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## The relation of socioeconomic and cognitive variables to dropout from a Salvation Army Drug Rehabilitation program

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**THE RELATION OF SOCIOECONOMIC  
AND COGNITIVE VARIABLES  
TO DROPOUT FROM A SALVATION ARMY  
DRUG REHABILITATION PROGRAM**

By  
Mark Bruce Ireland

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts  
in  
Psychology

Department of Psychology  
University of Nevada, Las Vegas  
December, 1994

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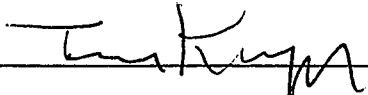
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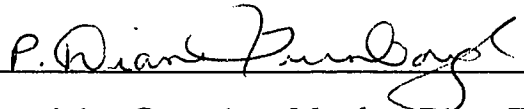
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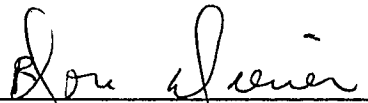
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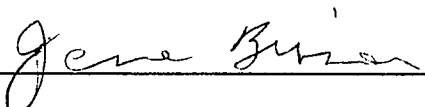
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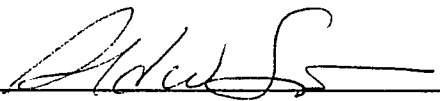
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## **ABSTRACT**

A group of 134 substance abusers from two Salvation Army Rehabilitation programs: the CDIP (Chemical Dependency Intervention Program) and the CDRP (Chemical Dependency Rehabilitation Program) were administered at intake to the program a demographic form, the *CMRS (Circumstances, Motivation, Readiness and Suitability Scales)*, the *Novaco Provocation Inventory (NPI)* and the *Cognitive Triad Inventory (CTI)*. A stepwise hierarchical analysis for each treatment was used to test the hypothesis asserts that the addition of cognitive factors would improve the prediction rate of dropout using demographic variables alone. Results supported this for the CDIP, but not the CDRP. The second hypothesis was that clients in the program would have elevated levels of *NPI* and *CTI* scores as compared to a normative population, which was confirmed by study. The third hypothesis that anger provocability as measured by the *NPI* would be correlated with the *CTI* was not supported.

## LITERATURE REVIEW

### Introduction

Most research in treatment dropout presents a model whereby the client who drops out is seen as a passive recipient of internal and external influences which “cause” them to drop out. Attempts to predict dropout based solely on various intake measures reflecting socioeconomic and demographic factors, psychopathology and previous drug history have been somewhat limited in their success. More recently, cognitive and relapse-prevention oriented approaches to substance abuse have acknowledged the influence of cognitions and on-going decision-making processes on outcome in substance abuse treatment. However, little use has been made of these approaches in the understanding of treatment dropout.

This paper will investigate the role of two factors: anger provocability, and the cognitive triad as formulated by Aaron Beck (1976) in predicting dropout from treatment. Personal observation has noted that a client will frequently leave treatment under the influence of a recent anger incident, which parallels research showing the influence of anger in relapse. Depression, as well as negative perceptions of the treatment environment, has been shown to influence dropout. The hypothesis of this paper, is that two cognitive measures, the Novaco Anger Inventory (Novaco, 1975b) and the Cognitive Triad Inventory (Beckham, Leber, Watkins, Boyer, & Cooke, 1986) will have a significant effect in predicting

the length that clients remain in treatment, over socioeconomic and demographic factors alone.

## **Overview of Drug Abuse Treatment**

### **Defining substance abuse**

The Diagnostic and Statistical Manual (Third Edition- Revised) (Association, 1987) lists ten categories of psychoactive substance use disorders. These disorders focus mostly on the behavioral aspects concomitant to substance use as distinguished from the substance-induced organic mental disorders which primarily concern themselves with the immediate and long-term physiological effects of substance-use on mental functioning. The psychoactive substance use disorders include the following ten categories: alcohol; amphetamine or similarly acting sympathomimetic; cannabis; cocaine; hallucinogens; inhalants; nicotine; opioid; phencyclidine or similarly acting arylcyclohexylamine; and sedative, hypnotic or anxiolytic. Also, within each substance category the DSM-III-R makes the additional distinction between abuse, which entails continued substance use in the presence of negative effects, and dependence, where physiological withdrawal symptoms and tolerance are experienced.

An emerging alternative viewpoint on addictions emphasizes the common shared processes of these behaviors across different objects of addiction (Peele, 1986). Addiction is seen as a “complex progressive behavior pattern having biological, psychological, sociological and

behavioral components (Donovan, 1988) (p. 6).” An important distinguishing factor of this behavior pattern is the over involvement with the object of addiction, and consequent reduced personal control of the abuser over the various aspects of their life. Common elements of addictive behaviors can be seen to include many of the following: altered mood states that result from both physiological and expectancy effects; states of stress, arousal, negative moods etc., which often accompany and serve as precursors to use; classical and instrumental conditioning, which can play a role in maintaining addictive behavior; and, finally the “paradox of control” whereby the addict uses drugs to control certain aspects of his life and emotions, yet is “out of control” in the use of the substance (Donovan, 1988).

### **Modalities of treatment**

Klein and Miller (1986) postulate three basic models for the treatment of substance abuse: methadone maintenance, the therapeutic community and the self-help abstinence oriented recovery models. Methadone maintenance is a treatment routinely used for heroin addiction wherein methadone is given to the addict as a substitute for heroin. This model does not attempt to change the lifestyle or mindset of the addict, but rather attempts to stabilize the lifestyle of the addict and to remove them from the criminal environment inherent in the use of an illegal substance. The therapeutic community model, on the other hand, emphasizes extensive lifestyle change, philosophical change, as well as

behavioral change. This model includes the extensive use of confrontation, and a long-term time commitment to treatment. Program leaders are often previous graduates of the program. This model is considered optimal for those with a long history of criminal or anti-social behavior. The abstinence-oriented recovery model is exemplified by groups such as Alcoholic Anonymous, and twelve step programs. This model encompasses both an outpatient and inpatient approach, depending on the severity of the problem.

Miller and Hester (1989) offer another classification scheme comprised of eleven different treatment approaches to alcoholism . These approaches differ as to causal factors (i.e., what the problem is perceived to be), implied interventions (i.e., what intervention is done), and appropriate intervention agent (i.e., who does the intervention). The treatment models he specifies are the following: moral (drug use as sin); temperance (drug use result of availability of alcohol); American disease (use as result of abnormality of individual includes AA and NA); educational (lack of knowledge), characterological (personality formulations); conditioning (behavioral viewpoint), biomedical (genetics); social learning (modeling, skills training); general systems (family therapy); sociocultural (social policy); and public health. To select an appropriate model for a client, Miller and Hester (1989) recommend an approach of informed eclecticism whereby the treatment is chosen to suit

the particular individual needs, and no one intervention is necessarily perceived "better" or superior to another.

In another article where they had reviewed studies of treatment effectiveness, Miller and Hester (1986) commented on the current state of the art of substance abuse treatment. Their overall conclusion was that the treatments most commonly being used to treat substance abuse were in actuality the least effective. The treatment modalities that programs most frequently employ include Alcoholics Anonymous, alcoholism education, disulfiram, group therapy, and individual counseling. In contrast, the methods they found to be most supported by controlled outcome research included aversion therapy, behavioral self-control training, the community reinforcement approach, marital and family therapy, social skills training and stress management. Miller and Hester (1986) have suggested that future programs should increase utilization of the methods that worked, attempting the least intensive and intrusive methods of intervention first, and match clients to the optimal treatments as indicated by research.

## **Overview of Alcohol and Substance Abuse Treatment Dropout**

### **Defining Treatment Dropout**

There has been a general lack of consistency in the criteria that have been used by researchers to determine who should be considered a dropout out from treatment. Garfield (1986), citing in his literature review the inadequacy of criteria in this regard, and noting the problem that this



raises in comparing results from study to study, suggests that a good definition of a dropout from psychotherapy might be "...one who has been accepted for psychotherapy, who actually has at least one session of therapy, and who discontinues treatment on his/her own initiative by failing to come for any future arranged visits with the therapist" (p. 219). This definition seems to have outpatient therapy particularly in mind. Baeklund and Lundwall (1975) distinguish among three types of clients who fall under the category of dropouts: those who fail to return; those who refuse to return; and those who are expelled from treatment. These distinctions are seen as important due to the likelihood of there being significant differences between these groups. An alternative method of specifying dropouts entails using some form of temporal cutoff for distinguishing between dropouts and continuers. In this case, Baeklund and Lundwall (1975) suggest using the number of treatments attended rather than the number of weeks in treatment as a measure of outcome due to the sometimes low correlation between the two.

### **The Problem of Dropout**

#### **Prevalence of Dropout**

Dropout out rates for substance abuse programs are generally in the same range as other treatment populations. While it is difficult to compare rates because of the many different methods used to measure dropout, the majority of researchers find that about 50% of substance abuser's dropout within the first month of treatment. Inpatient programs tend to have a lower rate of dropout than outpatient (13.7% to 39.2% with

a mean of 28%) (Baekelund & Lundwall, 1975). One reviewer suggests that the comparable dropout rate across different forms of treatments suggests an explanation of treatment dropout independent of the form of treatment (Stark, 1992). On the other hand, Garfield (1986) considers it to be highly unlikely that one variable or set of variables would be to account for all the varying results found across all the modalities of therapy.

### Problems Associated with Dropout

#### **Effect on Client Outcome**

Various studies (Baekelund, et al., 1975; Garfield, 1977; Garfield, 1986) have looked at the effects of premature dropout from treatment on long-term outcome. The results of these studies have been mixed, although the general trend is that successful outcome is positively correlated with how long clients remain in treatment. Finney, Moos, and Chan (1981) reported in their review of the literature of non-experimental studies, four different results of longer inpatient stay: better outcome; initial positive outcome, but not maintained at follow-up; no better outcome; and poorer outcome. One source of these ambiguous results may result from a confounding of length of stay with other variables such as socioeconomic factors that may also effect outcome (e.g., clients with higher socioeconomic status tend to stay in treatment longer) (Baekelund et al., 1975). In his study on the effect of dropout on treatment, Yalom (1966) discovered that patients who leave group therapy early do so out of a sense of dissatisfaction with treatment, and show no or only marginal improvement. In addition, the early dropouts tend to have a negative

demoralizing effect on the remaining members. This problem is especially important to address, as those who dropout are often precisely those who show higher levels of psychopathology, and general life impairment.

Therefore, it seems that those who need treatment the most are precisely those most likely not to continue in treatment. In spite of this, many who are considered to be dropouts might actually fare quite well. Silverman and Beech (1979) found that almost 80% of the "dropouts" that they were able to contact by phone felt that the problems for which they had sought treatment had been solved, and 70% felt satisfied with the treatment they had received. Pekarik (1983b), also, found that the most common reason clients gave for dropping out was they felt "no further need for services." Even with those dropouts who do not fare as well, Baekelund and Lundwall (1975) point out many of those who have been considered "dropouts" do actually return to treatment later.

