Block Design and Digit Symbol subtests of the WAIS-R (Parsons & Farr, 1981; Parsons & Leber, 1981; Tarter & Ryan, 1983; Wilkinson, 1987).

Several studies have suggested that observed differences on measures of neuropsychological performance and personality characteristics may predispose children of alcoholics to the development of alcoholism latter in life. Goodwin (1983) reported the existence of premorbid neuropsychological deficits in the sons of alcoholic fathers. He found that the nonalcoholic sons of alcoholics had poorer performance on the Halstead Category Test than the nonalcoholic sons of nonalcoholics. Tarter, Hegedus, Goldstein, Shelly, and Alterman (1984) found that the

adolescent sons of alcoholic fathers demonstrated deficits in perceptual-motor ability, memory, and language processing relative to appropriate controls. This group was also found to have auditory and visual attentional deficits and lower achievement in reading comprehension. Additionally, the sons of alcoholics had a more neurotic personality profile (MMPI) than the sons of nonalcoholics.

As part of a prospective longitudinal study on alcoholism, Drejer, Theilgaard, Teasdale, Schulsinger, and Goodwin (1985) found that the sons of alcoholic fathers performed significantly worse on tests of categorizing ability, organization, and planning relative to appropriate controls. The authors concluded that difficulty in maintaining set, and a rigid, inflexible approach to problem-solving, may indicate a reduced capacity for sustaining goal-directed activity which places these individuals at increased risk of developing alcoholism. However, the authors cautioned that only future research can determine if inferior neuropsychological performance in the high-risk group is genetically based or the result of a variety of psychosocial factors.

In their review of the literature on the causes of neuropsychological impairment in alcoholics, Tarter and Alterman (1984) asserted that the deficits commonly observed in alcoholics are not simply caused by the neurotoxicity of alcohol. They identified several factors which may

contribute to the development of neuropsychological deficits in alcoholics including (a) positive family history of alcoholism, (b) fetal alcohol syndrome, and (c) a history of impulsivity and/or hyperactivity. These findings suggest that there may be neuropsychological factors which antedate excessive drinking that predispose persons at risk to greater adverse biochemical effects of drinking.

Schaeffer, Parsons, and Yohman (1984) found neuropsychological differences between males with an alcoholic parent, sister, or brother (FH+) and those without one (FH-). Neuropsychological tests measuring verbal, learning-memory, abstracting/problem-solving, and perceptual-motor performance were administered to four groups of subjects; alcoholics and nonalcoholics both with and without a positive family history of alcoholism. Alcoholics performed more poorly than nonalcoholics on abstracting/problem-solving and learning-memory tasks. Also, results showed that subjects with a positive family history of alcoholism scored significantly poorer on abstracting/problem-solving and perceptual-motor tasks than subjects without such a history.

The authors suggested that (a) a performance deficit in abstracting/problem-solving and possibly learning-memory may antedate the onset of excessive drinking in FH+ individuals, and (b) alcoholism and positive family history of alcoholism may have independent and additive effects on

cognitive-perceptual functioning. They also recommended that future neuropsychological studies of alcoholism consider the frequency of FH+ and FH- in both alcoholic and control groups. Schaeffer, Parsons, and Errico (1988) also found a weak but statistically significant difference between alcoholics with and without a family history of alcoholism on a test of abstracting ability.

In an attempt to better understand neuropsychological vulnerability markers, Heilbrun, Tarbox, and Madison (1979) found that narrow internal scanning was predictive of poor psychosocial adjustment following treatment. In a series of related studies, Heilbrun, Cassidy, Diehl, Haas, and Heilbrun (1986) found that (a) acute alcoholics displayed poorer scanning ability than more chronic alcoholics, (b) at-risk adolescents (juvenile offenders) were poorer scanners than appropriate controls, and (c) male college students with alcohol-related problems performed scanning tasks more poorly than those without alcohol-related The authors proposed that deficits in internal problems. scanning contribute to alcoholic vulnerability by restricting an individual's sensitivity to internal stimulation and use of internally generated information:

In theory, narrow scanning of information serves to impair the person's judgement regarding drinking as it reduces information that might limit alcohol consumption. The less people reflect upon bad past experiences, health warnings, standards of personal conduct or viable alternatives to drinking, the less they are likely to inhibit alcohol consumption. Narrow scanning, as defined, also would diminish the person's

sensitivity to internal stimulation including cues indicating the amount of liquor ingested or degree of inebriation (p. 237).

Because neurobehavioral capacity has been associated with treatment outcome (Abbott & Gregson, 1981), and employability (Heaton, Chelune, & Lehman, 1978), the assessment of neuropsychological status may have prognostic utility for maximizing rehabilitation efforts. Alterman, Tarter, Petrarulo, and Baughman (1984) compared young male alcoholics and education-matched nonalcoholics on three measures of persistence. Persistence was defined as the capacity to temporally organize, sequence, and sustain goal-directed behavior. Results showed that alcoholic subjects made significantly more errors than nonalcoholics on two of the three measures, and were differentiated from the nonalcoholics on an overall index of persistence based on a combination of the three measures. Since test performance was not correlated with duration of alcohol abuse, impairments could not be the consequence of gradual cognitive deterioration. The authors concluded that the observed deficits were the result of a vulnerability to the detrimental effects of alcohol leading to a rapid decline of capacity. They stressed the importance of determining the extent to which laboratory measures of impersistence were predictive of persistence in treatment and progress in rehabilitation.

Two recent studies have examined the relationship

between depression, anxiety, and alcoholics' self-assessment of their neuropsychological functioning. In the first study, Shelton and Parsons (1987) examined self-reports of impairment in everyday cognitive and perceptual-motor functioning in alcoholics and nonalcoholic controls. Results showed that alcoholics reported significantly higher levels of depression and anxiety, and more everyday impairment than nonalcoholics. Neuropsychological test performance revealed that the alcoholics performed significantly poorer than nonalcoholics on measures of memory, higher cognitive functions, and overall neuropsychological functioning. Measures of depression and anxiety were correlated with perceived level of impairment in both alcoholics and controls. However, test performances were not correlated with self-reported everyday impairment or with self-reported levels of depression and anxiety. The authors concluded that alcoholics may be inaccurate sources of information regarding the severity of their everyday impairment, and that complaints of poor cognitive functioning should be evaluated with respect to the level of affective disturbance present.

In a second study, Errico, Nixon, Parsons, and Tassey (1990) developed a short self-report instrument for predicting neuropsychological impairment in alcoholics. Subjects were administered the 50-item Neuropsychological Impairment Scale (NIS), in addition to psychological

measures of depression, anxiety and a battery of neuropsychological tests which included tests of learning and memory, problem-solving, abstracting ability, and perceptuomotor skill. As anticipated, alcoholics differed (in the expected direction) from nonalcoholics on the neuropsychological test battery, their NIS profiles, and measures of depression and anxiety.

The authors used multiple regression analyses to show that select NIS subscales could predict neuropsychological impairment in the alcoholic group. However, these subscales were found to be more strongly correlated with standard measures of anxiety and depression than with actual neuropsychological test performance. These results suggested that the confounding role of affect in predicting neuropsychological impairment from self-report questionnaires is an important consideration for future research.

Two recent studies have examined the relationship between neuropsychological functioning and "in-treatment" behavior. In the first study, Kupke and O'Brien (1985) investigated the generalizability of neuropsychological test data to the behavioral problems and other limitations exhibited by a group of male alcoholics in a residential treatment program. Ratings supplied by alcoholism counselors of problematic behaviors were used to form two groups of subjects, behaviorally impaired (BI) and

behaviorally unimpaired (BU). Members of the BI group, relative to the BU group, were found to have significantly longer histories of alcoholism, more frequent neurological examination abnormalities, and a higher incidence of suboptimal nutrition. Also, the neuropsychological performance of BI subjects was impaired, relative to BU subjects on composite measures of motor skill, problemsolving, psychomotor speed, and memory. The authors suggested that neuropsychological measures may help clinicians make valid inferences regarding the behavioral consequences of neuropsychological impairment as expressed within the alcoholism treatment setting.

In a second study, Leber, Parsons, and Nichols (1985) examined relationships among tests of neuropsychological functioning, clinical ratings of participation in therapeutic activities, and predictions of outcome. Alcoholic men rated by therapists as having a poor prognosis performed significantly worse on certain neuropsychological tests (e.g., measures of abstracting and problem-solving) than those rated as having a good prognosis. These data provide evidence that neuropsychological tests are sensitive to many of the same dimensions assessed by clinicians in evaluating therapeutic progress.

Alcoholism and Depression

The relationship between the neuropsychological aspects of alcoholism and affective disturbance has been studied

extensively (Parsons, 1987). Based on his review of the literature, Goldstein (1987) concluded that:

It seems clear that we can now essentially reject what now appears as the naive presumption that alcoholics perform poorly on neuropsychological tests because they are nervous and depressed. They may well be nervous and depressed, but that does not seem to account for their poor performance levels (p. 237).

Surprisingly, there is little evidence to support the idea that the course of alcoholism is more malignant in those alcoholics with secondary depression (Jaffe & Ciraulo, 1986; Hesselbrock, Hesselbrock, Tennen, Meyer, & Workman, 1983). Nor do alcoholics with and without depression vary in terms of family histories of alcoholism or affective disorder (Schuckit, 1983). However, a considerable proportion of newly abstinent alcoholics report symptoms of depression (Hesselbrock et al., 1983; Keeler, Taylor, & Miller, 1979), and there is a general consensus that these depressive symptoms are most severe immediately following the cessation of active drinking, gradually declining to near-normal levels after approximately two weeks (Jaffe & Ciraulo, 1986; Brown & Schuckit, 1988; Schuckit, 1979).

In an excellent review of the literature on alcoholism and depression, Jaffe and Ciraulo (1986) suggested that many factors interact to cause depressive symptoms in alcoholics including:

- 1. the direct toxic effects of alcohol on the brain.
- 2. the indirect toxic effects of alcohol, e.g., compromised liver function, suboptimal nutrition.

- 3. the effects of alcohol withdrawal.
- 4. the central nervous system effects of other drugs, either to enhance intoxication or to alleviate withdrawal.
- 5. central nervous system injury, e.g., head trauma, anoxia, ischemia.
- 6. alcohol-related social losses.
- 7. a dawning psychological appreciation of the physical consequences of the alcohol abuse.
- 8. affective disorders independent of alcoholism.
- 9. antecedent personality disorders.
- 10. genetic predisposition to both alcoholism and depression.

In light of this etiological complexity, the authors conclude that:

In a patient with alcoholism and depressive symptoms of mild to moderate severity, there are no reliable methods to distinguish which depressive and dysphoric symptoms are part of a personality disorder, which stem from the toxic effects of alcohol, and which may stem from some recurrent depressive diathesis equivalent to one of the Axis I affective disorders (p. 314-315).

Denial

Psychological denial and resistance to change have traditionally been defining characteristics of alcoholism. Conventional treatment has utilized a psychodynamic model of emotion that conceptualizes denial as an ego defense. Generally, denial has been conceptualized as an endeavor to disavow the existence of disagreeable aspects of life (Wing & Hammer-Higgins, 1993). In alcoholism, it is characterized by the alcoholic's lack of recognition and insight concerning the degree of dependence and the negative consequences of alcohol consumption.

However, it has been argued that the clinical management of denial in alcoholism has been hampered by conceptual limitations (Goldsmith & Green, 1988), and by a paucity of literature on the subject (Brissett, 1988). Definitions of denial have ranged from those found in traditional psychoanalytic theory to biopsychosocial interpretations. Brissett (1988) has argued that denial is not a self-evident phenomenon and that analysis of the assumptions and consequences of denial has been complicated by the lack of a consistent definition of denial in the literature. He concluded that while there appears to be no clear consensus about what actually constitutes denial, there is agreement that denial is a psychological mechanism used by alcoholics to ward off the unpleasant consequences of their drinking behavior.

Anderson (1981) described alcoholic denial as "unwitting," almost automatic. In his view, denial involves not only the disavowal of ideas and external reality, but the repression of internal processes as well. The alcoholic defense system is actually a diverse set of largely unconscious processes which distort perception and impair judgment. Over time, these distortions of reality lead to an "entrenched" form of self-delusion making accurate selfawareness impossible. Anderson described the seven most common defensive strategies as (a) simple denial, (b)

minimization, (c) projection, (d) rationalization, (e) intellectualization, (f) diversion, and (g) hostility.

Tarter, Alterman, and Edwards (1984) proposed an alternative biopsychosocial interpretation of the origins and mechanisms of alcoholic denial which views denial as the "consequence of a developmental defect in the apperception of interoceptive stimuli and in the appraisal of the significance of environmental events" (p. 214). In support of their theory, the authors cited evidence suggesting that (a) the arousal regulatory mechanisms of alcoholics are excessively labile, and that this disorder is an antecedent, not the consequence of excessive drinking, (b) alcoholics are less capable than nonalcoholics in the discrimination and utilization of interoceptive cues and physiological states, and (c) alcoholics have an impairment in cognitive processing that leads them to consistently underestimate or otherwise poorly evaluate affectively relevant information. In this view, denial is understood not as the unconscious resistance to change, but as a cognitive-physiological integration disorder. The authors contend that further research from this perspective might lead to a "comprehensive biobehavioral theory of alcoholism" (p. 216-217).

<u>Conclusion</u>

Self-efficacy expectations reflect a person's perceived, rather than actual, capabilities. In the area of

health behavior change, high self-efficacy has been found to be a consistent predictor of short- and long-term success. Conversely, a diminished sense of personal control has been related to performance deficits and a greater likelihood of relapse into addictive behaviors. It has been argued that positive self-evaluations promote qualities usually associated with mental health and may represent useful cognitive strategies that are necessary for optimum functioning. Positive "illusions" about the self and the future, especially apparent under circumstances of threat, may foster perseverance and counter potential threats to self-esteem. Therefore, treatment strategies which improve clients' coping skills and develop their sense of personal control may be potent interventions to reduce the risk of alcoholic relapse.

It has also been proposed that self-efficacy beliefs may be moderated by cognitive factors that affect the accuracy of self-appraisal. For example, an unrealistically positive assessment of personal capabilities may decrease concern about exposure to high-risk situations, thereby increasing an individual's vulnerability to relapse. Unrealistic self-appraisal may also induce people to persist in unhealthy behaviors, ignore important health risks, or disregard important sources of information. Self-assessment "deficits," then, would reduce the overall positive impact of higher self-efficacy on treatment outcome. This implies

that low pre-treatment self-efficacy may be related to positive treatment outcome under certain circumstances.

Extensive research has shown that detoxified alcoholics tend to perform poorly on a variety of neuropsychological measures. However, it has been asserted that the deficits commonly observed in alcoholics are not simply caused by the neurotoxicity of alcohol. Several studies have suggested that premorbid neuropsychological deficits and personality characteristics may have independent and additive effects on cognitive-perceptual functioning which may, in turn, predispose children of alcoholics to the development of alcoholism latter in life. Neuropsychological factors which antedate excessive drinking (i.e., difficulty in maintaining set, deficits in internal scanning, restricted sensitivity to internal stimulation, inflexible problem-solving), may predispose persons at risk to greater adverse biochemical effects of drinking.

It has been proposed that alcoholics may have a developmental defect in the apperception of interoceptive stimuli. It is possible that this self-appraisal deficit is an antecedent, not a consequence of excessive drinking, and that alcoholics have an impairment in cognitive processing that leads them to consistently underestimate or otherwise poorly evaluate affectively relevant information.

Finally, whether these performance deficits are the result of premorbid factors or alcohol-induced

neurotoxicity, neuropsychological measures may help clinicians make valid inferences regarding the behavioral consequences of neuropsychological impairment as expressed within the alcoholism treatment setting. That is, neuropsychological tests may be sensitive to many of the same dimensions assessed by clinicians in evaluating therapeutic progress. At any rate, it appears that neuropsychological impairment, depression, and denial may all be functioning as important confounds which affect alcoholics' "reality testing" and moderate the ability of self-efficacy to predict treatment outcome.