Specifically considering treatment dropout from substance abuse programs, Baeklund and Lundwall (1975) concluded that alcoholics in inpatient treatment who leave early do not do as well as remainers, and those who do not maintain six months of sobriety tend to regress. Stark (1992) in his review found that substance abusers in particular gain from remaining in treatment, compared with general psychotherapy patients who achieve most of their treatment benefits early on. Welte, Hynes, Sokolow and Lyons (1981) concluded by using random assignment of client to substance abuse treatments of different length that most of the

benefit of increased length of stay was for those clients with low social stability. In general, it seems that little long-term benefit is accrued from treatments lasting less than 90 days (Simpson, 1981; Simpson, Savage, & Lloyd, 1979). All in all, results seem to indicate a benefit of increased length of stay for most substance abusers.

Three studies of Salvation army facilities similar to the one in this study are of particular interest in considering the effects of length of stay in this particular modality of treatment on outcome. The first study of interest is by Moos, Mehren, and Moos (1978) who found that clients who dropped out of the Salvation Army program they investigated showed poorer functioning on physical complaints, heavy drinking and behavioral complaints at follow-up. Only 28% of dropouts remained abstinent as compared with 53% of those remaining in treatment. Also, the dropouts tended to perceive the treatment environment more negatively than remainers. Contrasting with these results, Bromet, Moos, Wuthman, and Bliss (1977) analyzed the results of five different residential treatment programs including a Salvation Army treatment facility and found no systematic relationship between patient outcome and length of stay. The third study by Finney, Moos, & Chaney (1981) involved a Salvation Army treatment facility, as well as a half-way house and a milieu-oriented program. Evaluating the effect of length of stay (LOS) on treatment outcome, the study found that only at the half-way house was treatment outcome related to LOS. However, for the Salvation Army facility a

significant effect was found for attendance at AA meetings during treatment on outcome. So two of the three studies of Salvation Army facilities did not show an effect of length of stay on outcome.

Of the many possible explanations given by Tomsovic (1970) to explain the general lack of effect of LOS on outcome, three seemed particularly applicable to the Salvation Army facility: First, that for some of those who remain longer, longer stay length may indicate a lack of plans, family or other viable options, and may reflect dependence on the hospital or treatment program. Second, that the "LOS was related to short-term positive results for first-admission patients but not for individuals who had previously been hospitalized for alcoholism" (Ellis & Krupinski, 1964) cited in (Finney, Moos, & Chan, 1981), p. 127. In confirmation of the second explanation, Finney, Moos, & Chan (1981) found in the Salvation Army Program they investigated that several significant relations were found between LOS and treatment outcomes for first-time admissions, but not for repeaters. Third, and finally, that whatever the positive effects that a program might have, these could be weakened over time by experiences that occur once a person leaves the program (see Cronkite & Moos, 1980). Research supports the significant effects that post-treatment experiences can have on outcome. For example, Willems, Letemendia and Arroyave (1973) found differences in abstinence rates for length of stay in inpatient alcoholic treatment at 1-year follow-up, but no differences at 2-year follow-up. Another study by Walker, Donovan, Kivlahan and Leary (1983)

showed no differences for abstinence based on length of stay, but did show significant differences between groups based on continuing participation in aftercare at 9 month follow-up. So for Salvation Army programs it seems that various factors may govern the effect that length of stay on outcome, requiring, perhaps, a case by case evaluation of the benefit of increased length of stay for each particular client.

#### **Effect of Dropout on the Therapist and Treatment Program**

Treatment dropout may be found to have additional effects on both the therapist and the treatment program. If the assumption is made of minimal effectiveness with clients who terminate prematurely, this means for therapists that the more of their clients who terminate prematurely, the more of therapists' time that is spent ineffectively (Pekarik, 1983a).

Dropout can also lead to a greater emotional toll on the therapist resulting in greater therapist burnout (Maslach, 1978). In terms of the effect on a treatment program, higher turnover leads directly to an increased load of paperwork. If this were decreased, it would allow for additional time for each client to be more thoroughly assessed and suitably assigned to available resources (Craig, 1985). The general issue of cost-effectiveness of treatment has sparked concerns over treatment dropout. So, in conclusion, taking client, therapist and program factors into account, avoiding treatment dropout if possible is probably a desirable outcome.

#### **Factors Associated with Substance Abuse Treatment Dropout**

A fairly large number of studies have investigated the factors leading to dropout from treatment, both for psychotherapy in general and substance abuse in particular. Most have focused on differences in client factors that would predict treatment dropout. The most widely studied factors have tended to be demographic, and psychological ones based on information generally taken on intake to a facility. A relatively smaller number have considered treatment factors that affect dropout. Several literature reviews have examined treatment dropout in general (Baekelund & Lundwall, 1975; Garfield, 1986), and drug abuse treatment dropout in specific (Allison & Hubbard, 1985; Stark, 1992). These reviews will be incorporated and summarized, stressing results that most directly concern inpatient substance abuse treatments with characteristics similar to the Salvation Army Treatment Facility.

### **Factors in Predicting Dropout**

#### **Demographics**

##### **Age**

Younger age is moderately related to dropping out for most treatments, a fact perhaps related to greater lack of social stability and social support among younger people (Baekelund & Lundwall, 1975). Garfield (1986) more recently, found no or only slight effect of age in treatment. In reviewing various substance abuse treatments, Stark (1992) noted a slight relationship of age to dropout, but basically saw the results as inconsistent, with no relationship found for inpatient drug-free treatment.

**Gender**

Baeklund and Lundwall (1975) reported the finding that females were more likely to drop out than males, which they noted as being especially valid in substance abuse treatment. In comparison, Garfield (1986) did not find sex to be an important factor, but acknowledged a slight tendency for more males to continue. Green and Ryser (1978) have noted that fewer females than males enter treatment. Disputing previous assertions of a direct connection between sex and dropout, Stark (1992) inferred the presence of complex interaction effects of gender with personality, social factors, and treatment modality. Still, considering all these other factors, he still did not find the overall effect of gender to be a very powerful one.

**Race, or Minority Status**

Blacks tend to drop out more than whites although no consistent pattern emerges (Garfield, 1986). Another reviewer found inconsistent overall results of race, but noted the importance of the interaction of race with therapist characteristics, e.g., therapist being same race tends to increase retention (Stark, 1992). A similar result in one study found that gay and bisexual males tended to drop out of treatment perhaps because of feeling uncomfortable being a minority (Aron & Daily, 1976).

**Socioeconomic status**

Lower socioeconomic status as reflected by education, income and occupation status has been found to be associated with increasing rate of drop out (Baeklund & Lundwall, 1975). Studies of psychotherapy



treatment using the Hollingshead index (a measure of socioeconomic status) suggest a linear relationship between SES and treatment length. This may reflect such things as lower IQ, non-psychological mindedness, and factors involved with rapport between therapist and client (Garfield, 1986). Stark (1992) interprets the mixed results of lower SES on substance abuse treatment dropout as due to the limited access to extended treatment available to clients in lower SES rather than for other reasons. He found mixed results with employment status, and no indication of the effect of education or IQ on treatment dropout. He suggests that improving treatment accessibility for poorer clients would lead to a decrease in dropout.

#### **Social Factors**

Being socially isolated has been found to be associated with increased dropout. This includes being single or separated and living alone, and difficulty in forming close relationships (Baekelund & Lundwall, 1975). More recent reviews tend to confirm this finding (Garfield, 1986). Siddall and Conway (1988) found that family involvement in treatment, the client's employment status and his or her social support network to be predictive of successfully completing treatment. Stark (1992) noted that the effect of significant others can be either positive or negative, with several studies showing the negative influence of family and friends can negatively affect a client's treatment.

#### **Substance Use**

Clients who are in a more advanced stage of alcoholism are increasingly likely to drop out (Baekelund & Lundwall, 1975). Overall results reflect that higher levels of recent substance abuse, particularly just before or during treatment, are related to dropout. Due to confounding with age, length of drug use history does not seem to be predictive of dropout, as younger clients may have a higher severity of use than some older clients, and that severity is not reflected by measuring length of use due to their young age (Stark, 1992).

#### Criminality and Legal Pressure

Previous criminal history tends to predict treatment dropout. Nevertheless, criminal history is inclined to be confounded with the severity of addiction since increased use often leads directly to more criminal activity to support use (Stark, 1992). Collins and Allison (1983) ascertained in their review that legal coercion into treatment regularly increased stay length and those coerced into treatment as a rule did as well as voluntary participants. Similarly, Aron et al. (1976) found that those clients with short use histories that are court referred were the most likely of all participants to complete the treatment program in their study.

#### Prior Treatment History

Poor prior treatment history (i.e., a greater number of previous treatments, increasingly associated with poor prognosis) tends to predict dropout (Garfield, 1986). A prevalent myth among clinicians working in substance abuse is that some users may have to hit bottom or fail in

treatment many times before successfully completing treatment. However, research tends to show that clients have as good or better chance to complete treatment in their first attempt as they have in subsequent attempts (Stark, 1992). Marlatt emphasizes that an important difference in the outcome of treatment may result from how a client interprets his previous failure. By interpreting previous failure as indicating an inherent flaw in their nature, clients can contribute to creating circumstances that lead to increasing failure, while by seeing failure as part of the learning process that will ultimately lead to success they can promote successful outcomes (Marlatt & Gordon, 1985; Marlatt & Rohsenow, 1980). Stanton Peele (1983; 1986) takes these ideas a little further and argues that those entering treatment programs, may in reality represent a sub-group of people who have become addicted. Studies show that the great majority of people are actually able to quit on their own, so that those entering programs may, in reality, represent a class of individuals who already have a lowered sense of self-efficacy, being unable to quit on their own. He also blames the thinking of Twelve-step programs as contributing to people's belief in "powerlessness" and that such beliefs actually contribute to increased rate of failure. Indeed, research (Gossop, Eiser, & Ward, 1982) supports that clients who see their addiction as a sickness tend to drop out more readily. Again, this may reflect on their inability to take responsibility for their addiction.

### Psychopathology

Psychiatric diagnosis overall tends not to be associated with premature termination from substance abuse programs (Garfield, 1986). By far, the most frequently used measure to try to predict dropout is the MMPI. Some researchers using the MMPI to predict dropout report elevated scales and scale patterns particularly the F-scale (Faking Bad); as well as the Pd (Psychopathic Deviate); and others (Biasco, Fritch, & Redfering, 1983; Foureman, Parks, & Gardin, 1981; Jarvis, Sinnegar, & Traweek, 1975; Keegan & Lachar, 1979). Garfield (1986) reported the overall pattern of studies using MMPI to predict dropout yielded inconsistent results. Many problems arise with the use of the MMPI as a predictor. One difficulty arises from the fact that substance abusers tend to be a more homogeneous population than other clinical populations with high percentage of dual diagnosis clients (Craig, 1984). Also, alcoholics as a group, score relatively high on Scale 4 (Psychopathic Deviate) (Graham, & Strenger, 1988). Predictor equations using the MMPI are seldom cross-validated, but when they are, they tend to lose predictive accuracy over time. This may be due to the specificity of predictor equations to each population and each program (Craig, 1984).