The above literature review leads to several conclusions:

- High self-efficacy (either pre-treatment or at discharge) may not be an effective predictor of treatment outcome for alcoholics.
- 2. The predictive utility of pre-treatment self-efficacy ratings may depend on the accuracy of self-appraisals.
- 3. Alcoholics in the early stages of recovery may be inaccurate self-appraisers. The ability to accurately self-evaluate may be mediated by either affect (depression) or level of psychological denial for this population.
- 4. Cognitive impairment may also interfere with accurate self-appraisal.
- 5. Alcoholics in the early stages of recovery are often

cognitively impaired.

6. High intake self-efficacy may be indicative of inaccurate self-appraisal and, possibly, of cognitive impairments that, in turn, interact with treatment to predict outcome.

Based on these conclusions this study proposes that (a) neuropsychological impairment leads to unrealistically positive assessments of self-efficacy and increased denial of the severity of an individual's substance abuse problem, (b) individuals rated as having less denial will report lower (i.e., more accurate) assessments of self-efficacy, and (c) depressed individuals will report lower selfefficacy and be rated by their counselors as experiencing less denial.

<u>Hypotheses</u>

The specific hypotheses of this study are:

- Intake self-efficacy will be negatively related to continued abstinence at follow-up. This finding would be a replication of earlier research by Burling, Reilly, Moltzen, and Ziff (1989).
- 2. Intake self-efficacy will be significantly correlated in a positive direction with psychological denial.
- 3. Intake self-efficacy will be negatively related to depression, with more depressed individuals experiencing lower self-efficacy.
- 4. A negative relationship between depression and denial

is anticipated, with more depressed individuals experiencing less denial of their alcoholism.

- 5. Intake self-efficacy will be significantly related in a negative direction with neuropsychological functioning, with high pre-treatment self-efficacy related to lower scores on these measures.
- 6. The level of neuropsychological functioning will significantly moderate the relation between selfefficacy and treatment outcome: a significantly stronger positive relation between self-efficacy and outcome will be observed in the higher functioning group.
- 7. Intake self-efficacy, denial, depression, and neuropsychological status will combine to predict group membership (i.e., abstainers v. nonabstainers) at follow-up.

Chapter 3

<u>Methodology</u>

This chapter will provide an overview of the general methodology and specific procedures used in this study. The research population and instrumentation will be described. (A detailed description of the subject pool will be provided in Chapter 4.) Data collection procedures and techniques of data analyses will be explained in an attempt to link specific methods of analysis to the conditions of the study. Procedure

Subjects. The participants all met the DSM-III-R criteria for Alcohol Dependence (303.90), a standard admission criteria for many residential treatment programs. Data were obtained on 80 subjects. Individuals with a secondary psychiatric diagnosis requiring medication were excluded from the study. Also, anyone with a previous diagnosis of mental retardation or current diagnosis of alcohol amnestic disorder (Korsakoff's syndrome) was excluded from consideration.

Participation in the study was strictly voluntary. Involvement was solicited in such a way that clients understood their right to refuse participation (see Appendix B). It was made clear to potential subjects that failure to participate would in no way jeopardize any aspect of their treatment. The counseling staff of the host agencies did not have access to any of the project data (i.e., SCQ, BDI,

and neuropsychological test results). The importance of confidentiality was also stressed.

<u>Sites</u>. The investigation took place in two residential treatment programs for alcoholism and substance abuse. One program was hospital-based, located within a large, university-affiliated medical center. The other was a freestanding clinic located on the grounds of a state-operated psychiatric center. The length of stay in both facilities is typically four weeks.

Design. Since the research on self-efficacy in the context of addictive behaviors is still in its infancy, an exploratory investigation utilizing a correlational field design was proposed. I believe that this is an appropriate design for this type of investigation given Gelso's (1979) assertion that "correlational research may....be useful in the pilot stages of ongoing research, or during a research program at a point where overall inspection of intercorrelations is called for" (p. 17).

This design allows the investigator to say very little about cause-effect relationships. However, it can be particularly helpful in disconfirming hypotheses (i.e., when no significant relationship is found between key variables).

A correlational field study that takes place in a natural setting, where actual treatment occurs, allows for a high degree of generalizability. Gelso (1979) has stressed that issues of generalizability are crucial to counseling

research and that external validity is the "strength and hallmark" of the correlational field design (p. 18). Instruments

Pertinent respondent information was obtained using a Client Information Sheet (see Appendix C) and from the client's medical record. Information included basic demographics (e.g., age, race, sex, level of education), in addition to items concerning family history of alcoholism, length and severity of drinking, date of last drink, current drinking pattern, referral status (e.g., mandated v. nonmandated), history of psychopathology, and medical history (e.g., history of head trauma, evidence of seizure disorder).

Mini-Mental State. The Mini-Mental State Examination (MMSE) was used as a general cognitive screening device (Folstein, Folstein, and McHugh, 1975). The MMSE is a simplified mental status examination which includes eleven questions and requires only five to ten minutes to administer (see Appendix D). The test is divided into two sections, the first requiring verbal responses covering orientation, memory, and attention. The second section tests the respondent's ability to follow verbal and written commands, to write a sentence, and to copy a complex polygon. The MMSE has been demonstrated as a valid and reliable test of cognitive function (Dick, Guiloff, Stewart, Blackstock, Bielawska, Paul, & Marsden, 1984; Roca, Klein,

Kirby, McArthur, Vogelsang, Folstein, & Smith, 1984;
Escobar, Burnam, Karno, Forsythe, Landsverk, & Golding,
1986). It is used extensively in both psychiatric and
neurological settings as a screening device for dementia and
gross cognitive deficits.

Alcohol Dependence Scale. The Alcohol Dependence Scale (ADS) is a screening device designed to assess alcohol dependence syndrome, increased tolerance, the severity of withdrawal symptoms, and drinking style (Skinner & Horn, 1984). The ADS is a 25 item multiple-choice survey that can be administered in either a questionnaire or interview format (see Appendix E). It was developed to provide a brief measure of the alcohol dependence syndrome, the compulsion to drink excessively, and the importance of "drink-seeking" behavior. The ADS appears to be a valid measure of alcohol dependence and to has internal consistency and test-retest (interval) reliability estimates above .90 (Kivlahan, Sher, & Donovan, 1989; Skinner & Horn, 1984; Skinner & Allen, 1982).

Beck Depression Inventory. The 21-item version of the Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) was used as a measure of depression (see Appendix F). Twenty-five years of research on the BDI have demonstrated its reliability and validity with a variety of clinical populations (Beck, Steer, & Garbin 1988). Reliability ratings (i.e., test-retest, internal

consistency), have ranged from .86 to .93 (Reynolds & Gould, 1981; Beck, 1970). The BDI has also demonstrated good concurrent validity with other depression scales, such as the Zung Self-Rating Depression Scale (Kerner & Jacobs, 1983; Zung, 1969), the Hamilton Rating Scale (Bailey & Coppen, 1976; Schwab, Bialow, & Holzer, 1967), the MMPI D-Scale (Beck, 1970), and with clinical interviews with psychiatric patients (Williams, Barlow, & Agras, 1973). Its validity has also been confirmed through extensive research on depression in alcoholics (Dorus, Kennedy, Gibbons, & Ravi, 1987).

Comprehension Subtest. The Comprehension subtest of the Wechsler Adult Intelligence Scale - Revised (WAIS-R) (Wechsler, 1981), was used to assess common-sense judgment and practical reasoning (see Appendix G). This subtest requires an individual to answer questions similar to, "What are some reasons why a national census is taken?" and "What does this saying mean? A stitch in time saves nine." The Comprehension subtest is only a fair test of general ability, but scores tend to hold up well as a record of premorbid intellectual achievement (Lezak, 1983). The Spearman-Brown corrected split-half reliability coefficients range from .77 to .90 across nine age groups from age 16 to 74, with an average reliability coefficient of .84 (Wechsler, 1981).

Rey-Osterrieth Complex Figure Test. The Complex Figure

Test (CFT, see Appendix H), was designed to assess perceptual organization and visual memory in brain damaged subjects (Lezak, 1983). The subject is first instructed to copy the figure. The copy is then evaluated for accuracy in terms of proper placement, distortions, incomplete segments, and absent or unrecognizable sections. The Taylor (1959) adaptation of Osterrieth's (1944) original scoring system was used. This scoring criteria has yielded inter-rater reliabilities above .95 (Spreen & Strauss, 1991; Bennett-Levy, 1984). In the present study, subjects were also asked to complete two recall administrations, one immediately following the copy task and the second following a twenty minute delay. The recall administrations are generally thought to assess the speed of organization of complex data and visuospatial abilities.

Digit-Symbol Subtest. The Digit-Symbol subtest of the WAIS-R consists of 100 small blank spaces each paired with a randomly assigned number between one and nine (see Appendix I). Each number is paired with a different nonsense symbol. The subject's task is to fill in the blank spaces with the appropriate symbol as quickly as possible. The subject's score is the number of spaces filled in correctly after 90 seconds. Digit-Symbol is a test of psychomotor speed which is relatively unaffected by intellectual ability, learning, or memory. This subtest also involves motor persistence, sustained attention, response speed, and visuomotor

coordination (Lezak, 1983). The test-retest reliability coefficients for this subtest range from .73 to .86 with an average reliability of .82 (Wechsler, 1981). Lezak (1983) notes that Digit-Symbol is consistently more sensitive to brain damage than any other WAIS-R subtest. In addition to the standardized performance, an incidental learning score was obtained by asking subjects to fill in from memory as many symbols as they can recall.

Trail Making Test. The Trail Making Test (TMT) is a test of visual conceptual and visuomotor coordination involving motor speed and attention functions that is highly vulnerable to the effects of brain damage (Lezak, 1983). It is administered in two parts (see Appendix J). In Part A, the subject is asked to draw lines to connect consecutively numbered circles. In Part B, the subject is asked to connect consecutively numbered and lettered circles, alternating between the two sequences. Both tests are timed and the subject is instructed to complete each task as quickly as possible. Part B of the Trail Making Test is more discriminating than Part A, with a cut score of 91/92 seconds yielding a "hit" rate of 84.9% (Reitan, 1958; 1986).

Several studies have found the Trail Making Test to yield moderate to high test-retest reliability depending on the population being evaluated (.64-98 for Part A; .67-.86 for Part B), (Goldstein & Watson, 1989; Snow, Tierney, Zorzitto, Fisher, & Reid, 1988; Lezak, 1983). Two studies

have also found good alternate form reliability (.80-.89 for Part A; .81-.92 for Part B), (Alekoumbides, Charter, Adkins, & Seacat 1987; desRosiers & Kavanagh, 1987). The Trail Making Test has been found to be highly sensitive to brain damage of various etiologies (desRosiers & Kavanagh, 1987; Grant et al., 1984, 1987; O'Donnell, 1983; Dodrill, 1978). It has also been shown to differentiate between normal controls and different clinical groups (Alekoumbides et al., 1987). Because scores on the Trail Making Test are strongly affected by age (Davies, 1968), and education (Heaton, Grant, & Matthews, 1986), the Alekoumbides et al. (1987) correction equation for age and education was used.

Controlled Oral Word Association Test. The Controlled Oral Word Association Test is a test of verbal fluency that is a sensitive indicator of brain dysfunction (Lezak, 1983). The test (see Appendix K), consists of three one-minute word-naming trials in which the subject is asked to say as many words as s/he can think of that begin with a certain letter of the alphabet (Benton, Hamsher, Varney, & Spreen, 1983). Proper nouns, numbers, and words with the same prefix but a different suffix are excluded. The letters FAS have been employed so extensively that the test is often referred to as the "FAS." Inter-rater agreement has been reported as near perfect (Spreen & Strauss, 1991). Testretest reliability for adults has been reported as .88 (desRosiers & Kavanagh, 1987), and .70 in older adults (Snow

et al., 1988). Because word fluency is associated with both age and education, the score was adjusted using the Benton and Hamsher (1978) correction equation.

Revised Category Test. Adaptive ability, as measured by the Revised Category Test (RCAT, Russell & Levy, 1987), is the primary neuropsychological variable of interest in this study. The RCAT is a shortened version of the Category Test included in the Halstead-Reitan Neuropsychological Test Battery. A test of abstract concept formation, the RCAT shortens the original test from 208 to 95 items (see Appendix L) while retaining all of the abstract principles requiring shifts in conceptual set. The total number of errors on the RCAT is multiplied by 2.2 to obtain an error score comparable to the original Category Test.

It has been reported that the standard version of the Category Test is sensitive to cerebral lesions regardless of their location (Pendleton & Heaton, 1982), and is almost as sensitive as the full Halstead-Reitan battery in detecting the presence or absence of neurological damage (Adams & Trenton, 1981). The standard version of the Category Test yields internal consistency values above .95 for samples of normal controls and brain damaged adults (Charter et al., 1987; Shaw, 1966), and test-rest reliability above .90 (Goldstein & Watson, 1989; Matarazzo et al., 1974). The authors of the RCAT report a high correlation ($\underline{r} = .97$) between the revised version and the original test.

For ease of administration, a booklet version of the Category Test was used (DeFilippis & McCampbell, 1991). Stimulus material is presented in six sets of items organized on the basis of different principles. The subject views figures on separate sheets of 8.5 x 11 paper and is asked to figure out the principle presented in each set. The score is the number of errors. Because performance on this measure of complex problem-solving ability is affected by age and education (Ernst, 1987; Prigatano & Parsons, 1976), the Alekoumbides et al. (1987) correction equation was used.

To summarize, neuropsychological functioning was measured by a battery consisting of two subtests from the Wechsler Adult Intelligence Scale-Revised (WAIS-R), two subtests from the Halstead-Reitan Neuropsychological Test Battery, the Rey-Osterrieth Complex Figure Test, and the Controlled Oral Word Association Test. The WAIS-R subtests included Comprehension and Digit-Symbol. The Halstead-Reitan subtests included the Trail Making Test (A & B), and a shortened booklet version of the Category Test.

Together these tests are designed to assess several levels of cognitive functioning including (a) visuomotor coordination, (b) visuospatial conceptualization, (c) problem-solving strategy, (d) practical reasoning and social judgement, (e) abstract concept formation, (f) premorbid intellectual achievement, (g) perceptual organization, (h)

short-term memory, (i) attention/concentration, (j) the ability to shift and/or maintain set, and (k) verbal fluency.

Situational Confidence Ouestionnaire. The Situational Confidence Questionnaire (SCQ) was used to assess selfefficacy at intake and discharge. The normative sample (n = n)424) for the SCO was 27% female and 73% male (Annis & Graham, 1988). The age range was from 18 to 76 with a mean age of 41.4 years (+ 11.8). Forty-four percent of the sample had completed high school and 26% had some postsecondary education. The SCQ has eight subscales (see Appendixes A and M) with item-total score correlations ranging from .59 to .91. The internal consistency reliability (alpha) of each subscale is good, ranging from .81 to .97. The overall mean score reliability is excellent at .98. The standard errors of measurement for individual subscales are small ranging from 5.7 to 10.25. The overall mean score for the 39 items was 69.9, with a standard deviation of 22.7.

Denial Rating Scale. The Denial Rating Scale (DRS) (Goldsmith & Green, 1988) was used to assess denial at intake (see Appendix N). Surprisingly little research has been conducted on the concept of denial in alcoholism, and conceptual clarity regarding its role in the treatment of alcoholism is clearly lacking (Brissett, 1988).

The DRS was intended to be used as part of a standard

evaluation process. It is designed to assess an individual's acceptance of alcoholism as a significant life problem. Counselor ratings of subjects' level of denial are completed after brief assessment interviews (30-45 minutes).