Depression, sociopathy, poor impulse control, more reported symptoms, and dependence on alcohol for coping with negative emotions are reported to be associated with dropout (Steer, 1980). Woody, O'Hare, Mintz, and O'Brien (1975) found that methadone clients in slow intake procedures tended to drop out more quickly supporting the idea of the

effect of low frustration tolerance on dropout. Cognitive style of alcohol treatment dropouts tends to be more defensive, with them denying discomfort (Baekelund & Lundwall, 1975).

### Client Motivation and Expectations

Miller (1985) points out that the use of trait definitions of motivation has generally failed to find empirical support. He comments that such definitions place blame on the client and discourage intervention with those clients who are perceived by the therapist as poorly motivated. Using subjective criteria, therapists tend to perceive a client as motivated if he agrees with the therapist's ideas, accepts their self-labels, expresses distress and need for help. Those considered by therapists to be "motivated" are inclined to be those who comply with treatment by behaving in a dependent manner, and by not challenging authority. In place of these definitions, Miller defines motivation as "the probability of engaging in behaviors that are intended to lead to a positive outcome" (p. 212). Marlatt and Gordon (1985) equates motivation with commitment to achieving a particular goal. Motivation is seen as insufficient to cause desired behavioral change, but they emphasize the additional need for coping responses and self-efficacy. In their review of treatment, Baeklund and Lundwall (1975) note that poor motivation (based on referred patients or clinical impressions) is associated with dropout, and lower attrition rates in inpatient facilities. Also, negative or ambivalent attitudes towards treatment, reflected by resistance to help or a previous history of dropping

out, increases a client's risk for dropping out. One study based on a survey of beliefs filled in at intake, showed that attendees who stayed longer saw themselves as more in need of help and were more willing to accept help (Rees, 1985). Garfield (1986), however, felt the overall results of motivation on treatment dropout were conflicting, perhaps due to the general overall vagueness in defining the construct of motivation.

The expectations of patients as to length and type of treatment influence how long they remain in treatment. Clients anticipate length of treatment to be briefer than what their psychologists or therapists want or expect (Garfield, 1986). Actual length of treatment tends to be closer to the client's expectation than psychologists, but the disparity may reflect clients' underestimating their improvement and their actual ability to maintain abstinence (Stark, 1992).

### Treatment Factors

Many researchers feel that due to the weak and inconsistent predictive effects of the psychosocial and demographic variables that more emphasis needs to be placed on treatment and environment factors and the interaction between treatment and client (Craig, 1985; Cronkite & Moos, 1978; Cronkite, et al., 1980; Kleinman, et al., 1992; Moos & Bromet, 1978; Moos & Finney, 1986). As one example of a study showing how treatment factors affect dropout, deLeon (1985) found retention rate in therapeutic communities to be related to time already spent in treatment. In follow-up studies of the same clients, the reasons given for dropping

out were equally distributed between personal reasons, and problems with the program.

One factor that seems important in predicting dropout is the amount of attention that a client receives in the program. In one case, it was found that for people undergoing detoxification, who probably just wanted to be left alone, too much attention lead to dropout. As a rule though, some (but not too much) individual attention tended to decrease dropout. For example, Schroeder and Bowen (1982) discovered that the size of the treatment group (optimum size was 5) was predictive of dropout. (Craig & Rogalski, 1982) discovered a discriminant function that predicted 88% of the clients who would stay or leave, based on number of admittances during stay, number of staff absences of primary therapist, and whether or not they were prescribed methadone. He concluded that making the client comfortable, giving them some attention but not hassling them too much would encourage them to stay.

An important issue is the impact of therapist characteristics on treatment dropout. Research has shown client dropout rates vary with different therapists (Baekelund et al., 1975; Miller, 1985). Garfield (1986) suggests that less dropout is associated with therapists possessing greater skill or experience. Negative staff attitudes toward clients can negatively influence dropout (Craig, 1985). Clients respond more positively and stay in treatment longer with therapists who demonstrate empathy, and limit use of harsh, excessively direct confrontation techniques (Stark, 1992).

Therapist expectations of client improvement have been shown to reflect positively on outcome in treatment. In one study illustrating this, researchers Leake and King (1977) told therapists that certain clients were likely to show greater improvement as indicated from results of personality test, whereas those clients had instead been selected at random. These clients were rated more highly by therapists on several measures, and demonstrated less premature dropout.

Factors leading a client to perceive treatment as restricting their personal freedom seem to promote dropout. Increased length of treatment has been found to be associated with greater dropout (Schroeder et al., 1982). On the other hand, it has been found that a greater number of client options and choices in treatment decreases dropout (Parker, Winstead, & Willi, 1979). In general, a restricted environment with many rules can lead to a phenomenon called reactance. Reactance as a theory "holds that a threat to or loss of a freedom motivates the individual to restore that freedom. Thus the direct manifestation of reactance is behavior directed to restoring the freedom in question" (Brehm & Brehm, 1981, p. 4). It has been shown that reactance arousal may be accompanied by feelings of hostility towards agent of freedom threat (Worchel, 1974) cited in (Brehm et al., 1981). Relating these ideas to dropout, it may be that when the client perceives his freedom being limited or removed, he or she may act in a way to restore those lost freedoms, which, in the extreme, may include dropping out.



## **Cognitive approaches to substance abuse treatment**

### **Cognitive-behavioral therapy**

#### Introduction

With the rise of cognitive-behavioral therapy in recent years it is only to be expected that this viewpoint should be increasingly applied to understanding, conceptualizing and treating substance abuse. Schwartz (1982), in reviewing the concepts underlying various models of therapy, points out that those various models differ in considering affect, behavior or cognition to be the primary causal factor. Whichever of the three is considered primary is considered cause of the other two, and is therefore the primary focus of intervention. To illustrate this idea, certain forms of humanistic therapy, like gestalt therapy, might consider affect to be primary and concentrate therapy on modifying or changing affect. To better understand how different therapies view the role of cognition, he specifies that there are four separate approaches to conceptualization. These are: introspection-mentalism, which studies mind and mental events; radical behaviorism, which denies mind, study of mental events as unscientific, (cf. Skinner, 1977); mediational behaviorism, which stipulates that mental events can be studied, but considered them to be mediators of behavior or behaviors themselves under same learning principles as behaviors; and cognitivism, which sees cognitive processes as organized structures under different laws than behavior.

Lee and Holt (1989) elucidate four basic assumptions that can be said to undergird the CBT approach. The first assumption, as already suggested, is that cognitions cause emotions, and that the most effective way to change emotion is by changing cognitions. Marziller (1979) points out that there are three different uses of the term cognition within cognitive therapy: "cognitive events occurring in the stream of consciousness, cognitive processes transforming and interpreting incoming stimuli, and cognitive structures, relatively enduring aspects of cognitive organization" (p. 250). *Cognitive events* consist of such things as imagery, fantasies, maladaptive thoughts and the like. Examples of *cognitive processes* might include cognitive processing (e.g., overgeneralization; selective abstraction) and the interpretation and meaning given events. Finally, *cognitive structures* are more temporally abiding structures that underlie and organize experience e.g., "schemata" (Beck, Rush, Shaw, & Emery, 1979) or "belief systems" (Ellis, 1979).

The second assumption of cognitive therapy is that disturbances in emotion and behavior are due to a certain type of cognition, namely, irrational, illogical or dysfunctional thought. This leads directly to the third assumption that a therapeutic intervention which changes or restructures those problematic cognitions leads to an improvement in one's emotional state and behavior. Mahoney and Arnkoff (1978) indicate three major trends in cognitive therapy interventions: restructuring of cognitive belief systems; learning to deal with stress by use of coping

skills, and problem solving techniques. Finally, the last assumption of cognitive therapy is that those cognitions relevant to therapy are accessible to conscious processes. In order to evaluate and change relevant cognitions, it is necessary that those cognitions be accessible to the client. The important role that unconscious processes play in cognition is increasingly being recognized and addressed (Kihlstrom, 1987; Shevrin & Dickman, 1980). Questions have been raised as to the validity as well as the implications of each of these four assumptions, and have had to be addressed as part of the on-going evolution of cognitive-behavioral therapy (Lee et al., 1989).

### Overview of Criticisms of Cognitive Therapies

As alluded to previously, cognitive-behavioral therapies have been criticized along several fronts (Beidel & Turner, 1986). One prominent controversy has concerned the effort to demonstrate cognition to be a cause of behavior and affect. Research, in general, has failed to show cognition to be a predictor of either behavior, or psychopathology (Coyne & Gotlieb, 1983; Lewinsohn, Steinmetz, Larson, & Franklin, 1981). As a trend, negative cognitions do tend to be correlates of negative or depressed mood, with positive cognitions correlating with positive mood or mania. However, cognitions could be considered to be epiphenomena of mood rather than a cause itself. Even when cognition is assumed to be a “causal” factor, behavioral learning methods are often found to be as or more effective in changing “cognitions” than cognitive-based methods (Alden, Safran, & Weideman, 1978; Hammen, Jacobs, Mayol, & Cochran, 1980). Affect, cognition and behavior all seem to covary, so, it reduces to a chicken and egg question as to which comes first (Plutchik, 1985).

Another source of criticism has been the issue of what has been termed depressive realism. Experiments have shown depressives may actually perceive things more realistically than those in a non-depressed mode. This goes against the premise of such thought being irrational or dysfunctional (Alloy & Abramson, 1980). Cognitive-behavior therapists have had to address these and other questions, in some cases modifying their theory to accommodate these criticisms (Beck & Hollon, 1993; Ellis, 1985).

**Contrasting Rational-Emotive Therapy , Cognitive Therapy, and Stress Inoculation**

The number of cognitive type therapies has increased greatly in recent years, and one reviewer lists seventeen different cognitive therapies (Mahoney, 1987). In the interest of expediency, only Rational-Emotive Therapy as espoused by Albert Ellis (Ellis, 1962), Cognitive Therapy as espoused by Aaron Beck (Beck et al., 1979) and Stress Inoculation Training as espoused by Meichenbaum (Meichenbaum, 1977; Meichenbaum, & Jaremko, 1983) will be discussed at this time. Also, as particularly germane here, both Aaron Beck and Albert Ellis have explicitly addressed substance abuse treatment in terms of their forms of therapy (Beck, 1993; Ellis, 1982; Ellis, McInerney, DiGiuseppe, & Yeager, 1988). A brief survey of the differences in their approach will be undertaken, and then a look at their particular contribution to understanding the dynamics of substance abuse. Beck and Ellis differ in their views as to what is the primary source or etiology of dysfunctional or irrational thinking, which aspect of cognition plays the most important role in emotional disturbance, and how therapy is to be carried out (Dryden, 1984; Ellis, Young, & Lockwood, 1987).

**Cognitive Therapy**

There are three main premises in cognitive therapy concerning the role that automatic thoughts, schemas and cognitive distortions play in psychopathology (Freeman, Pretzer, Fleming, & Simon, 1990). The first premise is that dysfunctional automatic thoughts play a significant role in psychopathology. Automatic thoughts are thoughts that pop into the awareness quickly and reflexively. Thoughts such as these have been

found to be prevalent in depression (Beck, 1976). The Automatic Thoughts Questionnaire (ATQ) (Hollon & Kendall, 1980) is a checklist of such thoughts that has been found to be highly successful in differentiating depression (Dobson & Breiter, 1983; Hill, Oei, & Hill, 1989).