The scale consists of eight levels of denial ranging from the total denial of any emotional or family problems, to a person's acceptance of her/his self-image as an alcoholic. The inter-rater reliability for this instrument ranges from .67 to .77. In a recent follow-up study, Breuer and Goldsmith (1992) reported increased inter-rater agreement ratings of between .83 and .97. Validity studies on this relatively new instrument are needed.

In addition to the standard DRS administration, counselors were also asked to complete a single question from the Working Alliance Inventory (WAI, Horvath, 1986 see Appendix N). Questions on the WAI are based on a sevenpoint Likert Scale (Never, Rarely, Occasionally, Sometimes, Often, Very Often, and Always). Counselors were asked to complete question #23 which reads, "I appreciate ______ as a person."

Data collection

All subjects were evaluated within 2-8 days of admission (mean = 5, SD \pm 2), and within 4-17 days following their last substance abuse (mean = 12, SD \pm 3). All subjects were individually tested by the primary investigator. The average testing time was between 1.5 and

2 hours. All test protocols were scored by the primary investigator prior to follow-up assessment. The instruments were presented in the following order:

1. Mini-Mental State (MMSE)

2. Alcohol Dependence Scale (ADS)

3. Beck Depression Inventory (BDI)

4. Comprehension Sub-test

5. Rey-Osterrieth Complex Figure Test (CFT)

6. Digit-Symbol Sub-test

7. Trail Making Test (TMT, Parts A & B)

8. Controlled Oral Word Association Test (FAS)

9. Revised (Booklet) Category Test (RCAT)

10. Situational Confidence Questionnaire (SCQ) The DRS was completed by client's primary counselor following her/his initial interview with the client. Counselors from both sites received one hour of prior training in the effective use of the DRS and the utilization of the DRS Decision Tree Model to ensure standardization. The DRS was typically completed within three days of the client's admission into treatment. Participants were also asked to complete the SCQ prior to discharge from treatment.

Follow-up. Every attempt was made to solicit cooperation from all participants, even those discharged prematurely. Post-treatment recovery status was evaluated at one and three month follow-ups. Follow-up information was obtained through telephone interviews (see Appendix 0). The telephone interview was designed to obtain information concerning drinking status (abstinent v. non-abstinent), quantity and frequency of current drinking behavior, and the degree of compliance with aftercare. Telephone interviews typically lasted between five and ten minutes. Those individuals reporting a return to active drinking or substance abuse were offered a referral for further counseling services. Follow-up interviews were conducted in a personable, non-evaluative manner designed to elicit the greatest degree of cooperation. The interviewer attempted to be as helpful as possible without actually conducting therapy.

Respondent confidentiality was preserved when it was necessary to leave messages on either a telephone answering machine or with a friend or relative (e.g., individuals were asked to contact Mr. Gunther of the "University Study"). If several attempts to contact a respondent by telephone were unsuccessful, a form letter was sent to the last known address requesting her/him to contact the primary investigator. If no response was received from the followup letter, efforts to contact the respondent were abandoned.

Researchers in addictive behaviors have traditionally relied on the self-report method in describing treatment outcome. However, reliance on self-report data has been viewed as tenuous for several reasons (Maisto & Cooper, 1980). Subjects may deny or minimize negative events such

as drinking or use of drugs. Inaccurate reporting may result from the embarrassment subjects feel over "failing" in their efforts to remain abstinent. Or, they may wish to fulfill the researchers' expectations and present themselves in a favorable light by minimizing any difficulties in functioning.

Recent research, however, suggests that the selfreports of alcohol and drug abusers are reliable, particularly when confidentiality has been assured (Maisto & Connors, 1988; Maisto, Sobell, & Sobell, 1983; L.C. Sobell, Sobell, Maisto, & Fain, 1983). Furthermore, telephone and computer administered follow-up contacts may yield more honest responses from subjects than face-to-face contacts (R.B. Whitney, M.D., personal communication, May 3, 1991). Presumably, these non- face-to-face contacts minimize embarrassment and other demand characteristics that may result in inaccurate reporting.

Data Analysis

Hypotheses #1-4 was tested through an examination of the zero-order correlations between the variables in question. Hypothesis #5 was tested via correlation and it was expected that the measure of "adaptive ability" would be negatively related to self-efficacy. Adaptive ability was the main neuropsychological variable of interest and refers to (a) concept formation and problem-solving ability, (b) flexibility in changing cognitive set, and (c) ability to

utilize errors. These capacities were measured by the Revised (Booklet) Category Test.

Discriminant analysis, a technique for the multivariate study of group differences, was used to assess the degree to which self-efficacy, neuropsychological status, depression, and denial predicted outcome. This technique provides a method of examining the extent to which multiple predictor variables are related to categorical criterion (i.e., group membership).

This technique is particularly useful when one wants to assess which of a number of continuous variables best differentiates groups of individuals (e.g., abstainers v. nonabstainers). Discriminant analysis can also be used to describe and summarize group differences and to test hypotheses that use stepwise or stage concepts (Betz, 1987). Discriminant analysis has been useful in understanding the dynamics of behavior and behavior change because it contributes to an appreciation of the nature of group differences. The technique is effective because it can be used to identify individuals at risk, for whom special interventions might be designed (e.g., persons at risk for premature discharge or relapse).

Discriminant analysis provides information on both the statistical significance of the function as a whole (i.e., the combined predictive utility of a set independent variables), and the individual variable weights. Like
multiple regression, discriminant analysis generates a linear equation with beta weights indicating the relative importance of each variable in predicting the criterion. In discriminant analysis the weights are determined mathematically to maximize the predictability of group membership. Since the variables on which groups differ are weighted more heavily than those on which they are similar, the technique emphasizes group differences and deemphasizes group similarities.

Discriminant analysis also allows the researcher to predict group membership for each individual in the sample. This prediction is compared to actual group membership. The percentage of correct predictions is then compared with the percentage predicted using other strategies, or on the basis of chance.

Outcome was assessed at one and three month intervals posttreatment. Discriminant analysis was used to explore the contribution of the independent variables in predicting outcome as measured by abstinence v. nonabstinence. For discriminant analysis it is assumed that (a) there is a linear relationship between predictors, and (b) that the continuous predictors come from a multivariate normal population.

Means and standard deviations were calculated for the SCQ, BDI, DRS, and the neuropsychological measures. Because the seven neuropsychological measures assess relatively

discrete functions, no attempt was made to aggregate the scores to establish an overall index of neuropsychological impairment. Correlations between the independent and dependent variables were obtained. Using Fisher's \underline{r} to \underline{Z} transformation, correlations were transformed and their significance tested by \underline{t} tests.

Chapter 4

<u>Results</u>

The purpose of this study was to investigate several research questions including (a) the degree to which selfefficacy is a predictor of treatment outcome in alcoholism, (b) the extent to which the accuracy of self-appraisal (i.e., self-efficacy estimates), is affected by neuropsychological deficits or level of depression, and (c) the degree to which high pretreatment self-efficacy is related to psychological denial. The chapter will begin with a summary of subject and site characteristics, followed by a discussion of the measurement of self-efficacy. Results of individual hypotheses tests will be presented in order, followed by a section on post-hoc analyses. Evidence that supports and/or fails to support each hypothesis will be reported, along with unanticipated findings. The chapter will conclude with a general summary that attempts to organize the results into a coherent whole.

<u>Subjects</u>

The overall subject pool was 60 (75%) male, and 20 (25%) female substance abuse inpatients of two residential treatment centers in Buffalo, New York who were admitted between August, 1992 and March, 1993. The group consisted of 49 (61%) whites, and 31 (39%) blacks. The average age was 32 (SD = 7.10) years. For a summary of subject characteristics see Table 1. All had a DSM-III-R, Axis I

SUMMARY OF SUBJECT CHARACTERISTICS

<u>site</u>					-
	Value	Frequency	Percent	Valid Percent	Cum Percent
	SATC	53 27	66.3 33.8	66.3 33.8	66.3
	BUNU	Total		100 0	100.0
22.07		IULAI	80	100.0	100.0
RACE	_			Valid	Cum
	Value	Frequency	Percent	Percent	Percent
	White	49 31	61.3 38.8	61.3 38.8	61.3
	DIGCA	J1			
		Total	80	100.0	100.0
<u>SEX</u>				Valid	Cum
	Value	Frequency	Percent	Percent	Percent
	Male	60	75.0	75.0	75.0
	Female	20	25.0	25.0	100.0
		Total	80	100.0	100.0
MARITAL					
<u>STATUS</u>				Valid	Cum
	Value	Frequency	Percent	Percent	Percent
	Married	14	17.5	17.5	17.5
	Unmarried	60	82.5	82.5	100.0
		Total	80	100.0	100.0
EMPLOYMENT					
<u>STATUS</u>				Valid	Cum
	Value	Frequency	Percent	Percent	Percent
	Employed	11	13.8	13.8	13.8
	Unemployed	69	80.3	80.3	
		Total	80	100.0	100.0
PARENTAL					
SUBSTANCE ABUSE				Valid	Cum
	Value	Frequency	Percent	Percent	Percent
	Yes	52	65.0	65.0	65.0
	No	28	35.0	35.0	100.0
		Total	80	100.0	100.0

Table 1 (cont'd)

MANDATED Status					
<u>23110 VV</u>	Value	Frequency	Percent	Valid Percent	Cum Percent
	Yes No	18 62	22.5 77.5	22.5 77.5	22.5 100.0
		Total	80	100.0	100.0
PSYCHIATRIC <u>HISTORY</u>					
	Value	Frequency	Percent	Valid Percent	Cum Percent
	Yes No	7 73	8.8 91.3	8.8 91.3	8.8 100.0
		Total	80	100.0	100.0
SEIZURE <u>HISTORY</u>					
	Value	Frequency	Percent	Valid Percent	Cum Percent
	Yes No	9 71	11.3 88.8	11.3 88.8	11.3 100.0
		Total	80	100.0	100.0
HISTORY OF <u>HEAD INJURY</u>					
	Value	Frequency	Percent	Valid Percent	Cum Percent
	Yes No	21 59	26.3 73.8	26.3 73.8	26.3 100.0
		Total	80	100.0	100.0
Concurrent Substance <u>Abuse diagnosis</u>	:				
	Value	Frequency	Percent	Valid Percent	Cum Percent
	Yes No	51 29	63.8 36.3	63.8 36.3	63.8 100.0
		Total	80	100.0	100.0
SUCCESSFUL V. <u>UNSUCCESSFUL TREAT</u> .					
	Value	Frequency	Percent	Valid Percent	Cum Percent
Succ Unsucc	essful essful	62 18	77.5	77.5 22.5	77.5
		Total	80	100.0	100.0

diagnosis of alcohol dependence. There were 51 (64%) who also had a concurrent substance abuse diagnosis, 38 (75%) cocaine dependence and 13 (25%) cannabis abuse. A comparison of mean intake scores on the SCQ indicated that the various substance abuse groups did not differ at intake with respect to their SCQ or the total number of "noconfidence" ratings. For a complete set of summary statistics see Table 2.

It should be mentioned that the coincidence of alcoholism and the abuse of other substances is not unusual. It is a base characteristic of this population and no distinction was made between these two subgroups (i.e., "pure" alcoholics and mixed alcohol and drug abusers).

Subjects with a positive parental history of alcoholism were more likely to have a concurrent substance abuse diagnosis (χ^2 = 5.59, p <.05), and black subjects were more likely than white subjects to have a positive parental history of alcoholism (χ^2 = 5.45, p <.05). Consequently, black subjects were more likely than white subjects to have a concurrent substance abuse diagnosis (χ^2 = 19.48, p <.00001). However, this was true both for black subjects with (χ^2 = 12.86, p <.001), and without (χ^2 = 4.18, p <.05), a positive parental history of alcoholism.

Black subjects performed more poorly than white subjects on the RCAT ($\underline{X}^2 = 5.43$, $\underline{p} < .05$), the Complex Figure Test - Copy ($\underline{t} = 3.76$, $\underline{p} < .0001$), and the Complex Figure

SUMMARY STATISTICS

.7168 .2689 .3645

.5318

.5424

.2689 .1959

.0

.8743

.2689

.5318

.8987 .2689

.5967

.5318

.5318

AGE Valid cases: 80.0 Missing cases: .0 Percent missing: .0 Nean 32.1875 Std Err .7934 Nin 19.0000 Skewness Nedian 30.0000 Variance 50.3568 Nax 53.0000 S E Skew 5% Trim 31.8611 Std Dev 7.0963 Range 34.0000 Kurtosis IOR 8.7500 S E Kurt EDUCATION .0 Percent missing: Valid cases: 80.0 Missing cases: .0 Median 12.0000 Variance 4.8657 Max 5% Trim 11.6389 Std Dev 2.2058 Ranna 8.0000 Skewness 17.0000 S E Skew 9.0000 Kurtosis 2.0000 S E Kurt .5318 DAILY CONSUMPTION 80.0 Missing cases: .0 Percent missing: Valid cases: Nean 20.3125 Std Err 1.3182 Min Nedian 16.0000 Variance 139.0024 Nax 4.0000 Skewness 48.0000 S E Skew -.2252 5% Trim 19.6250 Std Dev 11.7899 Range 44.0000 Kurtosis IQR 15.0000 S E Kurt FREQUENCY Valid cases: 80.0 Missing cases: .0 Percent missing: .0 -.5200 5.4625 Std Err .1865 Min 2.0000 Skewness Nean Nedian 5.5000 Variance 2.7834 Nax 5% Trim 5.5694 Std Dev 1.6683 Range 7.0000 S E Skew 5.0000 Kurtosis .2689 -1.0527 3.0000 S E Kurt .5318 IOR DURATION OF PROBLEMATIC DRINKING 80.0 Missing cases: .0 Percent missing: .0 Valid cases: Mean 11.2750 Std Err .8279 Min Median 10.0000 Variance 54.8348 Max 5% Trim 10.7500 Std Dev 7.4051 Range 2.0000 Skewness 35.0000 S E Skew 33.0000 Kurtosis 11.0000 S E Kurt IQR NUMBER OF DAYS BETWEEN LAST CHEMICAL USE AND EVALUATION .0 Percent missing: .0 80.0 Missing cases: Valid cases: -.1758 11.5625 Std Err .3632 Min 4.0000 Skewness Nean 17.0000 S E Skew 13.0000 Kurtosis Nedian 12.0000 Variance 10.5530 Max .2689 5% Trim 11.6389 Std Dev 3.2485 Range -.3625 IQR 4.0000 S E Kurt NUMBER OF DAYS BETWEEN ADMISSION AND EVALUATION

Valid cases: 80.0 Missing cases: .0 Percent missing: .0

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LENGTH OF STAY

Valid car	Bes :	80.0 Missing cases:		.0 Perce	.0		
Mean Median 5% Trim	26.0500 29.0000 26.2361	Std Err Variance Std Dev	.6658 35.4658 5.9553	Nin Max Range IQR	8.0000 41.0000 33.0000 7.0000	Skewness S E Skew Kurtosis S E Kurt	8362 .2689 1.1702 .5318

MINI MENTAL STATUS EXAM

Valid ca	5 85 :	80.0 Nis	sing case	81	.0 Perce	nt missing:	.0
Hean	28.1125	Std Err	. 1551	Nin	24.0000	Skewness	7901
Nedian	28.0000	Variance	1.9239	Nex	30.0000	S E Skew	.2689
5% Trim	28.2083	Std Dev	1.3870	Range	6.0000	Kurtosis	.7736
				IQR	2.0000	S E Kunt	.5318

ALCOHOL DEPENDENCE SCALE

Valid cas	es :	80.0 Ni	ssing case	15 :	.0 Perce	nt missing:	.0
Hean Hedian 5% Trim	19.9625 19.0000 19.6667	Std Err Variance Std Dev	1.0170 82.7454 9.0965	Nin Max Range IQR	4.0000 47.0000 43.0000 11.7500	Skeuness S E Skew Kurtosis S E Kurt	.3787 .2689 0728 .5318