The second premise is that there are underlying “schemas” that shape how a person perceives and interprets events. Negative schemas are believed to lie dormant, not affecting cognition, and become activated in response to environmental circumstances. The negative schemas, once activated, contribute to causing emotional problems such as in depression and anxiety. One illustration of this is the cognitive triad, consisting of a negative view of the self, of the world, and of the future, which Beck sees as playing an important role in depression (Beck et al., 1979). Automatic thoughts and schema are not seen as “causing” depression. Rather they are seen as part of a stress-diathesis model wherein they act to mediate along with other factors between the external stressors and the emotional reactions to contribute to depression. They are seen as providing a good target for intervention, but not the only possible target (Beck et al., 1993). The theory of cognitive specificity hypothesizes that different disorders have unique cognitive profiles (Beck, 1991). For example, people exhibiting a personality disorder are viewed as possessing schemas peculiar to that disorder that are more enforced and deeply ingrained, and therefore, are harder to change (Beck, Freeman, & Associates, 1990).

The third premise is that “cognitive distortions” that represent faulty inferences or errors in logic are quite prevalent in persons suffering from emotional disorders, especially depression (Beck et al., 1979). These distortions include such things as *dichotomous thinking*, *overgeneralization*, *selective abstraction*, etc. Distortions in thinking are viewed primarily as a result of learning processes, although Beck (1991) talks about the possibility of certain primary schema present at birth that might be modified and elaborated by learning. In terms of how therapy is carried out, Beck uses a more collaborative and empirical approach, using methods that promote reality testing, and experimentation. The emphasis is on modifying expectations rather than changing philosophies (Ellis et al., 1987).

Applying cognitive therapy to substance abuse, Beck (1993) suggests the presence of certain dysfunctional core beliefs or “schemas” that underlie addictive behavior. The first set of core beliefs involves “personal survival, achievement and autonomy (p. 43),” and reflect use in response to some sense of vulnerability, or weakness in these areas. The second set reflects issues of bonding, belonging and acceptance, and the ideas of lack in these areas. These represent underlying beliefs that may not be immediately apparent to the user. Beck also points to the cognitive triad, which can be distorted in substance abusers, even without depression being present (p. 227). More directly obvious to the user are the addictive beliefs, which Beck distinguishes into two types: *anticipatory*

*beliefs*, which relate to benefits accrued to drug use; and *facilitating* or *permissive beliefs*, which serve to mitigate conflict about using. These various beliefs operate in the following sequence: Activating stimuli (internal or external cues) → activating beliefs → automatic thoughts → craving/urges → facilitating beliefs → focus on instrumental strategies → continued use or relapse → activating stimulus, etc. (p. 47).

#### **Rational -Emotive Therapy**

To Ellis, in contrast to Beck's viewpoint, it is not the inferences one makes about an event, or the cognitive distortions that are most problematic, rather the evaluations one makes about the meaning or significance of an event. Ellis (Ellis et al., 1987; Ellis, 1962) sees the primary source of emotional disturbance to be absolutistic, and irrational thinking: shoulds, musts, and awfulizing, catastrophizing thoughts that need to be modified and changed. Irrational thinking is seen as a direct source of disturbed emotion. Ellis uses an ABC formulation to conceptualize the relationship between events, thought and emotion. In this formulation, "Activating Events" are interpreted through "Beliefs" to determine the emotional and behavioral "Consequences." Therefore, therapy seeks to replace irrational thinking ("Beliefs") with more rational thought resulting in more appropriate affect and behavior. The rational/irrational distinction has come under increasing criticism in recent years (Eschenroeder, 1982; Mahoney, Lyddon, & Alford, 1989). Ellis (1985) has attempted to modify his original ABC model of emotion to reflect how the elements of "Activating Events," "Beliefs" and "Consequences" can



interact in a more complex manner, than simply A causing B that then causes C. To illustrate some examples of this modification, an already present emotional "Consequence" can effect or modify "Beliefs," and previous "Consequences" can serve as new "Activating Events" (Ellis, Young, & Lockwood, 1987).

Ellis conducts RET in a confrontational, and forceful manner, directly disputing a client's irrational beliefs. He prefers to aim at a deeper philosophical change rather than merely changing only the beliefs directly causing the disturbance. Others have found this desire for philosophical change to be problematic (Wessler, 1984). Ellis sees the source of irrational thinking to be mostly biological, yet is fairly optimistic about people's capacities to change. Research supporting the causal relation between irrational beliefs and emotional distress has been mostly correlational, using paper and paper measures, whose construct validity have been questioned (Smith, 1982). Also, research into the therapeutic effects of RET has many times yielded ambiguous results, perhaps reflecting a lack of formalized methods and poor conceptualization of what constitutes good RET practice (Zettle, & Hayes, 1980).

The rational-emotive approach to conceptualizing substance abuse focuses on underlying irrational beliefs that lead to substance abuse (Ellis, McInerney, DiGiuseppe, & Yeager, 1988). The term *low frustration tolerance* refers to the irrational belief that one cannot stand being deprived of the substance that follows from a belief in the importance of abstinence. This

in turn leads to *discomfort anxiety* and results in the substance abuser deciding to use substance which in turn reinforces the irrational belief. Another model sees substance abuse as part of a coping mechanism for dealing with stress and frustration. The substance-abuser is seen as someone who has a faulty mechanism for dealing with problems and upsets, and drinks or abuses substances as a means of dealing with negative affective states. An additional irrational pattern is called *intoxification equals worthlessness*. Two aspects of this are identified: the tendency of the abuser to see themselves as worthless, and to experience depression and negative states as a result of their self-labeling as abusers and addicts, and the dichotomous reasoning in seeing oneself as a user or non-user, leading to what has been termed the *abstinence violation effect* (Marlatt & Gordon, 1985). A final pattern is called the *demand for excitement*. The combination of the sensation seeking personality of the addict coupled with the irrational belief that "I must not be bored" leads into drug or alcohol use (DiGiuseppe & McInverney, 1990).

#### **Stress Inoculation Training**

Stress inoculation training (Meichenbaum, 1977; Meichenbaum & Jaremko, 1983) was originally created to treat anxiety. It focuses on training coping skills for dealing with stressful situations, so that a client may reduce levels disturbed emotions and adaptive behavior maximized. The training consists of three phases: cognitive preparation and appraisal, skill acquisition, and rehearsal and application. The model has been

extended to anger (Novaco, 1975; Novaco, 1977), and to pain (Turk, Meichenbaum, & Genest, 1983). Marlatt et al. (1985) modifies this technique for dealing with relapse prevention in substance abuse. After a coping skills assessment is done on the client, the client and therapist work together to develop and train coping skills appropriate to the perceived vulnerabilities and potential high-risk relapse situations of the client.

### **Social learning theory**

Social learning theory (Bandura, 1977b; Bandura, 1982; Bandura, 1986) has been very influential in cognitive formulations of substance abuse. Social learning theory rejects the strictly behavioral formations of operant conditioning, and stimulus response psychology, but includes cognitive-mediational or person factors to account for behavior. Personal factors, environment and behavior are seen to be interlocked in their interaction in a complex manner termed reciprocal *determinism*. Each of these has the ability to affect and change the other (Bandura, 1985), although controversies exist as to how best to translate this into a formal model (Staddon, 1984).

Certain basic individual factors are seen to be important in this view: symbolizing capability, forethought capability, vicarious capability, self-regulating capability and self-reflective capability. Symbolizing capability represents an individual's ability to create and manipulate symbols, and includes rational and irrational modes of thinking. One

assumption is that psychological laws regarding thought processes can be formulated without necessarily resorting to physiology. Forethought capability refers to a person's ability to think about the future, plan, and act in a purposive manner, etc., and the effect that such thinking can have on present behavior. Vicarious capability is the ability to learn through observation, and modeling. Self-regulating capability is the person's ability to formulate standards and self-evaluate, and thereby change their behavior based on discrepancies between these standards and behavior. Finally, self-reflective capability refers to the ability to be self-aware, reflect on their own thought-processes, and analyze their experience. Judgments of self-efficacy (see below) are seen to be functions of this capability (Bandura, 1985).

Social learning theory has had great influence in the field of substance abuse, especially in the area of relapse (Annis, 1990; Brownell, Marlatt, Lichtenstein, & Wilson, 1986; Marlatt et al., 1985; Miller, 1991). Social learning theory proposes that people who abuse alcohol differ from non-abusers in their expectations and beliefs about alcohol, and their manner of coping with stress (Abrams & Niaura, 1987). A 9-year longitudinal study utilizing a path model to by Stacy, Newcomb and Bentler (Stacy, Newcomb, & Bentler, 1991) demonstrated support for the effect that expectancies can have on subsequent drug use behavior and motivation once the effects previous substance use behavior has been controlled for. Another study by Cooper, Russell, and George (1988)

substantiates the effect of current alcohol consumption, “drinking to cope,” expectancies about benefits of use, and coping styles on substance use behavior, with “drinking to cope” being the most powerful predictor of future consumption.

### **Relapse models of substance abuse**

Increasing emphasis in recent years has been placed on the importance of understanding relapse as a part of the recovery process (Brownell et al., 1986; Marlatt et al., 1985). Getting people off drugs initially is relatively easy when contrasted with the task of maintaining abstinence. Factors that are associated with relapse have come under increased scrutiny and study. Similar patterns of relapse rates have been found among alcoholics, heroin addicts, and smokers (Hunt, Barnett, & Branch, 1971), and support the notion of the commonality of the phenomena of addiction across various substances. For example, a study by Cummings, Gordon, and Marlatt (1980) cited three situations that represent a high-risk of relapse: negative emotional states, such as anger, frustration and anxiety account for 35 percent of relapses; interpersonal conflict accounts for 16 percent; and social pressure, or being around others who are using accounts for 20 percent. McDermut, Haaga, and Shayne (1991) have shown a significant difference in schemata between smoking abstainers and relapsers. Some treatments have been shown to impact post-treatment functioning by focusing on relapse prevention by either skills training (Chaney, O’Leary, & Marlatt, 1978; Ito, Donovan, &

Hall, 1988; Jones, Kanfer, & Lanyon, 1982) or motivational interviewing (Allsop, & Saunders, 1989). Marlatt et al. (1985) cite four cognitive models relevant to substance abuse relapse: self-efficacy, outcome expectancies, attributions of causality, and decision-making processes. Each of these will now be investigated in more depth.

### Self-Efficacy Models

Many researchers (see Abrams et al., 1987)) have focused on Bandura's theory of self-efficacy (Bandura, 1977a; Bandura, 1982) as a means of conceptualizing substance use and abuse. As Bandura states: "Perceived self-efficacy is defined as people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses" (Bandura, 1986, p. 391). A related concept *outcome efficacy* is defined as "a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977a, p. 193). A person's behavior can be seen to be dependent on both types of efficacy judgments. Generally, an action will be performed if the person perceives themselves as capable of performing it (self-efficacy) and that the performing of it will bring the desired results (outcome efficacy). Four things are seen to influence self-efficacy judgments: previous performance, modeling influences (or seeing others perform the action), social persuasion, and physiological state.