BECK DEPRESSION INVENTORY

Valid cas	es :	80.0 Mi	Missing cases: .0 Percent mi		nt missing:	.0	
Hean Hedian 5% Trim	13.8625 11.5000 13.5417	Std Err Variance Std Dev	.9458 71.5631 8.4595	Min Max Range IQR	1.0000 34.0000 33.0000 12.0000	Skewness S E Skew Kurtosis S E Kurt	.7173 .2689 3494 .5318

COMPREHENSION SUBTEST OF WAIS-R

Valid case	B:	80.0 Mis	sing case	8:	.0 Perce	nt missing:	.0
Mean Median 5% Tri	8.0500 8.0000 8.0278	Std Err Variance Std Dev	.2097 3.5165 1.8752	Min Max Range IQR	5.0000 13.0000 8.0000 3.0000	Skeuness S E Skew Kurtosis S E Kurt	.1739 .2689 7801 .5318

COMPLEX FIGURE TASK - COPY

Valid cas	es :	80.0 Mis	ssing case	8:	.0 Perce	nt missing:	.0
Hean Hedian 5% Tri	30.1563 31.0000 30.6042	Std Err Variance Std Dev	.5293 22.4152 4.7345	Nin Max Range IQR	12.0000 36.0000 24.0000 4.3750	Skewness S E Skew Kurtosis S E Kurt	-1.5374 .2689 2.8796 .5318

COMPLEX FIGURE TASK - IMMEDIATE RECALL

Valid ca	B es :	80.0 Ni	ssing case	::	.0 Perce	nt missing:	.0
Hean	15.5875	Std Err	.7344	Min	3.0000	Skewness	.2199
Median	16.0000	Variance	43.1505	Max	32.0000	S E Skew	.2689
5% Trim 15.4514	Std Dev	6.5689	Range	29.0000	Kurtosis	5221	
				IOR	9.8750	S E Kurt	.5318

COMPLEX FIGURE TASK - DELAYED RECALL

Valid ca	B06 :	80.0 Missing cases:		.0 Perce	.0		
Nean Nedian 5% Trim	15.2125 15.7500 15.1597	Std Err Variance Std Dev	.6638 35.2517 5.9373	Nin Nax Range IQR	3.0000 31.0000 28.0000 8.5000	Skeuness S E Skew Kurtosis S E Kurt	.0277 .2689 2856 .5318
	TING SCALE	- DRS					

Valid cases: 80.0 Missing cases: .0 Percent missing: .0 Mean 4.3625 Std Err .1426 Nin 1.0000 Skewness -.4165 Median 5.0000 Variance 1.6264 Max 7.0000 S E Skew .2689 5% Trim 4.3611 Std Dev 1.2753 Range 6.0000 Kurtosis -.0775 IQR 2.0000 S E Kurt .5318

DIGIT SYNDOL SUBTEST OF WAIS-R

Valid case	6:	80.0 Mis	sing case	18 1	.0 Perce	nt missing:	.0
Mean Median 5% Trim	8.9250 8.0000 8.8750	Std Err Veriance Std Dev	.2878 6.6272 2.5743	Nin Max Range IQR	4.0000 15.0000 11.0000 4.0000	Skeuness S E Skew Kurtosis S E Kurt	.4001 .2689 2354 .5318

INCIDENTAL MEMORY TASK

Valid case	s:	80.0 Miss	sing case	s:	.0 Perc	ent missing:	.0
Mean Median 5% Trim	6.4250 7.0000 6.5556	Std Err Variance Std Dev	.2619 5.4880 2.3426	Hin Max Range IQR	1.0000 9.0000 8.0000 4.7500	Skewness S E Skew Kurtosis S E Kurt	6088 .2689 7211 .5318

TRAILS A

Valid cas	es :	80.0 Mis	sing case	s:	.0 Perce	nt missing:	.0
Mean Median 5% Trim	30.2125 29.0000 29.8611	Std Err Variance Std Dev	.9952 79.2328 8.9013	Min Max Range IQR	13.0000 57.0000 44.0000 11.0000	Skewness S E Skew Kurtosis S E Kurt	.6525 .2689 .1001 .5318

TRAILS B

Valid cas	es :	80.0 Mi	ssing case	5:	.0 Perce	nt missing:	.0
Mean Median 5% Trim	71.0000 64.0000 69.3056	Std Err Variance Std Dev	2.7481 604.1772 24.5800	Nin Max Range IQR	30.0000 149.0000 119.0000 25.2500	Skeuness S E Skew Kurtosis S E Kurt	1.2141 .2689 1.3360 .5318

CONTROLLED WORD ASSOCIATION TEST - FAS

Valid ca	ses :	80.0 Mi	ssing case	8:	.0 Perce	nt missing:	.0
Hean	42.2125	Std Err	1.2363	Nin	20.0000	Skewness	.3369
Median	40.5000	Variance	122.2707	Max	70.0000	S E Skew	.2689
5% Trim	41.9861	Std Dev	11.0576	Range	50.0000	Kurtosis	5250
				IQR	16.7500	S E Kurt	.5318

BOOKLET CATEGORY TEST - REVISED

Valid cas	46 :	80.0 Mi	ssing case	8:	.0 Perce	nt missing:	.0
Mean Nedian 5% Trim	30.7500 28.5000 30.6667	Std Err Variance Std Dev	1.3843 153.3038 12.3816	Nin Nex Range IQR	3.0000 60.0000 57.0000 18.0000	Skeuness S E Skew Kurtosis S E Kurt	.1324 .2689 3262 .5318

SITUATIONAL CONFIDENCE QUESTIONNAIRE - PRE-TREATMENT

Valid case	BS :	80.0 Ni	ssing case	18 :	.0 Perce	nt missing:	.0
Mean Median 5% Trim	67.8000 68.1500 68.8458	Std Err Variance Std Dev	2.7292 595.8663 24.4104	Nin Max Range IQR	14.4000 100.0000 85.6000 37.9750	Skeuness S E Skew Kurtosis S E Kurt	4772 .2689 7059 .5318

SITUATIONAL CONFIDENCE QUESTIONNAIRE - POSTTREATMENT

Valid ca	8 6 8 :	73.0 Mi	ssing case	8:	7.0 Perce	nt missing:	8.8
Nean	81.3507	Std Err	1.7754	Min	36.3000	Skewness	9118
Median	83.7000	Variance	230.0998	Max	100.0000	S E Skew	.2810
5% Trim	82.4145	Std Dev	15.1690	Range	63.7000	Kurtosis	.5094
				IGR	23.7500	S E Kurt	.5552

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Test - Immediate Recall ($\underline{t} = 2.17$, $\underline{p} < .05$). Black subjects also had a shorter average length of stay in treatment than white subjects ($\underline{t} = 2.71$, $\underline{p} < .01$).

The average level of education was 12 years (SD = 2.21). The sample reported an average drinking problem length of 11.28 years and exhibited a moderate level of alcohol dependence as reflected in an average standardized score of 42.66 (SD = 8.25) on the Alcohol Dependence Scale (ADS) (Skinner & Allen, 1982). At the time of admission, 83% of the sample were unmarried and 86% were unemployed. Informed consent was obtained from all participants. The overall subject pool was used for analysis when possible. Site Characteristics

One program was hospital-based, located in a university-affiliated medical center. The second program was a free-standing clinic located on the grounds of a state psychiatric center. The hospital-based program also maintained a detoxification unit from which many of its patients came. In general, this program provided services to a slightly more debilitated patient population than did the "psychiatric" program. Otherwise, the two programs were nearly identical in terms of the population served and the scope of treatment provided. Though not assessed directly, both programs utilized a similar theoretical orientation based on traditional psychosocial therapies and the 12-Step A.A. model.

Subjects obtained from the two treatment sites differed on three measures. Subjects in the hospital-based program reported a more severe history of alcohol dependence (\underline{t} = 2.24, \underline{p} <.05), obtained lower scores on the CFT-Copy (\underline{t} = 2.49, \underline{p} <.05), and were rated as having less denial (\underline{t} = 2.53, \underline{p} = <.05), than subjects from the psychiatric program. Measurement of Self-Efficacy

For measures of central tendency and dispersion for the SCQ-39 see Table 3. Preliminary analysis revealed a high degree of internal consistency in the SCQ (intake coefficient alpha =.98). Reliability estimates for the eight individual subscales ranged from .79 - .96 (see Table 4). While the SCQ subscales were not correlated with amount and frequency of alcohol consumption, all subscales were highly correlated with duration of problematic drinking (see Table 5). These results are consistent with those reported in the SCQ-39 user's manual (Annis, 1987). These findings indicate that the SCQ has satisfactory internal consistency, scale specificity, and is an adequate measure of selfefficacy when applied to the area of substance abuse.

A subsequent comparison of intake and discharge selfefficacy levels showed a marked increase in self-efficacy over the course of treatment and this increase was highly significant ($\underline{t} = 5.45$, $\underline{p} <.001$). As a group, self-efficacy levels increased from a mean of 68.18 (SD = 24.96) at intake to a mean of 81.35 (SD = 15.07) at the time of discharge.

MEASURES OF CENTRAL TENDENCY AND DISPERSION ON

SCQ-39 SUBSCALES

Subscale	Mean	SD	Median	Kurtosis	Skewness
1. UNPLEASANT EMOTIONS/ FRUSTRATIONS	63.69	25.73	65.0	93	21
2. PHYSICAL DISCOMFORT	79.94	24.06	87.5	.86	-1.28
3. PLEASANT EMOTIONS	79.33	25.18	90.0	. 38	-1.12
4. TESTING PERSONAL CONTROL	52.38	34.92	55.0	-1.35	10
5. URGES/TEMPTATIONS	61.44	30.09	65.0	91	42
6. SOCIAL PROBLEMS AT WORK	74.84	26.94	80.0	36	89
7. SOCIAL TENSION	74.77	24.51	82.0	.02	90
8. POSITIVE SOCIAL SITUATIONS	56.00	32.29	58.8	-1.24	23
AVERAGE OF Subscales	67.80	27.97	72.9	-0.44	-0.64
FULL SCALE SCQ	67.80	24.41	84.0	-0.48	-0.71

SUI	BSCALE	NUMBER OF ITEMS	RANGE OF ITEM-TOTAL CORRELATIONS	CRONBACH ALPHA
1.	UNPLEASANT EMOTIONS/ FRUSTRATIONS	8	.4676	.93
2.	PHYSICAL DISCOMFORT	4	.2469	.79
3.	PLEASANT EMOTIONS	3	.5276	.83
4.	TESTING PERSONAL CONTROL	4	.5779	.90
5.	URGES/TEMPTATIONS	4	.4976	.88
6.	SOCIAL PROBLEMS AT WORK	3	.7783	.92
7.	SOCIAL TENSION	5	.5166	.88
8.	POSITIVE SOCIAL SITUATIONS	8	.5485	.96
	AVERAGE	39	.5176	.90

RELIABILITY ESTIMATES FOR SCQ-39 SUBSCALES

SCQ CORRELATIONS WITH ALCOHOL CONSUMPTION

ALCOHOL CONSUMPTION AMOUNT FREQUENCY DURATION SUBSCALE 1. UNPLEASANT EMOTIONS/ FRUSTRATIONS -.11 -.06 -.28** 2. PHYSICAL DISCOMFORT -.08 -.06 -.32** 3. PLEASANT EMOTIONS -.05 .09 -.36*** 4. TESTING PERSONAL CONTROL -.04 -.02 -.30** .01 -.29** 5. URGES/TEMPTATIONS -.10 6. SOCIAL PROBLEMS AT WORK -.31** -.09 -.10 -.29** 7. SOCIAL TENSION -.06 -.15 8. POSITIVE SOCIAL .08 -.25** SITUATIONS -.04 -.30** AVERAGE -.07 -.03

N of cases: 80 1-tailed Signif: ** - .01 *** - .001

Pre- and posttreatment levels of self-efficacy were strongly correlated (\underline{r} =.56, \underline{p} <.001).

Pretreatment self-efficacy was strongly correlated with marital status ($\underline{t} = 2.91$, $\underline{p} <.01$), with married subjects expressing higher levels of self-efficacy at intake. This difference was not observed in posttreatment levels of selfefficacy. As mentioned above, self-efficacy was also significantly correlated with duration of problematic drinking. Subjects with longer histories of problem drinking reported lower levels of confidence in their ability to remain abstinent at posttreatment ($\underline{r} =.34$, \underline{p} <.001). Once again, this difference was not observed in posttreatment measures of self-efficacy. There was a significant correlation between self-efficacy and scores on the ADS. Severity of alcohol dependence was associated with lower pretreatment levels of self-efficacy ($\underline{r} =.28$, $\underline{p} <.01$), and posttreatment levels of self-efficacy ($\underline{r} =.25$, $\underline{p} <.05$).

Two subgroups were found to have significantly lower posttreatment self-efficacy scores. Subjects with a positive parental history of alcoholism were less confident in their ability to remain abstinent posttreatment than subjects without such a family history ($\underline{t} = 2.00$, $\underline{p} < .05$). Also, subjects with a prior history of psychiatric treatment had lower posttreatment self-efficacy scores than subjects without such a treatment history ($\underline{t} = 2.06$, $\underline{p} < .05$). Additionally, males reported fewer "no confidence"

situations posttreatment than did females ($\underline{t} = 2.12$, \underline{p} <.05).

Results of Hypotheses Tests

Hypothesis #1

Self-efficacy and abstinence. For a complete correlation matrix see Table 6. It was hypothesized that intake self-efficacy would be negatively related to continued abstinence at follow-up. No correlation was observed between self-efficacy and abstinence at either 1and 3-month follow-ups, even when those subjects lost to follow-up (i.e., presumed to have relapsed), were included in the analysis. For a reduced correlation matrix see Table 7.