Self-efficacy ratings have been found to be a predictor of outcome for alcohol and drug abusers (Burling, Reilly, Moltzen, & Ziff, 1989). The theory recognizes that strategies involved in maintaining abstinence differ from those involved in originally initiating abstinence. These strategies include such things as: graduated exposure to real-life risk situations, homework tasks, and fading of external aids to performance (Annis, 1990). The emphasis by Marlatt (1985) in his book "Relapse Prevention" has been on increasing the self-efficacy of individuals, or, in other words, their confidence in their ability to deal successfully with potential relapse situations, and by providing the client with various coping responses for dealing with these types of situations.

### Outcome Expectancies

As defined above, outcome expectancies play an important role in behavior. Expectancies as to the results of substance use have been shown to have a significant impact on behavior. Expectancy theory has been in the process of development since Tolman (1932) but has not yet developed into a formal theory (Goldman, Brown, & Christiansen, 1987). Goldman, Brown and Christiansen (1987) summarize the theory of Bolles (1972) who defines expectancy as "simply a name for stored information about contingencies relating environmental cues and organismic responses to biologically important consequences (p. 185)."

The model that has been most exemplary of research into expectancies is the balanced placebo design (Marlatt & Rohsenow, 1980).

In this model a four cell design is used to gauge the influence of both of expectancies of drug effects and actual physiological effects of a drug on behavior. The four cells consist of four conditions: given no drug, told no drug; given drug, told drug; given no drug, told drug; and given drug; told no drug. Various research has shown expectancy effects with sexual performance, aggression, anxiety, euphoria, cognitive and motor performance (Goldman, Brown, & Christiansen, 1987).

A somewhat related topic is the issue of craving/urges. Some researchers (Horvath, 1988) have made the distinction between cravings (the subjective state associated with needing drugs) and urges (the learned behavioral component of drug-seeking). Beck (1993) lists four major types of craving: withdrawal related; boredom, or lack of pleasure related; conditioned responses to drug stimuli; and using drugs as an adjunct to enhance positive experiences, such as sex and social interactions. Marlatt (1985) asserts that research supports that cravings related to positive expectations of use, rather than those associated with avoidance of withdrawal symptoms play a more important role in relapse. Rohsenow et al. (1989) demonstrated a correlation between urges to drink and irrational beliefs that are associated with problem avoidance and dwelling on negative events. Tiffany (1990) hypothesizes that automatic and non-automatic processes play an important role in relation to drug urges. Automatic processes are processes that are carried on almost as a habit and have the characteristics such as speed, autonomy, lack of control,



effortlessness, and lack of conscious awareness. He proposes that many aspects of drug use and procurement become automatic processes with repeated prospective and states, "Emotion might be defined as action readiness change in response to emergencies and interruptions; and this action"responses supported by nonautomatic cognitive processes that are activated in parallel with drug-use action schemata" (p. 156).

### Attributions of Causality

#### **Locus of control**

A concept closely associated with expectancy is locus of control. One way of interpreting locus of control is to view it as an expectancy that is related to the degree of a person's control over reinforcement (Novaco, 1979). Locus of control is a concept first enunciated by Julian Rotter (1966, 1975). It refers to a person's perception of control, and whether control of behavior is seen as coming from outside them through chance (external locus) or from within themselves by their own actions (internal locus). People with an internal locus of control have been generally been found to be better able to cope with stress (Lefcourt, 1982). As a general trend, alcoholics have been found to have a more external locus of control than non-alcoholics (Rohsenow, 1983; Wright & Obitz, 1984). Nevertheless, the fact that this has not been found to be a consistent finding has been attributed to the heterogeneity of the alcoholic population (Rohsenow, 1983). As related to alcohol treatment, externals seem to do better in directed treatment and internals seem to do better in non-directive

treatment (Abramowitz, Abramowitz, Roback, & Jackson, 1974), with externals participating more in aftercare (O'Leary, Donovan, Chaney, & O'Leary, 1976). A scale to measure locus of control has even been developed specifically for alcoholics and is called the Drink-Related Locus of Control Scale (DRIE) (Donovan, & O'Leary, 1978). Weiner (1980) describes four attributional causes: effort, ability, task difficulty, and luck. Negative affect such as guilt and lowered self-esteem arise most readily from attributions associated with effort, since it is considered to be both unstable (changeable) and internal.

#### **Abstinence Violation Effect (AVE)**

Marlatt (1985) has postulated what he terms the Abstinence Violation Effect (AVE). This effect may occur when a user finds himself in a lapse situation. A lapse is defined as a single instance of use of a substance following a period of abstinence. This is contrasted with a relapse that is a full return to previous pattern of behavior. There are two components to this effect: cognitive dissonance, and personal attribution. If the person views themselves as an abstainer from alcohol, the lapse behavior can produce a cognitive dissonance between that self-image and the behavior. The person may then attribute the failure to maintain abstinence to personal weakness and lack of willpower, which in turn can lead to a decreased sense of self-efficacy. These combined factors can lead to a downward spiral of increasing negative affect and behavior that can turn a lapse into a relapse.

### Decision-Making Processes

Various authors have asserted the importance of decision-making processes in substance use behavior. Sutton (1986, 1984, 1971) has performed research on smoking cessation based on a model using the subjective expected utility (SEU) theory of Edwards (1954). Simply stated, the theory proposes that people make decisions based on their subjective evaluation of the benefits or disadvantages of a particular course of action, and the estimated probability of that outcome. Based on that information, a person will behave in ways that they believe will lead to the most beneficial outcome. It is not assumed that the person will make the actual calculations involved in this evaluation, but will behave as though they had. The theory is put into practice by using a decision tree to represent the choices before the individual. For example, with lung cancer as the output, there is either the decision to quit or continue smoking. For the choice to quit there are two possible outcomes: success or failure. Attached to each branch of the tree is the expected utility or benefit of each outcome. The person is expected to make a choice based on which branch yields the highest expected utility that equals utility times probability of outcome. The decision ultimately depends on three factors: the utility or value the person attaches to lung cancer (most likely negative), the perceived diminished risk from quitting smoking, and the confidence or subjective probability of succeeding. Utilizing path models, Sutton (1971; Sutton, &

Eiser, 1984) has conducted several studies that suggest the usefulness of this model in predicting intention and behavior.

In Janis and Mann's model of decision making (1968, 1977; Mann & Janis, 1982) the emphasis is on the conflict inherent in decision making. The more personal impact of a potential decision, the more likely is the presence of *hot cognitions*, emotionally charged thinking that affect the coping responses used and the degree of disruption of logical thought processes.

Marlatt (1985) suggests the use of a *decision matrix* for evaluating the outcome expectancies of clients concerning substance use. The matrix provides areas for entering information as to the immediate and long-term consequences (both positive and negative) of continuing and discontinuing substance use behavior. Similarly, Beck (1993) advocates the use of an *advantages-disadvantages* analysis, a common-technique used in cognitive therapy, for the treatment substance abuse. It consists of a four-cell matrix with use/non-use on one side and advantages/disadvantages on the other. Client with help of therapist fills in matrix to better understand their distorted views of advantages and disadvantages.

Marlatt et al. (1985) also cites the importance of "Apparently Irrelevant Decisions," (AIDs) to the relapse process. These are typically a series of seemingly minor decisions that bring the user in closer and closer proximity to high-risk potential relapse situations. Denial and rationalization are used to minimize the role that these decisions make in

the relapse process. By understanding the part that AIDs play, the client is in a better position to make decisions that help avoid relapse.

#### **Four Stage model of Recovery**

Prochaska and DiClemente (1986) present a four-stage model for understanding the process of recovery from substance abuse. These four stages consist of precontemplation (prior to consideration of quitting), contemplation (consideration of quitting), action (quitting) and maintenance (continuing non-use). Their research suggests that different processes of change (such as self-reevaluation, contingency management, counterconditioning, etc.) correlate with each stage with certain change processes optimal for each stage of recovery. Relapsers are seen as returning to the precontemplation from the action or maintenance stages. Eventually most continue on back into contemplation stage and onward from there in a revolving door fashion.

A client's resistance to change in this model can arise from the therapist failing to recognize which of the stages a client is in and utilizing a change method inappropriate to that stage. In the precontemplation stage the pros of the behavior in question outweigh the cons, and it is only in the contemplation stage that the balance begins to shift to favor the cons. As relevant to the understanding of treatment dropout, a person in the precontemplation stage may be interpreted as being highly resistant when treated as though they were in the contemplation stage, and

likewise a person in the contemplation stage may seem resistant when treated as though they were in the action stage.

## **Connections between anger, substance abuse and dropout**

### **Understanding emotions**

#### General Definitions of Emotion

Carlson and Hatfield (1991) define emotions as “a genetic and acquired motivational predisposition to respond experientially, physiologically, and behaviorally to certain internal and external variables (p. 6).” Lazarus, Kanner, and Folkman (1980) define emotions as “complex, organized states consisting of cognitive appraisals, actions impulses, and patterned somatic reactions (p. 198).” Fridja (1986) comes from the functionalist perspective and states, “Emotion might be defined as action readiness change in response to emergencies and interruptions; and this action readiness change itself might be restricted to activations and deactivations of actual, overt response: activated behavior and physiological arousal or upset (p. 474). Carol Izzard (1977) states: “A complete definition of emotion must take into account (a) the processes that occur in the brain and nervous system, (b) the observable expressive patterns of emotion, particularly those on the face, and (c) the experience or conscious feeling of emotion” (p.4).

#### Early Theories of Emotion

James-Lange (James, 1884; Lange, 1885) theory of emotion advances the idea that emotion is the result of physical sensations experienced in body induced by a perceived stimulus. Disputing that emotions are

simply physical responses, the Cannon-Bard (Cannon, 1927) theory of emotion asserts that physical sensations not differentiated enough to account for all the different emotions. Rather the theory hypothesizes that emotions are composed of two aspects: the experienced emotions in the cortex and the physical sensations due to the sympathetic responses in the body.

### Biological Theories of Emotion

There are two main viewpoints on emotion, biological and cognitive (Carlson, et al., 1991). From the biological perspective, emotions are seen as inherited patterns of behavior. One is born with certain biologically-determined patterns of behavior that constitute primary emotions. The numbers of primary emotions in each tradition vary from four (Trevarthen, 1984) to ten (Izard, 1977). As one exemplar of this approach, Plutchik and Kellerman (1980) propose that emotions exist to serve an adaptive purpose by enabling and facilitating survival, with each emotion promoting response pattern to deal with various environmental contingencies.

### Motivational and Cognitive Theories of Emotion

Schachter and Singer's (1962) two-factor theory of emotion posits that both physiological arousal and cognition are important to emotion. In this view, arousal to emotion is non-specific, that is all emotional states basically entail the same pattern of physical arousal. The different emotions arise from the brain's interpretation of the situation causing the



arousal situation. Recent research has actually found different patterns of physiological arousal with different emotions, and this finding tends to dispute the first point of the theory (Ekman, Levinson, & Friesen, 1983). In addition to this, Izard (1977) demonstrated different facial expressions accompanying different emotions, with evidence supporting that feedback as to facial expression, may play an important role in a person's interpretation of the emotion they are experiencing. Also, Shaver and Klinnert (1982) point out that animals and children display emotions without cognitive labeling, that raises questions concerning the necessity of labeling to emotion.

One cognitive theory developed by Lazarus (1981; 1982) emphasizes the role that a person's appraisal of a stimulus situation on the subsequent emotion and behavior. In this theory, each emotion has a corresponding type of appraisal, action and expression. There are two types of appraisal: primary appraisal and secondary appraisal. Primary appraisal concerns what personal factors might be at stake in the encounter, and involves six potential factors: (1) physical well-being; (2) self-esteem; (3) work goals; (4) financial state (5) respect for another person, and (6) well-being of a loved one. Secondary appraisal involves what individual can do to adjust or deal with the situation, and entails a cognitive evaluation of coping strategies available along with a prediction as to the effectiveness of each strategy in dealing with the stressor (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986).

Lazarus believes that some type of cognition, either conscious or unconscious, always precedes emotion (Lazarus, 1984). In direct contrast with Lazarus's view, Zajonc (1984) argues against the view of cognitions causing emotion by asserting that some emotions are not caused or do not depend on cognition for their existence. He disputes the notion that all emotional reactions depend on thinking, and rather contends that thinking and feeling are relatively independent processes.

In one attempt to resolve this issue, Douglas Candland (1977) suggests that the problem of which comes first, cognition or emotion, has been overemphasized and is not as important as has been previously argued. He sees emotional stimuli as eliciting both a cognitive and a physiological reaction that in turn act in a continuous feedback loop with each other affecting each other in return. Plutchik (1985) also sees the problem of emotion versus cognition as a chicken and the egg problem. He describes the situation as a complex feedback loop, circling in this manner: cognition → arousal → preparation → action → feelings → expressive displays → overt behavioral activity → back to cognition. What is important in this scheme is that cognitions are not seen as directly causing feelings and vice versa. As alluded to earlier, both Beck and Ellis have striven to address the criticism of that cognitive therapy views emotion is seen as being directly caused by cognition.

In summary, the various theories of emotion appear to exist along a spectrum. On one end of the spectrum, are those theories that see emotion

as biologically determined, with cognitions playing little or no part in their arousal, and on the other end of the spectrum, emotions are mostly learned behaviors, in which the interpretation or meaning of an event plays a pivotal role in determining which and to what degree the emotion is elicited.

## **Anger**

### Defining anger

#### **Biological definitions**

Plutchik et al. (1980) as part of his psychoevolutionary theory of emotions, posits all emotional behavior as promoting survival, and serving eight purposes: protection, destruction, reproduction, reintegration, affiliation, rejection, exploration, and orientation . For each emotion, there is a corresponding perceived stimulus situation that activates the emotion, a subjective experience corresponding to the emotion, a behavior response pattern that the emotion elicits, and an overall function that the emotion serves. In the case of anger, the stimulus situation would be something that is perceived as an obstacle; the behavior would tend to be some form of aggression; the subjective experience would be fear or rage; and the functional purpose would be the destruction of the obstacle.

As another proponent of a biologically based theory of emotion, Tomkins (1963) investigates emotions from a neurological point of view.

He suggests that various emotions represent varying patterns of neural firing in preparation for possible response. Anger is characterized by a persistent high rate of neural firing, with the anger continuing until the person has found a way to decrease his/her level of firing.

Henry (1986) sees anger as the normal response to a threat or challenge, when the person feels competent to respond to the stress of the response. Anger, in this view, has a unique neuroendocrine pattern of response, involving the amygdalar central nucleus of the limbic system, and the release of norepinephrine and testosterone. Research to support this has shown that persons identified through personality tests as angry, irritable and resentful show a higher ratio of norepinephrine to epinephrine in their urine samples (Kadish, 1983).

#### **Cognitive-behavioral definitions of anger**

Millenson is a behaviorist who sees emotions as Pavlovian-type reflex patterns that are publicly observable. He suggests elation/love, anxiety, and anger are the three basic inborn emotions. Each emotion is biologically linked to certain unconditioned responses that then become generalized to other stimuli as a result of learning. In his view, the disruptive impact of emotions serve an important behavioral function, in that they allow the formation of different patterns of behavioral response as external conditions warrant. Anger, in his view, is elicited by the removal of positive reinforcers that leads to forceful, or even destructive behavior (Millenson & Leslie, 1979).

Novaco (1985) sees anger as “an emotional state characterized by emotional arousal and cognitions of antagonism (p. 210) In addition, anger is seen as serving six functions by Novaco (1975):

1. *energizing* behavior as it raises the amplitude of responses;
2. *disrupting* ongoing behavior by agitation, by interference with attention and information processing, and by inducing impulsivity;
3. *expressing* or communicating negative feelings to others;
4. *defending* against vulnerability to ego threat by preempting anxiety and externalizing conflict;
5. *instigating* or eliciting antagonism as a learned stimulus for aggression; and
6. *discriminating* an event as a provocation, that serves as a cue to act in ways that cope with stress (p. 6).

Averill (1980) defines emotion as “socially constructed syndromes (transitory social roles) that include an individual’s appraisal of the situation that are interpreted as passions, rather than actions” (p. 4). The term syndrome refers to the fact that no single behavior or response is sufficient to classify an emotion, but rather emotion is a cluster of responses that perform some social role. Behaviors and physiological response taken by themselves are seen as insufficient to classify an emotion, as the same physiological responses, and behaviors can occur in

two different emotions, such as jealousy and anger. So, in order to classify an emotion, one must look at an individual's appraisal of the situation and social role that the behavior serves as well. An individual's appraisal involves a judgment of an object, that in the case of anger usually involves an appraised wrong, contrasted with jealousy that might involve a potential loss to another. Finally, in viewing emotions as passions rather than actions, one sees the recipient as passively receiving the effects of the emotion rather than actively doing or eliciting the emotion (Averill, 1982).

Lacks (1988), in discussing anger and the substance abuser, distinguishes between four types of anger: historical, or anger arising from a person's upbringing; anger from grief or loss, particularly for substance abusers giving up their addiction; transitory anger, produced by everyday activity; and temperamental anger, which is anger that has accumulated over time, and has been allowed to fester.

#### **Distinguishing anger and aggression**

Many researchers have found it important to distinguish between anger and aggression. As Berkowitz (1993) defines anger it consists of feelings and experiences that lack goal-directedness. Aggression, in comparison, he sees as being a deliberate action to a goal: injury to another. Anger serves indirectly to instigate aggression. Berkowitz (1962) modified the Frustration-Aggression hypothesis of Dollard et al. (1939), where aggression is seen as being caused by frustration, to include subjective experience of anger as a mediator. Similarly, Novaco sees anger

as neither necessary nor sufficient for aggression, yet is a significant antecedent of aggression and has mutually influenced relationship with aggression (Novaco, 1985). Another theorist Averill (1982) also distinguishes between anger and aggression. While aggression is seen to be one expression of anger, it is not seen to be the cause of anger, and may or may not be manifest when anger is present. Research has shown that anger can serve as a precursor to aggression (Rule & Nesdale, 1976), but that other forms of arousal can contribute to aggression as well (Zillmann, 1983).

#### Cognitive Conceptualizations of Anger

Beck (1976) sees anger as a result of a person's appraisal of a threat or assault to his/her values, morals and rules. In terms of the substance abuser, low frustration tolerance combined with attributing responsibility for not getting what one wants to another leads to anger. Cognitive distortions such as dichotomous thinking, catastrophizing, and absolutistic thinking can also be seen to contribute to anger (Beck, 1993).

Weiner (1980; 1985) discusses the role attributions play in the generation of emotion. Whereas appraisals precede a particular situation to affect the response, attributions occur after a situation to attempt to understand and explain why a particular situation occurred. The particular experienced emotion is due to the attribution that has been made. Emotions arise as a result of both primary attribution as to whether the event is good or bad, and a secondary attribution as to the believed

cause of the event. Anger, in this view, results from a secondary attribution of an outcome that has an external locus and is controllable. Based on an analysis of men and women's reports of angry incidents, Averill (1983) found most incidents involved either friends or loved ones, and for most incidents involve an attribution of blame.

Novaco (1979) discusses cognitive factors that determine anger in terms of *expectations* and *appraisals*. Expectations are subjective probabilities about events that are based on previous appraisals of related circumstances. He specifies three ways that expectations affect anger: the discrepancy between obtained and expected outcomes; the anticipation of aversive events; and the expectation that anger arousal will be instrumental in achieving desired outcomes.

In terms of beliefs, Ellis (1977) presents four main ideas that he cites as the cause of anger:

1. "How *awful* for you to have treated me so unfairly."
2. "I *can't stand* your treating me in such an irresponsible and unjust manner."
3. "You *should* not, *must* not behave that way toward me."
4. "Because you have acted in that manner toward me, I find you a *terrible* person who deserves nothing good in life, and who should get punished for treating me so."

In support of the relationship between irrational beliefs and anger, four studies have used correlational methods to test the relation between



irrational beliefs and anger. The first study by Hogg and Deffenbacher (1986) utilized the MMPI-D (Hathaway, & McKinley, 1976), Novaco Anger inventory (AI) (Novaco, 1975) and Irrational Beliefs Test (IBT) (Jones, 1969) and found catastrophizing, personal perfection, and demand for approval scales significantly correlated with anger provocability. A previous study by Zwemer and Deffenbacher (1984) utilizing the AI, IBT and the Trait Anxiety Inventory (TAI) (Spielberger, Gorsuch, & Lushene, 1970) found personal perfection, anxious overconcern, blame proneness, and catastrophizing to be significant predictors of anger provocability. Mizes, Morgan, and Buder (1990) administered to 184 undergraduate college students the Rational Beliefs Inventory (RBI) (Shorkey, & Whiteman, 1977), the IBT, the NPI, and the Irrational Beliefs About Assertion scale (IBAA) (Craighead, 1979), and found correlations of  $r=.38$  for both the RBI and IBT with the NPI. Using multiple regression, the IBT subscales, Anxious Overconcern, Blame Proneness, and High Self-Expectations loaded significantly, and for the RBI subscales, Frustration and Negative Evaluation loaded significantly. Finally, Zwerdling, & Thorpe (1987) used the NAS (Novaco, 1975) to classify 36 subjects into high, moderate and low-anger groups. He administered them the Common Beliefs Survey (CBS) (Bessai, 1977); the Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961); the State-Trait Anxiety Inventory (STAI) (Spielberger et al., 1970); the Social Avoidance and Distress Scale (SADS), and the Fear of Negative Evaluation Scale (FNE) (Watson & Friend, 1969); and the Hostility and Direction of Hostility Questionnaire

(HDHQ) (Caine & Foulds, 1978). In addition, a structured interview using situations from NAS was administered to participants two months following the test battery to estimate report of anger experienced, self-statement irrationality and estimate of coping ability. Results showed high anger subjects to be "more anxious in general, suspicious, fearful of negative evaluation, hostile, and critical of themselves and others relative to the low anger group" (p. 114).