Hypothesis #2

Self-efficacy and denial. It was hypothesized that self-efficacy would be significantly correlated in a positive direction with psychological denial. It was thought that individuals with high pre-treatment selfefficacy might be expressing an unrealistically positive assessment of their ability to remain abstinent and were, therefore, in greater denial concerning the severity of their chemical dependence. It was presumed that this unrealistically positive self-assessment would be noted by the subjects' primary counselors and reported on the DRS. This relationship was not observed. Neither pre- nor posttreatment self-efficacy appeared to be related to

9	
Table	

CORRELATION MATRIX

LAST	
DURA	
FREQ	
AMIT	
PRNT	
EDUC	
ESTAT	- 1517 - 1517 - 1517 - 1114 - 1114 - 1520 - 1520 - 1520 - 1520 - 1520 - 1520 - 1520 - 1520 - 1520 - 1526 - 1520 - 1520 - 1520 - 1027 -
MSTAT	
AGE	
SEX	
RACE	0148 01758 01758 01758 01758 01758 011650 0196 01968 011650 01968 011650 01968 011650 01175 00091 01759 00091 01759 00091 01759 00091 01759 00091 01759 00091 01759 00091 01759 00091 01759 00091 01759 00091 01759 00091 00090 00091 00090 00000 00000 00000 00000 00000 00000 0000
SITE	
Correlations:	SITE SEC SEC SEC SEC SEC SEC SEC SEC SEC SE

Correlations:	SITE	RACE	S EX	AGE	MSTAT	ESTAT	EDUC	PRNT	AWT	FREG	DURA	LAST
SCCA NCCNA NCCNA *SCOB FOLLA FOLLA FOLLA FOLLA FOLLA FOLLB AFTB AFTB FOLLB AFTB Correlations:	1064 1064 0712 0794 1436 1436 1436 1436 1436	.0871 .0569 .0569 .0871 .0871 .0141 .0141 .0273 .0209	.11% .0340 .0348 .0318 .0170 .0170 .0323 .0323 .0323	. 0419 0445 1478 1478 1478 1112 1226 1226 1122 1122	3125** 1424 1424 .0143 2313* .0428 0111 0269 MSTAT	0474 .0009 .1257 .1257 .0004 1257 1185 1185 1185 1185	.0425 1266 1266 .0428 .0428 .0428 .0438 .0438 .0438 .0439 .0439		. 0814 . 0715 . 0715 . 0715 . 0765 . 0765 . 0769 . 0729 . 0174 . 0174	0261 .0532 .1461 .1461 .1461 .1461 .1461 .1597 .1321 .1321 .1321 .1321		.0834
Correlations:	Ŋ	QIVN	PSYCH	SEIZ	HEAD	CSAD	ß	81 MT	¥	sq	108	9 80
ADM MAND PSYCH SEIZ SEIZ SEIZ CSAD CSAD ADS SUT MSE ADS SIJ MSE CTT CFTD DIGIT TRLSA FAS FAS FAS											8020 8020 8020 8020 8020 8020 8020 8020	
WAI Correlations:	9850. MON	0422 MAND	0425 PSYCH	.1185 SEI2	2395+ HEAD	.1206 CSAD	5690. FC 801	1516 SUT		9970. SQ	0612 BDI	9600 -

Table 6 (cont'd)

			**.
COMP			
109	. 4969*** . 4780*** . 3024 ** . 3034 ** . 0313 . 0399 . 0399 . 0392	I ON	
SQV		ADS DRS	
JSN	. 0516 . 0518 . 0197 . 0197 . 0345 . 0855 . 0855 . 0815 . 0815	RCAT	
SUT	0513 .0381 2181* .1999 4316* 637 0637 1955	SUT FAS	
SOI	. 0513 . 0815 . 0738 . 0738 . 0738 . 0738 . 0122 . 0122 . 0122 . 0122	LOS TRLSB	
CSN	0889 0956 0956 0253 0256 0256 0568 1159 1159 1159	CSAU TRLSA	
HEAD		HEAD INCID	
S E12	. 0094 0506 0717 0766 0766 0767 0465 0465 2100	SE I Z DIGI T	
PSYCH	. 1882 - 0548 - 0548 - 0064 - 2430 - 1169 - 1065 - 1065	PSYCH CFTD	. 1940 . 1940 . 1940 . 1021 . 1028 . 1028
QIVI	. 1534 . 1455 . 1341 . 1343 . 13435 . 13435 . 13435 . 13435 . 13455555555555555555555555555555555555	CFTI CFTI	
N	.110k 1265 1265 1261 1561 1561 0561 0687 0649	CFTC	
Correlations:	SCOM NCOMA SCOM SCOM SCOM FOLLA FOLLB FOLLB FOLLB	Correlations: Correlations:	CFTC CFTI CFTI DIGIT INCID TRLSA TRLSA FAS FAS FAS FAS FAS MCDNB AFTA FOLLB AFTA FOLLB AFTA AFTA AFTA FOLLB AFTA Correlations:

۲.

Table 6 (cont'd)

Table 6 (cont'd)

RTOT		RTOT	
AFTB	++5*2*-	AFTB	
FOLLB		FOLLB	
AFTA	 .4457 ***	AFTA	
FOLLA		FOLLA	
NCONA		NCONA	1
Correlations:	NCONA ^SCOR ^SCOR ^SCOR FOLLA FOLLA FOLLB AFTB RTOT	Correlations:	•

W of cases: 80 1-tailed Signif: * - .05 ** - .01 *** - .001 ^W of cases: 74

CORRELATION MATRIX

	<u>se</u>	FOLLA	FOLLB	DRS	BDI	<u>RCAT</u>
SE						
Folla	.1014					
FOLLB	1057	.4483***				
DRS	.0195	.0251	0746			
BDI	4969***	0313	0142	.0176		
RCAT	0613	0026	.0956	0010	.0208	

N of cases: 80 1-tailed Signif: *** p <.001

counselor ratings of psychological denial.

Hypothesis #3

Self-efficacy and depression. Preliminary analysis revealed a high degree of internal consistency in the Beck Depression Inventory (BDI) (coefficient alpha =.88). Increased levels of depression were associated with longer periods of problem drinking ($\mathbf{r} = .24$, $\mathbf{p} < .05$), and severity of alcohol dependence (ADS, $\mathbf{r} = .27$, $\mathbf{p} < .01$). Higher levels of depression were also related to poorer performance on the CFT-Copy ($\mathbf{r} = .29$, $\mathbf{p} < .01$).

It was hypothesized that intake self-efficacy would be negatively related to depression, with more depressed individuals experiencing lower self-efficacy. The expected relationship between self-efficacy and depression was observed. Pre- and posttreatment self-efficacy were strongly related to depression, with more depressed subjects reporting lower levels of self-efficacy (pre, r = .50, p <.001; post, r = .30, p <.01). Depressed chemical abusers appear to be less confident in their ability to remain abstinent following a residential treatment experience. Hypothesis #4

Denial and depression. A negative relationship between depression and denial was anticipated, with more depressed individuals experiencing less denial of their alcoholism. It was expected that more depressed individuals would be less "defended" regarding the severity of their alcohol dependence and would be rated as having less denial by their primary counselors. This relationship was not observed.

However, a relationship was observed between counselor ratings of denial and counselor ratings of appreciation as measured by a single question from the Working Alliance Inventory. Subjects with less denial were "appreciated" more by their counselors ($\underline{r} = .21$, $\underline{p} < .05$).

Hypothesis #5

Self-efficacy and neuropsychological functioning. As mentioned earlier, abstract concept formation, as measured by the Revised Category Test, was the principal neuropsychological variable of interest in this study. The recommended cut score for the RCAT is 23. When this cut score is used 25 (31%) subjects fell below the cut score (i.e., their performance was within normal limits) and 55 (69%) fell above the cut score (i.e., indicating an impairment of their ability to use abstract reasoning). Because the distribution of RCAT scores in the present study was bimodal, a cut score of 32 was used. This resulted in 44 (55%) of the subjects being classified below the cut score and 36 (45%) of the subjects being classified above the cut score.

Changing the cutting score of a standardized neuropsychological instrument is not customary practice; however, the change was instituted for appropriate reasons. While recommended cutting scores generally identify

impairment better than by chance, they also misclassify neuropsychologically intact persons to varying degrees (i.e., false positive errors). Adams, Boake, and Crain (1982) have demonstrated that the adjustment of cutting scores decreases the likelihood of classification errors on tests influenced by age, education, and race-ethnicity. Although the RCAT scores were corrected for age and education, they were not corrected for race. It was beyond the scope of the present study to develop a statistical correction based on race, so the "natural" cut score supplied by the bimodal sample distribution was used. This resulted in an additional 19 (24%) subjects being classified as normal.

It was hypothesized that intake self-efficacy would be significantly related in a negative direction with neuropsychological functioning, with high pre-treatment self-efficacy related to lower scores on these measures. It was anticipated that subjects with neuropsychological impairment would have an unrealistically high assessment of their ability to remain abstinent posttreatment. This relationship was not observed.

Hypothesis #6

<u>Moderator test</u>. It was hypothesized that neuropsychological functioning would significantly moderate the relation between self-efficacy and treatment outcome. It was expected that a significantly stronger positive

relation between self-efficacy and outcome would be observed in the higher functioning group.

First, the correlations between pretreatment selfefficacy and abstinence rates at follow-up were examined for two groups of subjects, impaired and unimpaired. Then, by using Fisher's r to S transformation, the difference between the correlation coefficients for these two groups was tested.

At 3-month follow-up there was essentially no correlation between pretreatment self-efficacy and abstinence rates for the unimpaired group. However, the relation between these two variables was significant for the impaired group (TRLSA, $\underline{r} = .61$, $\underline{p} < .01$). When the correlation coefficients for these two groups was compared (i.e., impaired v. unimpaired), they were found to be significantly different (Z = 2.10, alpha = .05). For impaired subjects, intake self-efficacy was negatively related to outcome at 3-month follow-up. Whereas for unimpaired subjects, there was no relationship between selfefficacy and outcome at 3-month follow-up.

Additionally, a nonparametric multivariate crosstabulation of self-efficacy (high v. low), and treatment outcome (abstinent v. non-abstinent), controlling for neuropsychological functioning found that impaired subjects with high pretreatment self-efficacy had a greater likelihood of relapse at 3-month follow-up than impaired

subjects with low self-efficacy (RCAT, $\chi^2 = 4.13$, p < .05). This suggests that higher self-efficacy increases the likelihood of relapse at 3-month follow-up more for the impaired group than it does for the unimpaired group. Hypothesis #7

Prediction of posttreatment abstinence. Both discriminant and logistic regression analyses were used to determine if intake self-efficacy, neuropsychological status, depression, and denial would combine to predict group membership (i.e., abstainers v. nonabstainers), at follow-up. No such predictive relationship was found.

In summary, Hypotheses #1,2,4,5, & 7 were not directly supported. Post hoc analysis was considered advisable because (a) hypotheses regarding the relations of selfefficacy to posttreatment abstinence and denial were not supported, and (b) a moderator test indicated that higher self-efficacy may increase the likelihood of relapse at 3month follow-up for the neuropsychologically impaired group. Post-hoc Analyses

Two studies stimulated the present investigation. The first was the Burling et al. (1989) study which suggested that psychological denial might moderate the relationship between self-efficacy and treatment outcome. The second was the Tarter, Alterman, and Edwards (1984) conceptualization of denial as a neurobehavioral phenomenon. Since the main hypotheses of the present study were not supported, it

seemed desirable to conduct post hoc analyses to determine whether self-efficacy, neuropsychological status, denial, and treatment outcome were related in ways not anticipated. This section will begin with an exploration of self-efficacy through the use of survival analysis, followed by descriptions of post hoc analyses involving neuropsychological functioning and denial.

Survival analyses. When survival analyses were performed using self-efficacy as the variable of interest some interesting results were found. Survival analysis has recently been used by investigators at the Research Institute on Addictions (Buffalo, New York) to study the pattern of relapse across time and the differential effect of self-efficacy on relapse functions. Survival analysis is used to avoid problems with cross-sectional designs that may not find a significant relationship between a predictor variable and relapse at follow-up even though a significant relationship with the rate or pattern of relapse across time actually exists (Rychtarik, Prue, Rapp, & King, 1992).

The "cumulative survival function" describes the proportion of all individuals who have not relapsed as a function of follow-up time. Subtracting this function from 1 yields the cumulative relapse rate, or the proportion of all individuals who have relapsed as a function of follow-up time (Curry, Marlatt, Peterson, & Lutton, 1988). When using survival analysis in the fields of addiction and other

psychological disorders, subjects lost to follow-up are classified as relapsed. In this study, specific follow-up data were obtained from 70 (87%) of the sample. The remaining 10 (13%) had unsuccessful follow-up contacts and were thus categorized as relapsed.

Two survival analyses were performed. When a median split on intake SCQ was used, a significant relationship was found between intake self-efficacy and relapse, with high pretreatment SCQ scores being related to a greater likelihood of relapse at 3-month follow-up (χ^2 = 3.99, p <.05) (see Figure 1).

When a second analysis was performed using an equal thirds split (low-med-high) on intake SCQ, a significant relationship was found between intake self-efficacy and relapse, with high pretreatment self-efficacy being related to a greater likelihood of relapse at 3-month follow-up (χ^2 = 6.73, p <.05) (see Figure 2). Though not statistically significant, subjects with "medium" self-efficacy had a greater likelihood of abstinence at 3-month follow-up than either the Low SE or the High SE groups.

<u>Neuropsychological functioning</u>. Poor performance on the RCAT was strongly correlated with poor performance on several other measures of neuropsychological functioning:

Mini-Mental Status Exam	$(\underline{r} = .30, \underline{p} < .01)$
Comprehension Subtest	$(\underline{r} = .33, \underline{p} < .01)$
Complex Figure Task-Copy	$(\underline{t} = .40, \underline{p} < .001)$
Complex Figure Task-Immediate	$(\underline{t} = .46, \underline{p} < .001)$
Complex Figure Task-Delayed	$(\underline{t} = .37, \underline{p} < .001)$
Incidental Memory Task	$(\underline{t} = .43, \underline{p} < .001)$

Relapse Curve: High v. Low SE Figure 1



80 Subjects

---- High SE

- Low SE

Relapse Curve: Hi-Med-Low SE Figure 2



80 Subjects

Trail	Making	Test,	Part	λ	(r	-	.40,	p	<.001)
Trail	Making	Test,	Part	В	(r	=	.35,	p	<.01)

RCAT performance was correlated with duration of problem drinking, with better performance associated with fewer years of heavy drinking ($\underline{r} = .23$, $\underline{p} < .05$). Better performance on the RCAT was also associated with successful completion of treatment ($\underline{t} = 2.23$, $\underline{p} < .05$), and longer lengths of stay ($\underline{r} = .21$, $\underline{p} < .05$). Additionally, longer lengths of stay were also correlated with better performance on the Complex Figure Tests (Copy, $\underline{r} = .34$, $\underline{p} < .01$; Immediate Recall, $\underline{r} = .35$, $\underline{p} < .001$; Delayed Recall, $\underline{r} = .33$, $\underline{p} < .01$).

<u>Measurement of denial</u>. As mentioned earlier, subjects coming from the two different sites differed on counselor ratings of denial. Subjects from the hospital-based program were rated as having less denial than subjects from the "psychiatric" program ($\underline{t} = 2.53$, $\underline{p} < .05$). Married subjects were rated as having less denial than unmarried subjects (\underline{t} = 2.88, $\underline{p} < .01$).

Subjects reporting a higher frequency of alcohol/drug use were rated as having less denial by their therapists (<u>r</u> =.21, <u>p</u> <.05). This finding is consistent with the correlation between the DRS and the ADS, where greater severity of alcohol dependence was correlated with lower levels of denial (<u>r</u> =.35, <u>p</u> <.001).

Denial ratings were also related to length of stay, with longer lengths of stay being associated with less denial (<u>r</u> =.29, <u>p</u> <.01). Also, when the DRS was treated as a dichotomous variable, lower denial was associated with successful completion of treatment (χ^2 = 6.21, <u>p</u> = <.01).

Ratings on the Denial Rating Scale were associated with two neuropsychological measures, Trail Making Tests, Parts A & B. When Reitan's original cut scores were used subjects with poorer performance on these measures were rated as having more denial:

Trail Making Test, Part A $(\underline{X}^2 = 16.98, \underline{p} < .01)$ Trail Making Test, Part B $(\underline{X}^2 = 19.57, \underline{p} < .01)$

Summary

The SCQ has satisfactory internal consistency, scale specificity, and is an adequate measure of self-efficacy when applied to the area of substance abuse. Hypotheses #1,2,4,5, & 7 were not directly supported. A simple zeroorder correlation found no relation between intake selfefficacy and abstinence rates at 1- and 3-month follow-up. Neither pre- nor posttreatment self-efficacy were related to counselor ratings of denial. No relationship was observed between depression and denial. No relationship was found between self-efficacy and neuropsychological functioning. Discriminant and logistic regression analyses using intake self-efficacy, neuropsychological status, depression, and denial did not predict group membership at follow-up.

Intake self-efficacy was strongly related to depression with more depressed individuals experiencing lower selfefficacy. Neuropsychological functioning was found to significantly moderate the relation between self-efficacy and treatment outcome. Impaired subjects with high pretreatment self-efficacy had a greater likelihood of relapse at 3-month follow-up than impaired subjects with low self-efficacy.

Post hoc analyses found a significant relationship between self-efficacy and relapse status with high pretreatment SCQ scores being related to a greater likelihood of relapse at 3-month follow-up. Better performance on the RCAT was associated with shorter durations of problematic drinking, longer lengths of stay, and successful completion of treatment.

Further, post hoc analyses revealed that ratings on the Denial Rating Scale were associated with two neuropsychological measures, Trail Making Test, Parts A & B. Subjects with poorer performance on these measures were rated as having more denial. Denial ratings were also related to longer lengths of stay and successful completion of treatment.

Chapter 5

Discussion

This chapter will begin with a brief discussion of sampling and measurement efforts with special attention to site characteristics and the measurement of self-efficacy. This will be followed by an interpretation of confirmed or failed hypothesis tests. Results will be discussed in light of the measurement of key constructs. Relevant literature and post hoc findings will be reviewed in an attempt to address the implications these findings have on the theories that guided this study. Finally, the study's limitations, implications for practice, and directions for future research will be discussed.

Sampling and Measurement Efforts

Overall, the sampling and measurement efforts in this study were adequate for several reasons. First, the criteria for inclusion in the study were quite broad, ensuring that the present sample is likely very representative of the patient population currently being served in public sector residential substance abuse treatment settings. Second, in spite of the fact that research subjects were not compensated for their involvement in the study, when approached nearly all potential subjects agreed to participate. Therefore, there does not appear to have been anything atypical about those subjects who agreed to participate in the project. Thirdly, all assessments

were conducted, scored, and interpreted by the author ensuring reliability across the subject pool.

However, one important observation should be made concerning the subject population. Although all subjects had an Axis I diagnosis of alcohol dependence, 64% of the participants also had a concurrent substance abuse diagnosis - most often cocaine dependence (75%). This high incidence of concurrent substance abuse within the present sample almost certainly had an impact on the neuropsychological and affect-related components of the study. This is further confounded by the finding that black subjects were much more likely than white subjects to have a concurrent substance abuse diagnosis. Ninety-four percent of black subjects had a concurrent substance abuse diagnosis as compared with 45% of white subjects.

One of the primary formulations of this study was that neuropsychological status would have a significant impact on self-assessment capabilities (i.e., abstinence-related selfefficacy and psychological denial. It is almost certain that the neurotoxic effects of alcohol are moderated by the abuse of other substances like cocaine and marijuana. However, much of the previous research on neuropsychological functioning and its influence on diagnosis and treatment has either been conducted with relatively "pure" alcoholic samples or without considering concurrent substance abuse as a relevant factor. As mentioned earlier, no distinction was
made between these two subgroups in the present study. Considering the present state of the literature, for a population of mixed substance abusers, conclusions concerning the impact of neuropsychological functioning on the accuracy of self-appraisal should be approached with caution. While alcohol disorders are still over twice as prevalent as substance abuse disorders, recent data confirm that the incidence of mixed substance abuse diagnoses is increasing and represents a national trend (New York State Office of Alcoholism and Substance Abuse Services, 1992).

Site Characteristics

Subjects at the two treatment settings were found to differ on three variables: (a) severity of alcohol dependence, (b) performance on the Complex Figure Test-Copy, and (c) counselor ratings of subjects' denial. Subjects in the hospital based program reported a greater severity of alcohol dependence, performed more poorly on this measure of visuospatial construction, and were rated by their counselors as having less denial than were subjects from the psychiatric program. It is not surprising that subjects reporting more severe histories of alcohol dependence would require a medically supervised treatment experience. It is probable that a more malignant pattern of abuse resulted in poorer performance on the CFT-Copy for this group. Also, when faced with the actuality of hospital-based intervention, it is likely that these subjects were seen as

more accepting of their substance abuse problems than were subjects from the psychiatric inpatient setting. So, while there were observed site-based differences, these differences are easily explained and probably had little influence on the other variables of interest.

Measurement of Self-Efficacy

Subjects with longer periods of problematic alcohol and drug use and those reporting more severe alcohol dependence also reported less pretreatment self-efficacy. It makes intuitive sense that individuals who have had a less positive history of abstinence-related performance accomplishments would be less confident concerning their ability to remain abstinent posttreatment. It is probable that individuals with longer and more severe histories of substance abuse have a better understanding of how difficult remaining abstinent is likely to be and rated their selfefficacy in high-risk situations accordingly.

It is also interesting that, compared to unmarried subjects, married subjects (a) tended to be more confident about their chances of remaining abstinent posttreatment, and (b) were rated as having less denial by their counselors. It is likely that subjects "in relationship" felt greater support for their decision to establish and maintain a sober lifestyle and felt a greater imperative to change their drinking/drug-taking behavior so as not to jeopardize the relationship.

In this study, subjects with a positive family history of alcoholism, and those with a history of previous psychiatric treatment reported lower levels of posttreatment self-efficacy. It would appear that these two subgroups, because of their backgrounds, were less affected by residential treatment. It is possible that these two groups of subjects were realistically less optimistic concerning their ability to remain abstinent posttreatment. Or these subjects may have viewed their families of origin as incapable of providing adequate social support.

Males reported fewer posttreatment no confidence ratings than did females. One possible explanation for this finding is that, following residential treatment, males are generally less willing to admit "zero" confidence than females. Given the relatively high overall relapse rate in this study, these findings suggest that males may benefit from early treatment interventions that address their unwillingness to admit a total lack of confidence in highrisk situations.

The SCQ appears to be an adequate measure of selfefficacy when applied to the area of substance abuse. However, what has been referred to as a "blanket overconfidence bias" (Marlatt, 1985c, p. 223), was observed in posttreatment self-efficacy ratings. Many subjects responded to all, or nearly all, the items with a 100% confidence rating, indicating total confidence in their

ability to remain abstinent posttreatment. Marlatt (1985c) has suggested that such a ceiling effect is likely the result of the subject's misinterpretation of the questionnaire as a overall test of motivation. Individuals in treatment who respond in this manner may need to be targeted for special treatment interventions:

Clients who demonstrate the blanket overconfidence bias may require special attention in treatment, especially if this bias represents a naive estimate of the future risks involved in maintaining abstinence. Overconfidence in this respect may represent an underlying reliance on willpower as the sole means of coping with temptations. Since many clients believe that willpower is an all-or-none trait or ability, it follows that they would apply this concept in a blanket way across all temptation situations. Such clients may be at greater risk for relapse as a result, since the first time they encounter a risk situation that they cannot control, they may give up altogether (Marlatt, 1985c, p. 224).

The author suggested that one way to reduce this type of bias would be the development of a forced-choice format in which the subject is asked to rate which of two situations would be most difficult to cope with.

Discussion of Results

A simple zero-order correlation found no relation between intake self-efficacy and abstinence rates at 1- and 3-month follow-up (Hypothesis #1). However, post hoc analysis revealed the expected relationship when survival analyses were performed using both a median and equal thirds split on intake self-efficacy. High self-efficacy scores were related to a greater likelihood of relapse at 3-month follow-up. This finding is a replication of earlier research by Burling, Reilly, Moltzen, and Ziff (1989).

Although the difference in relapse rates between low and medium self-efficacy groups was not statistically significant, subjects with "medium" self-efficacy tended to have a greater likelihood of abstinence at 3-month follow-up than either low or high self-efficacy groups. Results suggested that subjects with moderate levels of selfefficacy fared better than subjects with either low or high levels. While not statistically significant, the trend is suggestive. It makes sense that individuals with more moderate or "balanced" self-appraisals would be in a better position to remain abstinent posttreatment than either of the more extreme self-efficacy groups.

Neither pre- nor posttreatment self-efficacy were related to counselor ratings of denial (Hypothesis #2). For this population it would appear that self-efficacy is unrelated to counselor ratings of psychological denial.

However, post hoc analysis found that denial ratings were related to length of stay, with longer lengths of stay being associated with lower levels of denial. Additionally, when the DRS was treated as a dichotomous variable lower denial was associated with successful completion of treatment. This is contrary to the finding described by the authors of the Denial Rating Scale who found that treatment completion rates were similar between clients in denial and those who had accepted their alcoholism (Goldsmith & Green,

1988).

Ratings on the DRS were also associated with two neuropsychological measures, Trail Making Test, Parts A & B. Subjects with poorer performance on these measures were rated as having more denial. As a test of simple visual scanning and complex visuomotor sequencing, the Trail Making Test is highly vulnerable to the effects of brain damage. Like the Kupke and O'Brien (1985) study in which composite measures of motor skill and psychomotor speed were associated with counselor ratings of behavioral impairment, it is possible that counselor ratings on the DRS were more an evaluation of "treatment readiness," motivation, or perceived prognosis, than a reflection of psychological denial per se. It is possible that neuropsychological deficits in this population are, in general, misinterpreted by treatment providers as "questionable motivation for treatment." It is reasonable to assume that an individual's adjustment to residential treatment is severely hampered by factors like poor attention and concentration, short-term memory deficits, impaired new learning, and problems with abstract reasoning. It is likely that these symptoms are routinely misinterpreted in the client-counselor relationship as psychological denial and resistance to therapy. So, it is neuropsychological impairment, and the misinterpretation of the these deficits as psychological resistance, that may explain why some individuals drop out

of treatment prematurely or are discharged unsuccessfully. These findings suggest that substance abuse counselors may need to be especially aware of the attributions they make for different client behaviors. Neurobehavioral measures might also be used to target individuals at risk for poor treatment outcome.

Additionally, one cannot rule out the possibility that subjects' DRS ratings were based on the degree to which they were "appreciated," by their counselors as measured by the single WAI question. A thorough consideration of the probable components of counselor-client appreciation or "liking" are beyond the scope of this discussion, but this finding is suggestive. It is possible that subjects who are less well liked are rated as having more denial, or vice versa. Also, counselors' assessments of denial may be influenced by other characteristics of the working alliance such as (a) agreement on the goals of treatment, (b) counselor expectations concerning client behavior, (c) a sense of mutual trust and/or respect, or (d) conflicting values. Based on these findings it is clear that denial is a complex construct having social, psychological, and perhaps neuropsychological components.

Pre- and posttreatment self-efficacy were strongly related to depression with more depressed individuals experiencing lower self-efficacy (Hypothesis #3). This is a replication of the finding reported in the SCQ User's Manual (Annis, 1987), where a negative correlation between selfefficacy and depression was found ($\underline{r} = -.52$). It is not surprising that more depressed individuals would have less optimistic performance expectations.

It was expected that more depressed individuals would be more accurate self-assessors and would tend to be rated by their counselors as having less denial (Hypothesis #4). No relationship was observed between depression and denial. Several factors may account for this.

At least one study has questioned the use of the Beck Depression Inventory when screening for depression in alcoholics (Willenbring, 1986). Using DSM-III diagnosis by clinical interview as the standard, this study found the Hamilton Depression Scale (Hamilton, 1960), superior to both the BDI and the Depression Scale from the MMPI. The author concludes that self-report measures are insufficient to assess clinical depression in alcoholics at intake to treatment.

Also, two recent studies have investigated the relation between depression and alexithymia in alcoholics. Alexithymia is a hypothetical construct consisting of four features: (a) difficulty in the identification and description of feelings, (b) difficulty distinguishing feelings from somatic sensations, (c) reduction in symbolic thinking (i.e., lack of imaginative ability), and (d) an external, operational cognitive style (Haviland, Hendryx, Cummings, Shaw, & MacMurray, 1991; Haviland, MacMurray, & Cummings, 1988).

In the first study, Haviland et al. (1988), found that subjects with high BDI scores tended to be more "alexithymic" than those with low BDI scores. The authors concluded that alexithymia may operate as a defense for alcoholics denying painful affect. In the second study, Haviland et al. (1991), found that both the cognitiveaffective and somatic-performance components of the BDI were associated with the Feelings factor of the Toronto Alexithymia Scale (TAS). As in their previous study, the authors found depression to be related to the inability to identify feelings and to distinguish them from somatic sensations.

Therefore, while depressed persons may be more accurate in their beliefs concerning personal control and their view of the future than nondepressed individuals, these individuals may also be using an alexithymic defensive operation to deny painful affect. If so, then one would expect counselor ratings of denial within this population to be equivocal at best. Certainly, further research in this area is necessary to explore the relations of depression, psychological denial, and alexithymia.

Subjects with neuropsychological impairment did not seem to have an unrealistically high assessment of their ability to remain abstinent posttreatment as compared with

neuropsychologically intact subjects (Hypothesis #5). However, neuropsychological functioning was found to significantly moderate the relation between self-efficacy and treatment outcome (Hypothesis #6). For impaired subjects, intake self-efficacy was negatively related to outcome at 3-month follow-up. Whereas for unimpaired subjects, there was no relationship between self-efficacy and outcome at 3-month follow-up.

This finding suggests that while impaired neuropsychological status may not directly affect ratings of self-efficacy, impaired subjects with high self-efficacy may be self-deluded or incapable of accurate self-awareness, or both. This subgroup of clients might also benefit from special intervention at the onset of treatment. By administering the SCQ and a relatively simple measure of neuropsychological functioning, for example the Trail Making Test, individuals with high self-efficacy and slowed response times on these visuomotor tasks could be targeted for special focus groups on relapse prevention. The goal of these groups would be to help at-risk individuals identify and effectively manage potential relapse situations.

It makes intuitive sense that abstinence-related selfefficacy and neuropsychological functioning would be associated in this way. For the newly abstinent individual, remaining alcohol and drug free requires, among other things, common-sense, practical reasoning, and social judgement. The SCQ is a measure of an individual's ability to discriminate between a variety of potential high-risk situations; a process which involves both intra- and interpersonal monitoring. The Trail Making Test, and to a certain extent the Category Test, are measures of complex attention requiring mental flexibility and, more importantly, vigilance. Therefore, if avoiding relapse is conceptualized as the ability to exercise social and intrapersonal vigilance, then the higher relapse rate evidenced by impaired subjects with high self-efficacy might have been the result of their inability to be alert to highrisk situations and may thus represent a kind of biosocial vigilance deficit.

In the present study, successful completion of treatment was not necessarily dependent on length of stay. Like the Burling et al. (1989) study, positive circumstances of discharge included graduation from the program or satisfactory fulfillment of a four week commitment. Negative circumstances of discharge were usually the result of such things as (a) on-unit substance abuse, (b) unauthorized absence, and (c) violation of program guidelines. Longer lengths of stay were associated with better performance on the Complex Figure Tests (Copy, Immediate Recall, and Delayed Recall), and the Revised Category Test. Also, better performance on the RCAT, while not correlated with abstinence rates at follow-up, was

associated with successful completion of treatment. Black subjects performed more poorly than white subjects on three of these four measures (excluding the CFT - Delayed Recall), and had a shorter average length of stay than white subjects.

Considerations of sample size and statistical power make a more comprehensive analysis of these factors beyond the scope of the present study. However, several variables related to race/ethnicity may account for these findings. In this sample, black subjects were much more likely than white subjects to (a) have a positive parental history of alcoholism, and (b) have a concurrent substance abuse diagnosis. In is possible that these factors have both separate and additive effects on neuropsychological functioning which, in turn, may have an impact on a variety of in-treatment variables (e.g., diminished social skills, or attention and concentration deficits which are misinterpreted as poor motivation) that affect the clientcounselor relationship. These in-treatment factors likely influence a client's length of stay in treatment and the successful completion of program objectives.

In any case, it would appear that subjects with relatively more intact neuropsychological functioning in the areas of new learning and memory, intellectual efficiency, and concept formation are better able to adapt to the conditions of residential treatment. In addition to

ensuring that cultural sensitivity is reflected in all aspects of the treatment experience, intervention efforts need to target those individuals who, because of a combination of factors (i.e., positive parental history of alcoholism, polysubstance abuse, impaired neuropsychological status) are at risk for poor treatment outcome.

Limitations

Two common factors have often limited the conclusions that can be drawn from previous research on relapse assessment: (a) follow-ups often include only participants who have completed treatment, and (b) follow-up periods are often too short (Welte, 1981). The present study included participants who began but did not complete treatment thereby avoiding inflated claims of successful treatment outcome.

However, recent recommendations for treatment outcome research stress the importance of a minimum 6-month followup duration. Unfortunately, the recommended 6 to 12-month follow-up period would have been unsuitable for this type of exploratory investigation. Because the follow-up period for this study ended at 90-days posttreatment, it provides little information about long-term relapse rates. This represents a limitation that might account for the fact that discriminant and logistic regression analyses using intake self-efficacy, neuropsychological status, depression, and denial were unable to predict group membership at follow-up

(Hypothesis #7).