Relating the idea of cognitive specificity to anger, Beck (1976) hypothesized that thoughts of being wrong or transgressed against would lead to anger. To demonstrate this, 72 undergraduates were asked to record when they felt anger, sad, or depressed and to record the thoughts that accompany those feelings. The results showed anger to be significantly associated with both thoughts of threat and loss (Wickless, & Kirsch, 1988).

Bandura (1983) puts forth four types of stimuli that may incite anger: physical assaults, verbal insults or threats, blocking completion of some activity (thwarting), and depriving a person of reward. Reeve (1992) sees anger as coming from a variety of sources: the one of principle importance being restraint either physical (as in being held against one's will or psychological (as in the form of rules and regulation); also frustration (interference with goal related behavior); or being hurt, betrayed or misled.

A recent view of anger and aggression interprets them in terms of catastrophe theory. While psychology tends to model phenomena in terms of linear processes, new mathematical techniques have emerged to describe phenomena as complex, non-linear systems. These descriptions of dynamical systems incorporate such ideas as chaos and catastrophe (Nowak, & Lewenstein, 1994). In catastrophe theory, there is a recognition of phenomena that have a discontinuous aspect to them, where under certain conditions, behavior and reactions to stimuli emerge that are different from those found in the previous state. For example, a person may slowly become angry, under increasing levels of pressure. Once a certain level of anger is reached, it may erupt into aggression. However, the process is not a linear one as merely reducing stimuli to previous levels does not lead to a reduction of anger, but levels may have to be reduced to levels far below the original levels for a longer time to return to the pre-anger state. This pattern of response has been labeled hysteresis, and is found in many natural phenomena such as magnetism (Tesser, & Achee, 1994).

### **Anger-proneness as it correlates with substance abuse**

#### **General High Levels of Anger with Substance Abuse**

Several studies have found higher levels of anger to be concurrent with substance abuse. A study by Walfish, Massey, and Krone (1990) found the general levels of anger and anxiety for substance abusers in treatment for drug and alcoholism to be significantly higher than non-

client samples. Nevertheless, there were no significant differences in levels of among users with different drugs of choice. Swaim, Oetting, Edwards and Beauvais (1989) in studying distress in adolescents as precursors to substance abuse using a path model found anger as the only variable linked to substance abuse. College students with higher trait anger have been demonstrated to show more tendency to abuse alcohol (Brooks, Walfish, Stenmark, & Canger, 1982). A study of 1,243 pregnant women found that victims of violent abuse were more likely to be users of alcohol and drugs, and partners of victims were more likely to use marijuana and cocaine (Amaro, Fried, Cabral, & Zuckerman, 1990).

### An Overview of Some Potential Mediating Variables Between Anger and Substance Abuse

#### **Anger as a Direct Result of Substance Use**

In considering the effects or influence of substance use, it is necessary to consider both the effects arising directly from the physiological effects of substance abuse, and those arising from the expectancies of the users as to consequences of use. The balanced placebo design referred to earlier has often been used to attempt to separate out the results of alcohol or substance use and expectancy effects. The general research has tended to support that expectancy effects have greater influence on anger and aggressive behavior than the direct physiological effects. It becomes difficult to assess the physiological versus expectancy effects at high dosages due to the difficulty in masking the substance at

higher doses. Related to expectancies, prevalent cultural beliefs about the effects of alcohol use may allow it to serve as an excuse for behaviors such as anger and aggression that are normally not socially acceptable (Wilson, 1978). Increased tendency to anger may accompany withdrawal from substance use. A study focusing on heroin users showed that while the initial high levels of depression and anxiety reported during withdrawal decreased over a 5-week drug free period, levels of anger remained high compared with those users about to enter treatment (Powell & Taylor, 1992).

#### **Anger as an Indirect Concomitant of Substance Use**

##### Substance Abuse as a Coping Mechanism for Anger

Stress studies have shown anger to be an etiological factor in alcoholism (Appel, Holroyd, & Gorkin, 1984). The stress response dampening model (SRD) proposes that alcohol dampens stress in certain individuals, and under stressful situations, its use can be very reinforcing to those individuals resulting in them using more frequently and in greater amounts (Sher, 1987).

##### Low Self -Esteem

Various studies reflect the effect that self-esteem may play in influencing anger and depression. High self-esteem subjects have been shown to respond with less aggression to provocations (Veldman, & Worchel, 1961). One study found low self-esteem as a key determinant in anger arousal and assault in exchanges between police and criminals (Toch, 1969). High self-disclosure followed by personal threat engendered

by critical commentaries has been shown to be a strong elicitor of anger and aggression (Green & Murray, 1973).

#### Antisocial Personality Disorder (ASP)

High rates of antisocial personality (ASP) have been consistently detected among substance abusers (Hesselbrock, Meyer, & Keener, 1985a; Hesselbrock, Hessebrock, & Stabenau, 1985b). Rates of ASP found with users of different substances have been found to vary from 14% for alcoholics to 43% for cocaine abusers (Regier et al., 1990). The most often reported feature of the MMPI of alcoholics is an elevated scale 4 (Psychopathic Deviate). (Owen & Butcher, 1979) The MacAndrew Alcoholism Scale is a scale of 49 items from the MMPI that differentiate alcoholics from non-alcoholics. About 85% of male alcoholics score high on this scale. Items on this scale reflect reward-seeking behavior, impulsivity, boldness, hedonism and aggressiveness (MacAndrew, 1965). Alcoholics tend to score high on Sensation Seeking Scale by Zuckerman (1979) although younger and older drinkers tend to have different patterns of Sensation Seeking. Jaffe, Babor, and Fishbein (1987) conducted a study that compared 77 hospitalized alcoholics to see if those diagnosed with antisocial personality (ASP) actually had higher levels of aggression. Surprisingly, however it was found that childhood aggression better accounted for the variance in adult aggression than ASP. The aggressive alcoholics were found to score higher on the Paranoia, Psychasthenia, Schizophrenia, Hypochondriasis, And Hypomania scales of the MMPI.

### **The Link Between Anger and Dropout**

Anger has been found to be a common precipitant to relapse across addictive behaviors (Brownell, Marlatt, Lichtenstein, & Wilson, 1986) .

Novaco (1985) states most directly the link between anger and dropout:

...persons who are prone to provocation ...can easily become impatient with the treatment process. Clients are often ambivalent about being in treatment, and some become frustrated prematurely because of poorly defined or unrealistic goals. Those with anger problems may be more disinclined to disengage from therapy as their impatience mounts when desired treatment effects are not quickly forthcoming. Sometime annoyance occurring with regard to minor incidental events can induce the client to abandon treatment (p. 205).

Craig (1985) instituted a program to reduce dropout, one element of that was meant to deal with what was viewed as low frustration tolerance. When a client requested to leave treatment against medical advice (AMA), a holding period of one working day was required to allow time for staff to deal with angry patients. Also, the client was required to speak to a counselor, and talk to a community group to explain their situation, and seek other solutions. This along with additional screening and measures to deal with client issues allowed the AMA (Against Medical Advice) rate to drop from 70% to 20%.

### **Summary and conclusions**

Research has shown that, in general, personality and sociodemographic variables show some relationship to predicting dropout, but the relationship is generally inconsistent, and weak, suggesting that what occurs within the treatment program, may be more important than the differences at intake. Also, little research has been done on the effects of cognition on dropout. However, considerable research has been carried out on a similar problem, relapse. Research with relapse has shown the potential benefits of a cognitive approach with this phenomena.

In considering anger specifically, dealing with anger has been shown to be a particular problem with substance abusers, and has been implicated as a factor in relapse. Due to a lack of adequate coping skills for dealing with stress and emotions, substance use is often used as a ready means of controlling emotions. A treatment environment, when seen by the client restrictive and rule-driven, can lead to reactance. Combined with a personal tendency to anger provocability, this can lead to anger activation.

Once anger is activated, a client can, given a sufficiently high level of activation and the absence of coping skills, try to escape from what is perceived as a threat. The client may try to leave the program, or act aggressively, attacking in some manner, leading that client to be ejected from the program. Even in the absence of a visible reaction, given the influence of emotions on cognition, anger activation may lead to a more negative evaluation of the treatment program, and have a pivotal



influence on the client's decision-making processes, tipping the balance in the mind of the client against the benefits of continuing.

The main hypothesis of this paper is that anger provocability as measured by the NPI and the cognitive triad as measured by the CTI will tend to predict dropout, due to influences already spelled out. It is expected that this will be above the variance predicted by socio-demographic factors. It is expected that substance abusers will tend to have higher scores on both the NPI and the CTI from the general population. The third hypothesis is that cognitive distortion as measured by the CTI will tend to be correlated with the NPI.

## METHODS

### Description of Program

The Salvation Army Adult Rehabilitation Program is an 89 bed inpatient treatment facility located in Las Vegas, Nevada. The three basic programs that the facility offers are: the Chemical Dependency Intervention Program (CDIP), a two-week program; the Chemical Dependency Therapy Program (CDTP), a four-week program; and the Chemical Dependency Recovery Program (CDRP), a 20-week program with 6 weeks of transitional care. The programs consist primarily of a Twelve-Step based recovery program, chemical addiction and values clarification education, and include group and individual therapy. A new client initially enters CDIP and then may continue on to CDTP or CDRP based on need and motivation.

In general , "Salvation Army programs offer an eclectic approach that bears on psychosocial, religious, and vocational functioning within a 'therapeutic community' milieu" (Bromet, Moos, & Bliss, 1976, p. 910). Another study describes the program as "a long-term recovery program which emphasizes milieu therapy, including weekly therapy groups, community meetings, Sunday worship services and religious counseling, educational lectures and films, A. A. meetings, and fellowship and recreational activities... (and) a vocational rehabilitation school (Moos, 1978) p. 1268."

Results of an analysis of various treatments using the the Community-Oriented Programs Environment Scale (COPEs) showed that the Salvation Army was higher than average in structure, organization and clarity as to what the program expects of its participants. The participants and staff are invited to interact with each other, with the program slightly above average in its allowance of free expression of negative emotions such as anger. The program strongly stresses practical planning for leaving the program, with vocational training integrated as part of the program (Bromet et al., 1976).

### **Subjects**

One hundred and thirty four subjects were recruited from clients entering Chemical Dependency Intervention Program over the period from 4/5/92 through 7/26/92. This sample consisted of 103 men and 31 females. The mean age of the entering clients was 33.2 years of age with a standard deviation of 7.8. The majority of the clients were single (47.7%) with 35.6% separated or divorced, 15.9% married or cohabitating and .8% widowed. The primary drug of choice of this population was cocaine (38.9%) with alcohol a close second (37.4%) and cannabis a distant third (9.9%). Comparing these demographics to another Salvation Army program studied by Moos, Mehren & Moos (1978), in that program, the majority of clients were white (93%) males over the age of 40 (96%) with 61% who had been separated or divorced, with the primary problem drug being alcohol. These differences suggest

a change in population toward a younger, more diverse population with more dual addictions. For a more complete summary of the demographic information on the population in the current study see Appendix 1.