Another potential limitation of this investigation is that relapse was defined as any use of alcohol or drugs during the follow-up period. In addictions research, a "lapse" refers to any return to the target behavior, regardless of amount, frequency, or consequences. A "relapse," on the other hand, refers to a resumption of pretreatment baseline behavior. In this study, because no distinction was made between lapse and relapse, follow-up data indicate the proportion of subjects who reported even a single occurrence of alcohol and/or drug abuse.

One of the central assumptions of Marlatt's relapse prevention model is that cognitive and affective reactions determine whether or not a slight error or "slip" is followed by a full-blown relapse. If relapse is defined as a transitional process rather than a return of the disease state, then one limitation of this study is that it provides no information concerning this process and the series of events that might affect a return to pretreatment levels of substance abuse.

However, it should be noted that while many researchers in addictive behavior agree that a less conservative definition of treatment outcome is needed (Donovan, 1988; Maisto & Connors, 1988), others still adhere to the "all-ornothing" model of relapse. For example in the Burling et al. (1989) study, relapse was defined as any posttreatment

use of the patient's diagnosed substance of choice. Additionally, in the Rychtarik et al. (1992) study, a subject was classified as relapsed if drinking was reported on more than two days during the entire 12-month follow-up period.

Finally, the survival analysis that was used in the post hoc investigation is a way to summarize relapse data in a way that permits not only the description of outcome but also an exploration of the relapse process. Conversely, longitudinal investigations that report their findings as cross-sectional or "dip-stick" assessments report only the percentage of subjects who can be classified as "relapsed" at any one point in time. However, one limitation of both cross-sectional reporting and survival analysis is that once an individual has met the criteria for relapse, then subsequent behavior is lost to analysis. That is, if stringent relapse criteria is used, then both techniques fail to account for a subject's status at subsequent followup intervals.

Implications for Practice

In the present study, impaired neuropsychological performance and increased denial were associated with shorter lengths of stay and unsuccessful completion of treatment. In the impairment driven model that has guided this study, impaired neuropsychological functioning was expected to lead to errors in self-assessment (i.e.,

concerning the severity of one's substance abuse problem, or abstinence-related self-efficacy). It has been suggested that these deficits are often misinterpreted by substance abuse counselors as resistance to treatment which, in turn, leads to a variety of in-treatment consequences, not the least of which involves subtle changes in the nature of the client-counselor relationship. While neither neuropsychological functioning nor denial were related to posttreatment outcome (i.e., abstinence rates), these variables appear to have a direct impact on in-treatment behaviors. Greater counselor awareness of the nature and extent of the subtle neuropsychologic deficits that occur among substance abusers may help offset the misattribution of these symptoms as psychological denial and resistance to therapy. The Denial Rating Scale might be used in conjunction with neuropsychological instruments, particularly the Trail Making Test, the Category Test, and the Complex Figure Test, to identify clients at-risk for premature discharge or unsuccessful completion of treatment.

Also, because impaired subjects with high self-efficacy were found to have higher posttreatment relapse rates, it is recommended that the Situational Confidence Questionnaire be used in conjunction with the Trail Making Test and the RCAT to target clients who might benefit from additional relapse prevention training while in treatment.

Directions for Future Research

Further research on the DRS is necessary to determine its validity. Results in the present study confirm that denial is a complex construct involving social, psychological, and probably biological components. It is not at all clear what was being measured by the DRS. Ι suspect that, rather than a circumscribed evaluation of psychological denial, counselor ratings on this measure were strongly influenced by the clinician's impression of the subject's overall prognosis. Furthermore, it is possible that this impression was based largely on the subject's social skills and may have been more a measure of intreatment behavioral impairment than denial per se. Future research might focus on the impact of subtle neuropsychological deficits on the client-counselor relationship. Specifically, what is the impact of attention/concentration, new learning, and abstract reasoning deficits on client-counselor interaction? To what extent do these deficits manifest as in-treatment behavioral handicaps? What role might counselor misattribution of these deficits play in the in-treatment decision-making process (e.g., decisions concerning length of stay, choice of outpatient therapy, and the allocation of scarce treatment resources like intensive case management or alternative housing)?

Future research on the neuropsychology of substance

abuse should make a more consistent attempt to examine the differential neurotoxic effects of various chemicals (i.e., alcohol v. cocaine v. marijuana). Of course, it will be difficult to obtain "pure" cases for study but, to the extent that this is possible, a differential consideration of the impact these substances have on neuropsychological functioning may have implications for diagnosis and treatment.

Marlatt's suggestion that a forced-choice format be developed for the SCQ is an excellent one and is another direction for further research. This format might produce a more direct measure of self-efficacy by eliminating the overconfidence ceiling effect mentioned above.

Since, in the present study, denial was associated with neuropsychological measures of visual scanning and complex attention, a fruitful area of research might be a continued examination of the relationship between psychological denial and scanning deficits. If, as Tarter et al. (1984) suggest, denial is the result of a defect in the apperception of both internal stimuli and external events, then any additional information that would clarify this relationship might have a significant impact on both secondary treatment efforts and primary prevention efforts. I suspect that the most fertile area of research within this general domain would attempt to explore the area of interpersonal scanning, its influence on social judgment and, in turn, its impact on treatment

outcome.

Related to this area of research, additional study is also needed on the relations of depression, denial, and alexithymia. If alexithymia is conceptualized as a difficulty in the identification and description of feelings and if this difficulty can be conceived of as an emotional scanning deficit, then clarification is needed on how these defects influence such variables as social interaction and self-appraisal.

APPENDICES

APPENDIX A

Sub-scales of the Situational Confidence Questionnaire ¹

Personal States

- 1. Unpleasant Emotions
- 2. Physical Discomfort
- 3. Pleasant Emotions
- 4. Testing Personal Control
- 5. Urges and Temptations

Situations Involving Other People

- 6. Conflicts with Others
- 7. Social Pressures to Drink
- 8. Pleasant Times with Others

¹ Based on the Situational Determinants of Relapse, In Marlatt, G.A., & Gordon, J.R. (1980). Determinants of relapse: Implications for the maintenance of behavior change. In P.O. Davidson & S.M. Davidson (Eds.), <u>Behavioral medicine: Changing</u> <u>health life-styles</u> (pp. 410-452). New York: Brunner/Mazel, Inc.

APPENDIX B

Consent Form

- 1. The purpose of this study is to learn more about the treatment of alcoholism. We are particularly interested in how to best meet the needs of our clients, and your participation will help us to achieve this goal.
- 2. I agree to be in this study conducted by Mark W. Gunther, under the supervision of Frederick G. Lopez, Ph.D. of the Department of Counseling, Educational Psychology, and Special Education, Michigan State University. The study has been approved by the University Committee on Research Involving Human Subjects of Michigan State University, and the institutional review boards of the Research Institute on Addictions and the Erie County Medical Center.
- 3. I understand that my participation will involve completing a series of tests of reasoning ability and several brief questionnaires concerning my beliefs about my ability to stop drinking. This activity will probably involve me for about 60 to 75 minutes. In addition, some personal and medical information from my records will be used. I will also be asked to complete two 10 minute telephone interviews, one and three months after I complete my treatment. The telephone interview will focus on my drinking status and participation in aftercare.
- 4. I understand that my participation is completely voluntary, and that I can stop participation in this research at any time I choose. No discomfort is anticipated as a result of participating in this study. However, some mild frustration may occur when completing some of the more difficult test questions. All questions about the study should be directed to:

Mark W. Gunther (716) 882-4900 Margaret A. Stutzman ATC 360 Forest Ave. Buffalo, New York, 14213

- 5. I understand that any questions concerning my rights as a research participant can be directed to Dr. Norman Solkoff, Chairperson of the Research Institute on Addiction's Institutional Review Board at 636-3660.
- 6. Participating or not participating will not affect my treatment at this facility now or in the future. I understand that being in this study does not give me any special benefits.
- 7. I understand that the information resulting from this research will be kept confidential and that I will never be personally identified in any report of this study. My counselor will <u>not</u> have access to my responses.

Name of Participant:	Date:
Signature of Participant:	
Name of Witness:	Date:
Signature of Witness:	

APPENDIX C

Client Information Sheet (CIS)
Respondent Number:
Sex:
Age:
Level of Education:
Parental Alcoholism: Father? Mother?
Amount of Alcohol per Drinking Occasion:
Frequency of Drinking Occasions:
Duration of Problem Drinking:
Approximate Date of Last Drink:
Are you currently mandated to alcoholism treatment?
Have you ever been treated for mental illness?
Do you have a history a seizure disorder?
Do you have a history of head injury?

APPENDIX D

Mini-Mental Status Exam

Orientation:

1.	"What	is the date?"	
		-Season	
		-Day	
		-Date	
		-Month	
		-Year	

Maximum: 5 points

2. "Can you tell me where you are now?" -Name of building -Floor -City -County -State

Maximum: 5 points

3. "May I test your memory?"
 -Ask patient to repeat three unrelated objects, e.g.,
 rose, hat, street, or thumb, floor, brown

Maximum: 3 points

Attention and Calculation:

4. "How much is 100 minus 7?"

Ask patient to begin with 100 and count backwards by seven. Stop after 5 subtractions. (93, 86, 79, 72, 65)
65) If patient cannot or will not perform this task, ask her/him to spell "world" backwards. The score is the number of letters in the correct order. (dlrow = 5 points)

Maximum: 5 points

Recall:

5. "Do you remember the three words I asked you to remember a few minutes ago? What are they?" -Score one point for each word correctly remembered.

Maximum: 3 points

Language:

6. "What is this object?"Show the patient a wrist watch, then a pencil.

Maximum: 2 points

7. "Repeat the following sentence: "No ifs, ands, or buts." -Allow only one trial. Score either zero, or one point if correct.

Maximum: 1 point

8. "May I see how well you follow directions?" -Give the patient a blank sheet of paper and repeat the following command: "Take the paper in your right hand, fold it in half, and put it on the floor." Score one point for each part of this three-stage command successfully completed.

Maximum: 3 points

9. "Please read this and do what it says." -On a blank sheet of paper, write the sentence, "Close your eyes." Write large enough that the patient can easily see it. Score one point only if the patient actually closes her/his eyes.

Maximum: 1 point

10. "Write a sentence on this paper." Give the patient a blank sheet of paper. Don't dictate a sentence; it must be spontaneous. Score one point for a correct response, which must contain a subject and a verb.

Maximum: 1 point

11. "Please copy this figure exactly as it is." -On a blank sheet of paper, draw intersecting pentagons with each side being approximately one inch. Score one point only if all ten angles are present and two angles intersect.

Maximum Total Score: 30 points

Maximum: 1 point

APPENDIX E

Alcohol Dependence Scale (ADS)

Circle the ONE choice that is most true for you. These questions refer to the past 12 months.

1. How much did you drink the last time you drank? a. Enough to get high or less b. Enough to get drunk c. Enough to pass out 2. Do you often have hangovers on Sunday or Monday mornings? a. No b. Yes Have you had the "shakes" when sobering up (hands tremble, shake 3. inside)? a. No b. Sometimes c. Almost every time I drink Do you get physically sick (e.g., vomit, stomach cramps) as a 4. result of drinking? a. No b. Sometimes c. Almost every time I drink 5. Have you had the "DTs" (delirium tremens) - that is, seen, felt or heard things not really there; felt very anxious, restless, and over-excited? a. No b. Once c. Several times When you drink, do you stumble about, stagger, and weave? 6. a. No b. Sometimes c. Often 7. As a result of drinking, have you felt overly hot and sweaty (feverish)? a. No b. Once c. Several times As a result of drinking, have you seen things that were not really 8. there? a. No b. Once c. Several times

9. Do you panic because you fear you may not have a drink when you need it? a. No b. Yes 10. Have you had blackouts ("loss of memory" without passing out) as a result of drinking? a. No, never b. Sometimes c. Often d. Almost every time I drink 11. Do you carry a bottle with you or keep one close at hand? a. No b. Some of the time c. Most of the time 12. After a period of abstinence (not drinking), do you end up drinking heavily again? a. No b. Sometimes c. Almost every time 13. In the past 12 months, have you passed out as a result of drinking? a. No b. Once c. More than once 14. Have you had a convulsion (fit) following a period of drinking? a. No b. Once c. Several times 15. Do you drink throughout the day? a. No b. Yes 16. After drinking heavily, has your thinking been fuzzy or unclear? a. No b. Yes, but only for a few hours c. Yes, for one or two days d. Yes, for many days 17. As a result of drinking, have you felt your heart beating rapidly? a. No b. Once c. Several times 18. Do you almost constantly think about drinking and alcohol? a. No b. Yes

- 19. As a result of drinking, have you heard "things" that were not really there?
 - a. No
 - b. Once
 - c. Several times
- 20. Have you had weird and frightening sensations when drinking?
 - a. No b. Once or twice c. Often
- 21. As a result of drinking, have you "felt things" crawling on you that were not really there (e.g., bugs, spiders)?
 - a. No b. Once
 - c. Several times
- 22. With respect to blackouts (loss of memory):
 - a. Have never had a blackout b. Have had blackouts that last less than an hour c. Have had blackouts that last for several hours d. Have had blackouts that last for a day or more
- 23. Have you tried to cut down on your drinking and failed?
 - a. Nob. Oncec. Several times
- 24. Do you gulp drinks (drink quickly)?
 - a. No b. Yes
- 25. After taking one or two drinks, can you usually stop?
 - a. Yes
 - b. No

APPENDIX F

Beck Depression Inventory

1.	0 1 2 3	I do not feel sad. I feel sad. I am sad all the time and I can't snap out of it. I am so sad or unhappy that I can't stand it.
2.	0 1 2 3	I am not particularly discouraged about the future. I feel discouraged about the future. I feel I have nothing to look forward to. I feel that the future is hopeless and that things cannot improve.
3.	0 1 2 3	I do not feel like a failure. I feel I have failed more than the average person. As I look back on my life, all I can see is a lot of failure. I feel I am a complete failure as a person.
4.	0 1 2 3	I get as much satisfaction out of things as I used to. I don't enjoy things the way I used to. I don't get real satisfaction out of anything anymore. I am dissatisfied or bored with everything.
5.	0 1 2 3	I don't feel particularly guilty. I feel guilty a good part of the time. I feel quite guilty most of the time. I feel guilty all of the time.
6.	0 1 2 3	I don't feel I am being punished. I feel I am being punished. I expect to be punished. I feel I am being punished.
7.	0 1 2 3	I don't feel disappointed in myself. I am disappointed in myself. I am disgusted with myself. I hate myself.
8.	0 1 2 3	I don't feel I am any worse than anybody else. I am critical of myself for my weaknesses or mistakes. I blame myself all the time for my faults. I blame myself for everything bad that happens.
9.	0 1 2 3	I don't have any thoughts of killing myself. I have thoughts of killings myself, but I would not carry them out. I would like to kill myself. I would kill myself if I had the chance.
10.	0 1 2 3	I don't cry any more than usual. I cry more now than I used to. I cry all the time now. I used to be able to cry, but now I can't cry even though I want to.

- 11. 0 I am no more irritated by things than I ever am. I am slightly more irritated now than usual. I am quite annoyed or irritated a good deal of the time. I feel irritated all the time now.
- 12. 0 I have not lost interest in other people.
 1 I am less interested in other people than I used to be.
 2 I have lost most of my interest in other people.
 3 I have lost all of my interest in other people.
- 13. 0 I make decisions about as well as I ever could.
 1 I put off making decisions more than I used to.
 2 I have greater difficulty in making decisions than before.
 3 I can't make decisions anymore.
- 14. 0 I don't feel that I look any worse than I used to.
 1 I am worried that I am looking old or unattractive.
 2 I feel that there are permanent changes in my appearance that make me look unattractive.
 3 I believe that I look ugly.
- 15. 0 I can work about as well as before.
 1 It takes an extra effort to get started at doing something.
 2 I have to push myself very hard to do anything.
 3 I can't do any work at all.
- 16. 0 I can sleep as well as usual.
 1 I don't sleep as well as I used to.
 2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
 3 I wake up several hours earlier than I used to and cannot get back to sleep.
- 17. 0 I don't get more tired than usual.
 1 I get tired more easily than I used to.
 2 I get tired from doing almost anything.
 3 I am too tired to do anything.
- 18. 0 My appetite is no worse than usual.
 1 My appetite is not as good as it used to be.
 2 My appetite is much worse now.
 3 I have no appetite at all anymore.
- 19. 0 I haven't lost much weight, if any, lately.
 1 I have lost more than five pounds.
 2 I have lost more than ten pounds.
 3 I have lost more than fifteen pounds.
- 20. 0 I am no more worried about my health than usual.
 1 I am worried about physical problems such as aches and pains, or upset stomach, or constipation.
 2 I am very worried about physical problems and it's hard to think of much else.
 3 I am so worried about my physical problems that I cannot think about anything else.
 21. 0 I have not noticed any recent change in my interest in sex.
- I have not noticed any recent change in my interest in sex.
 I am less interested in sex than I used to be.
 I am much less interested in sex now.
 I have lost interest in sex completely.

Interpreting the Beck Depression Inventory

Add up the score for each of the twenty-one questions and obtain the total. The highest possible total for the whole test is sixty-three. The lowest possible score for the test is zero.

<u>Total Score</u>	<u>Levels of Depression</u> *		
1-10	These ups and downs are considered normal.		
11-16	Mild mood disturbance.		
17-20	Borderline clinical depression		
21-30	Moderate depression		
31-40	Severe depression		
over 40	Extreme depression		

* A persistent score of 17 or above indicates the need for professional treatment.

APPENDIX G

Comprehension Sub-test

- 1. Why do we wash clothes?
- 2. What is the thing to do if you find an envelope in the street that is sealed, and addressed, and has a new stamp?
- 3. What are some reasons why many foods need to be cooked?
- 4. Why are child labor laws needed?
- 5. Why do people who are born deaf have trouble learning to talk?
- 6. Why do some people prefer to borrow money from a bank rather than from a friend?
- 7. What should you do if while in the movies you are the first person to see smoke and fire?
- 8. Why does the state require people to get a license before they get married?
- 9. Why should people pay taxes?
- 10. If you were lost in the forest in the daytime, how would you go about finding your way out?

- 11. Why do you need a doctor's prescription to buy certain drugs?
- 12. What does this saying mean? "Strike while the iron is hot."
- 13. Why does land in the city cost more than land in the country?
- 14. What does this saying mean? "Shallow brooks are noisy."
- 15. What does this saying mean? "One swallow doesn't make a summer."
- 16. Why is a free press important in a democracy?

APPENDIX H

Rey-Osterrieth Complex Figure Test



REY-OSTERRIETH COMPLEX FIGURE SCORING PROCEDURE

COPY	<u>REC1</u>	<u>REC2</u>		
			1.	Cross upper left corner, outside of rectangle
			2.	Large rectangle
			3.	Diagonal cross
			4.	Horizontal midline of 2
			5.	Vertical midline
			6.	Small rectangle, within 2 to the left
			7.	Small segment above 6
		<u> </u>	8.	Four parallel lines within 2, upper left
		<u> </u>	9.	Triangle above 2 upper right
		<u></u>	10.	Small vertical line within 2, below 9
			11.	Circle with three dots within 2
			12.	5 parallel lines, 2 crossing 3, lower right
			13.	Sides of triangle attached to 2 on right
			14.	Diamond attached to 13
			15.	Vertical line within triangle 13 parallel to right vertical of 2
			16.	Horizontal line within 13, cont. 4 to right
			17.	Cross attached to 5 below 2
	<u> </u>		18.	Square attached to 2, lower left
			TOT	NL .
<u>Correct</u> :	Placed Placed	proper Poorly	ly : / = :	= 2: <u>Absent of unrecognizable</u> = 0 1
Distorte	d or ind Placed Placed	complet proper poorly	<u>:e</u> : :ly : / = (= 1 <u>Maximum</u> = 36 Points D.5

APPENDIX I

Digit Symbol Subtest


APPENDIX K

Controlled Oral Word Association Test

Sub-Total FASAge/Educ CorrTotal ScorePercentile

- ... - ... - ... - ... - ... - ... - ... - ...

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F	A	S	Animals	Fruits & Vegetable	First Names
				-	

FAS NORM INFORMATION

Adjustment Formula for the Controlled Word Association Test

	Adjustment Fo		
Education Years Completed	Age 25-54	Age <u>55-59</u>	Age <u>60-64</u>
Less than 9	+9	+10	+12
09-11	+6	+7	+9
12-15	+4	+5	+7
16+		+1	+3
	Adjustment F	<u> 'ormula - Male</u>	
Education Years Completed	Age 25-54	Age <u>55-59</u>	Age <u>60-64</u>
Less than 9	+14	+15	+17
09-11	+6	+7	+9
12-15	+4	+5	+7
16+		+1	+3

Table for Converting Adjusted Scores to Percentiles

Adjusted scores	<u>Percentile range</u>	<u>Classification</u>	
54-62	95 & above	Superior	
51-53	90-94	High normal	
49-50	85-89	High normal	
46-48	80-84	High normal	
44-45	75-79	High normal	
43	70-74	Normal	
41-42	65-69	Normal	
40	60-64	Normal	
38-39	55-59	Normal	
37	50-54	Normal	
36	45-49	Normal	
35	40-44	Normal	
34	35-39	Normal	
33	30-34	Normal	
31-32	25-29	Normal	
29	20-24	Low normal	
27-28	15-19	Low normal	
25-26	10-14	Low normal	
24	05-09	Borderline	
23 & lower	4 & lower	Defective	

(Benton, 1973; Classifications adapted from Benton and Hamsher, 1976)

APPENDIX L

Booklet Category Test

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j e

SCORING AND RECORDING FORM FOR THE BOOKLET CATEGORY TEST Nick A. DeFilippia, Ph.D. and Elizabeth McCampbell, Ph.D. Occupati Prencipid Intellectual Level Education Total No. Errors Subtests I-VIL_ the Plane on 'X' in the square which coincides with the s abient a subject's take error access for the completed to n' chause for each term. The shaded a ry far oach ham. In -ساد م I TRATELIE SUGTEST B SUBTEST N SUBTRET ID 7. 1. 1. 10. 19. 00 Х × 2 8. 2. 11. 2. 20 111 000 9. 3. 12. 3. 0 ESDO SUBTEST IN 10. 1. 4. 13. 4. DØDD 0000 I I **•**] 11. 2. 14. 5. 5. 1 <u>SOD</u> BBB 12. 3. 6. 15. 6. BDDD CABE 13. 4. 7. 16. 7. SO ۵۵۵۵ ett 14. 5. 8. 17. 8. 1 ΔΔĽ FT 15. 6. 9. 000 Total No. Emans **.** . . . hi & 1967 by Pi ň 48 Printed in U.S.A.

Revised Category Test

Subtest 1	Subtest 2	Subtest 3	Subtest 4	Subtest 5	Subt es t 6
I - 1	II - 1	III - 2	IV - 1	V - 1	VI - 15
I - 2	II - 2	III - 1	IV - 2	V - 2	VI - 16
I - 3	II - 3	III - 4	IV - 3	V - 3	VI - 17
I - 4	II - 4	III - 3	IV - 4	V - 4	VI - 18
I - 5	II - 5	III - 5	IV - 5	V - 5	VI - 19
	II - 6	III - 6	IV - 6	V - 6	VI - 20
	II - 7	III - 7	IV - 7	V - 7	VI - 21
	II - 8	III - 8	IV - 8	V - 8	VI - 22
	II - 9	III - 13	IV - 9	V - 9	VI - 23
	II - 10	III - 14	IV - 10	V - 10	VI - 24
		III - 15	IV - 11	V - 11	VI - 25
		III - 16	IV - 12	V - 12	VI - 26
		III - 17	IV - 13	VI - 7	VI - 27
		III - 18	IV - 14	VI - 8	VI - 28
		III - 19	IV - 15	VI - 9	V - 18
		III - 20	IV - 16	VI - 10	V - 19
		III - 21	IV - 17	VI - 11	V - 20
		III - 22	IV - 18	VI - 12	V - 21
		III - 23	IV - 19	VI - 13	V - 22
		III - 24	IV - 20	VI - 14	V - 23

Roman numerals refer to the subtests of the original Category Test.

APPENDIX M

Items of the SCQ-39 and their corresponding Factor loadings

I would be able to resist the urge to drink heavily...

- 1. If I felt that I had let myself down. (1)
- 2. If there were fights at home. (1)
- 3. If I had trouble sleeping. (2)
- 4. If I had an argument with a friend. (7)
- 5. If other people didn't seem to like me. (7)
- 6. If I felt confident and relaxed. (3)
- 7. If I were out with friends and they stopped by a bar for a drink. (8)
- 8. If I were enjoying myself at a party and wanted to feel even better. (8)
- 9. If I remembered how good it tasted. (5)
- 10. If I convinced myself that I was a new person and could take a few drinks. (4)
- 11. If I were afraid that things weren't going to work out.
 (1)
- 12. If other people interfered with my plans. (1)
- 13. If I felt drowsy and wanted to stay alert. (2)
- 14. If there were problems with people at work. (6)
- 15. If I felt uneasy in the presence of someone. (7)
- 16. If everything were going well. (3)
- 17. If I were at a party and other people were drinking.(8)
- 18. If I wanted to celebrate with a friend. (8)
- 19. If I passed by a liquor store. (5)

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- 20. If I wondered about my self-control over alcohol and felt like having a drink to try it out. (4)
- 21. If I were angry at the way things had turned out. (1)
- 22. If other people treated me unfairly. (1)
- 23. If I felt nauseous. (2)
- 24. If pressure built up at work because of the demands of my supervisor. (6)
- 25. If someone criticized me. (7)
- 26. If I felt satisfied with something I had done. (3)
- 27. If I were relaxed with a good friend and wanted to have a good time. (8)
- 28. If I were in a restaurant and the people with me ordered drinks. (8)
- 29. If I unexpectedly found a bottle of my favorite booze. (5)
- 30. If I started to think that just one drink could cause no harm. (4)
- 31. If I felt confused about what I should do. (1)
- 32. If I felt under a lot of pressure from family members at home. (1)
- 33. If my stomach felt like it was tied in knots. (2)
- 34. If I were not getting along well with others at work.(6)
- 35. If other people around me made me tense. (7)
- 36. If I were out with friends "on the town" and wanted to increase my enjoyment. (8)
- 37. If I met a friend and he/she suggested that we have a drink together. (8)
- 38. If I suddenly had an urge to drink. (5)
- 39. If I wanted to prove to myself that I could take a few drinks without becoming drink. (4)

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APPENDIX N

Denial Rating Scale (DRS)

Level I: "No Problem."

The person at this level denies any emotional or family problems. He may report he is here as a requirement of probation, etc., only. He has no commitment to change because of his view that nothing is wrong. He feels, therefore, no willingness to cooperate in treatment. This person may be defensive or confused by the focus on alcohol and does not bring up alcohol spontaneously. If asked he reports that the alcohol is easily controlled and may be fun. He believes that alcohol is definitely not affecting his family. He may report choosing to refrain from drinking (or quitting) for various reasons. In either case, the person has nothing to talk about. The therapist may feel as if he has nothing to treat.

Level II: "A Problem."

The person at this level still actively denies that alcohol is a problem. He may spontaneously report having a problem such as nerves, depression, children, health, or money. He may feel misunderstood if his "problem" is not attended to and may feel maligned if alcoholism is the focus. On the other hand, this person may express some concern about the possibility that drinking may become an issue. He indicates a willingness to cooperate in the treatment process.

Level III: " Alcohol is a problem."

The person at this level agrees that alcohol contributes to life difficulties. His conviction, however, is that these difficulties are controllable. Drinking is seen as a reaction to and a way of coping with life stress. Gaining control over these difficulties will control the drinking. There is no belief or genuine understanding that alcoholism is the primary problem, a disease, autonomous or progressive. The loss of control over drinking, if present, is denied too. This person believes that an alcoholic is someone who drinks more than this person does. This person may become defensive if the interviewer focusses on alcoholism.

Level IV: "Sobriety may help but I can control it."

The person at this level accepts the idea of having a major problem with alcohol and may even call himself an alcoholic. However, this person denies being out of control and thus continues to try to "control" the drinking. This may be expressed in attempts (successful or not) to limit the drinking or in behavior that denies the wish to drink, i.e., sipping drinks and asking for approval of the control. This person may also report being an alcoholic in the past, but not now. There is some recognition that things were out of control in the past. If this person has stopped drinking he may display little or no affect when discussing his recent sobriety. The erratic nature of the disease is perplexing and confusing, but there is no urgency to stop as in Level V.

Level V: "Sobriety will help."

This person recognizes that his drinking is out of control and that his life is out of control due to drinking. There is conscious anxiety and guilt or shame about the loss of control. The focus of the affects can be either out-of-control drinking or the out-of-control life. This person may still be drinking or recently sober and may be concerned about losing family or job, going to jail, or going insame. The focus for this person is on the overwhelming realization of loss of control rather than what to do about it. There is the belief that the drinking is too much to control by himself. This person turns to the therapist seeking control. He appears committed to change. Alcoholism is seen as an illness, but the numerous implications are not yet appreciated.

Level VI: Sobriety is easy."

The person at Level VI has a solid commitment to sobriety. The anxiety of the previous level is absent. Some people at this level feel great and this phenomenon has been described as the honeymoon phase of recovery. However, other people may feel miserable. The salient feature is the belief that he can do it all himself. Recovery is seen only as not drinking, minimizing the degree to which life has become entwined with alcohol. Consequently, this person may minimize the number of changes which must occur to stay sober and to begin to rebuild his life (family, job, friends, etc.).

Level VII: "Sobriety is difficult."

The person at this level again experiences anxiety, but this time the anxiety is about reconstructing his whole life and making amends, like saving a marriage. This person realizes his own role in carrying this out and seeks reassurance and support for the struggle, rather than asking the therapist to do it for him. The person is not yet interested in exploring his past or present for deeper psychological meaning. The focus in often on exercising control, problem-solving, social skills, and making amends. This person has probably been sober for three months or more.

Level VIII: "Life is difficult."

This person has gained confidence that life can be controlled without alcohol and now appreciates some of the subtle dilemmas of existence and seeks an age-appropriate maturity. This person often experiences limitations of personality style and desires to explore them. Self-exploration begins spontaneously here because the alcoholic can control affects enough to talk about his behavior and thoughts, looking at fear, shame, guilt, anger, etc. This person is definitely connected to his self-image as an alcoholic and knows how easy it would be to fall back to drinking but is not threatened by this knowledge. This person has probably been sober for a year or more.



Decision Tree Model



Working Alliance Inventory - Item # 23

<u>Question</u>: I appreciate _____ as a person.

Please check one:

Never	Rarely	Occasion- ally	Sometimes	Often	Very Often	Always

.

APPENDIX O

Form for Follow-up Interview²

Are you currently involved in aftercare?
How often do you attend?
Alcohol Consumption
Number of Abstinent Days:
Number of Drinking Days:
Consumption Levels
Days on which 1-4 drinks were consumed:
Days on which 5-9 drinks were consumed:
Days on which 10 or more drinks were consumed:
Average number of drinks consumed on drinking days when more than 10 drinks were consumed:
Consumption Severity
of days on which client drank before noon:
Longest interval of days without a drink:
Time elapsed since last use of alcohol:
of drinks (since midnight) on day of interview:
of drinks on the day before interview:
Social Context
Percent of time spent alone drinking:
Percent of time spent drinking with others:

² Adapted from: Addiction Research Foundation. (1982). <u>Cross-study shared data base follow-up interview</u>. Toronto, Ontario: Author.

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