### **Materials**

The *Novaco Provocation Inventory (NPI)* (Note: the NPI is a revised version of an earlier version called the *Novaco Anger Inventory, NAI*). (Novaco, 1975) is an 80-item self-report instrument for assessing anger responsiveness. The inventory describes situations which are likely to provoke anger. The respondent is then asked to imagine the situation actually occurring to them and then list on a five-point Likert scale the degree of anger that the general situation would evoke in them. The scale provides both a general information about categories of situations likely to provoke anger, as well as providing a general measure of the respondent's propensity to be provoked to anger.

The principal index for the is the total score computed by summing the scale ratings. The maximum possible score is thus 400, with the mean for normal samples ranging from 230 to 255, with a standard deviation of about 45. For an example of some typical means, Novaco (1975) conducted a preliminary study with college students using the NPI and reported the following means: for males ( $n=138$ ),  $m = 299.8$ ,  $\text{Sigma} = 39.2$ ; for females ( $n=138$ ),  $m = 308.3$ ,  $\text{Sigma} = 45.3$ .

Biaggio (1980) similarly reported for college students: males ( $n=72$ )  $m=263.76$ ,  $sd=51.16$ ; females ( $n=78$ )  $m=271.54$ ,  $sd=43.17$ ; with combined scores for both males and females ( $n=150$ )  $m=267.81$ ,  $sd=47.18$ . Internal reliability coefficients are consistently high ( $r>.93$ ) across samples. Test-retest reliabilities have ranged from  $r=.83$  ( $n=34$ ) for a one month interval to  $r=.89$  ( $n=39$ ) and  $r=.90$  ( $n=69$ ) for a one week interval and  $r=.17$  ( $n=60$ ) for a two week interval (Biaggio, Supplee, & Curtis, 1981). Novaco administered his test to 353 undergraduates at the University of California, Irvine to get a mean score of 241.40, with a standard deviation of 42.85 and a reliability coefficient ( $\alpha=.96$ ). Also, Novaco administered his revised inventory to 16 psychiatric patients, several of whom were identified as having anger problems. The mean anger score was 273.31, with  $sd$  of 51.83, showing a significant difference between normal and psychiatric sample ( $r=2.43$ ,  $p<.02$ ) (Novaco, 1977).

Validation studies on the inventory have found it to be significantly related to laboratory self-report measures of anger. Studies with military samples have found significant associations with the Jenkins measure of Type A behavior ( $r=.34$ ,  $n=59$ ) and inverse relationships to job performance evaluations ( $r=-.32$ ,  $n=59$ ). Recent research by Selby (1984) has shown a 25-item subset of the NPI to discriminate between violent and nonviolent criminal offenders with 90% accuracy, which far exceeded that for several other instruments used. In another study, a significant correlation ( $r=.82$ ,  $p<.01$ ) was

shown between the Reaction Inventory (RI), a 76 item Likert-type inventory of situations that provoke anger (Evans & Strangeland, 1971) and the NAI. Convergent validity might be indicated from the high correlations, but which might also be due to the uniformity of method (Biaggio, 1980).

The *Cognitive Triad Inventory (CTI)* is a 36 item self-report inventory on a seven point Likert scale ranging from totally agree to totally disagree. developed to measure the cognitive triad as set forth by Aaron Beck (Beck, Rush, Shaw, & Emery, 1979). The three scales, which reflect the triad, are View of Self, View of World, and View of Future, and a total CTI score. This inventory was developed both to study the changes in the triad to reflect changes in depressive mood and changes due to treatment (Beckham, Leber, Watkins, Boyer, & Cooke, 1986a).

The reliability ( $n=28$ ) of the subscales as given are: View of Self ( $\alpha=.91$ ), View of World ( $\alpha=.81$ ), View of Future ( $\alpha=.93$ ) and the CTI scale ( $\alpha=.95$ ). A multitrait-multimethod correlation matrix was constructed using CTI measures, rater measures (from 16 faculty members of the Department of Psychiatry and Behavioral Sciences) and two other self-report measures: Self-Esteem (Rosenberg, 1965) and Hopelessness Scale (Beck, Weissman, Lester, & Traxler, 1974). The scores were also correlated with the results of the Beck Depression Inventory (Beck, et al., 1961). The total CTI score correlated significantly with the BDI ( $r = .77$ ,  $p < .0001$ ), and with the combined rater measures

of views of self, world and future ( $r = .79$ ,  $p < .0001$ ). As far as individual scales were concerned, the View of Self was correlated ( $r = .90$ ) with Self-Esteem (Rosenberg), and View of Future correlated ( $r = .90$ ) with Hopelessness Scale (Beck). View of Future correlated ( $r = .58$ ) with the View of Self scale, and ( $r = .67$ ) with the View of World scale. The View of World scale correlated ( $r = .76$ ) with the View of Self scale.

Convergent validity correlations average  $r = .815$  (using Fisher  $z$  transformation), while discriminant validity correlations averaged  $r = .604$  (Beckham, Leber, Watkins, Boyer, & Cooke, 1986b). Scores have been reported for a population of depressed patients for each scale: View of Self,  $m=36.96$ ,  $sd=14.86$ ; View of World,  $m=35.11$ ,  $sd=11.21$ ; View of Future,  $m=31.93$ ,  $sd=13.56$ ; and Total View,  $m=104.00$ ,  $sd=34.96$ .\*

*Circumstances, Motivation, Readiness and Suitability Scale (CMRS).* The CTI is a 52-item self-report instrument on a five point Likert scale ranging from strongly disagree to strongly agree. It was designed to be useful in predicting treatment dropout. The four scales include: *Circumstances*, which represents extrinsic pressures or external conditions which lead people to seek treatment; *Motivation*, which reflects the inner reasons (both positive and negative) that people give for seeking treatment; *Readiness*, which looks at the persons perceived need of treatment as compared with other options for change, and

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\* For complete information on how items on Cognitive Triad Inventory are scored, see footnote, Appendix 1b. A copy of the CTI provided in Appendix 3.

*Suitability*, which looks at how the individual perceives this particular form of treatment as meeting their needs as compared with other forms. The items were provided by clinical staff (themselves former substance abusers) and new admissions when asked to report their reasons for entering or remaining in treatment (deLeon & Jainchill, 1986).

Reported test-retest reliability of the scale is .8 (deLeon, 1992). The statements of the CMRS were distributed to the 11 staff members who rated the degree of concordance for the items with the four categories. The high degree of concordance presumed to reflect a confirmation of face validity for the CMRS. A factor analysis of the data has yielded four factors which validate the four concepts previously measured (deLeon, 1989). Data is reported for the form for both short-term dropout (<30 days) for consecutive admissions (n=400) and for long-term dropout (<150 days) with a smaller group (n=75). The data shows that 23 of the items correlated significantly for 30-day retention. On the other hand, only 13 of the items correlated significantly for long term dropout. (See Appendix 2).

*Demographic Sheet.* A form consisting of 15 questions which ask the following information: age, sex, marital status, number of children, race, education, employment pattern, time in prison, religious preference, living status, primary problem other than drug use, primary and secondary drug use, and pattern of use. No reliability or



validity data is available on this form as it was created just for the use of this study. A copy of this form is found in Appendix 3.

## PROCEDURES

Tests were administered to incoming clients of the Chemical Dependency Intervention Program (CDIP). Following the standard orientation lecture for the program, the clients were asked to stay, and fill out the permission form, the demographic sheet, the Novaco Provocation Inventory (NPI), Circumstances, Motivation, Readiness and Suitability (CMRS), and the Cognitive Triad Inventory (CTI). After filling out the forms, the clients were debriefed about the purpose of the tests, and any questions that they have are answered.

The outcome data for the study was compiled after the completion of all the clients through the program. The following information was gleaned from Salvation Army files: referral source (the source from where the clients were referred to the program.); date of admission and date of departure (from which length of stay was computed as date of admission subtracted from date of departure); and final outcome. Any inconsistent self-reported demographic data was also checked against Salvation Army records at this time.

The final outcome as recorded in the Salvation Army records consists of five possibilities: Voluntary checkout, administrative discharge, completion of CDIP, completion of CDTP, and completion of

CDRP. Voluntary checkout (VCO), is the voluntary withdrawal from any program before completion. Administrative discharge (AD) is the dismissal of the client from any program usually as a result of program rule infractions by the client. These two listings make no distinction in the records as to which program the client was enrolled in.

Nevertheless, some discrimination as to this may be made by combining this information with length of stay. All clients joining the program must first complete the Chemical Dependency Intervention Program (CDIP). Some clients may stay on for two weeks longer to complete the Chemical Dependency Therapy Program (CDTP), a four-week program. These are clients who are deemed to require more time in treatment, or who require a longer program at the request of the referral or payment source. Finally, some clients at the end of CDIP or CDTP see the necessity of continuing on for the long-term treatment in the Chemical Dependency Recovery Program (CDRP). Mere desire to continue does not necessarily insure acceptance, but is contingent upon the recommendation of their program counselor, and available space.

## RESULTS

### *Cleaning-up the Data Set*

One hundred and thirty-four cases were collected. Of these four cases were deleted: one due to missing NPI scores, one due to missing CMRS scores and one case due to missing Salvation Army data, and the final case due to lack of all test scores. Of the cases that remain, missing data was cleaned up by the following criteria: For the demographic data, missing or contradictory data was checked against Salvation Army records to reconcile any inconsistencies, with priority given to Salvation Army information; for the CTI and the CMRS scoring, missing values were coded for the neutral value; for the NPI form, missing values were coded to the average score for the remaining NPI items on the same test, as there was no neutral value for the NPI.

Due to the preliminary nature of the CMRS form, and insufficient information provided to insure correct coding of the answers, a principal components extraction with varimax rotation was performed using SPSS <sup>x</sup> on the 52 items of the CMRS. Preliminary analyses showed the presence of an excess of ten factors, which was not consistent with the expected four factors on the form, and previous reported results (deLeon, 1989). A subset of the items were then chosen based on the prior significance of those items in predicting treatment dropout. In order to produce a small subset of factors for use in this

study, information from a previous study done by deLeon (1986) was utilized. Items were chosen which had significantly predicted treatment dropout for both of the groups (N=75 and N=400) in this previous study. (Note: see Appendix 2 for a table which summarizes previous results, and compares with item correlations with stay length from present study.) This was done to enhance construct validity of the items by using only those items that had shown to be related to treatment dropout and had some measure of cross-validity. The items chosen were 18, 26, 29, 30, 31, 32, 33, 35, 36, 38, 43, 47, 48 and 51. It might be noted from the table in Appendix 2 that these items also showed some correlation with stay length in the current study as well.

An exploratory principal components extraction with orthogonal rotation was performed on the above fourteen items. Orthogonal rotation was retained because of conceptual simplicity and ease of interpretation. Three factors were found that had eigenvalues greater than unity. The first factor from the principle components analysis had an eigenvalue of 5.158 and accounted for 36.8% of the variance; the second an eigenvalue of 1.251 and accounted for 8.9% of the variance; and the third an eigenvalue of 1.2. and accounted for 7.7% of the variance.

For the purposes of this study, only one factor will be used as it accounts for over four times the variance of the next factor, and given that the majority of items load on it the factor may imply that it is

better defined than the others (Tabachnick & Fidell, 1989). All of the fourteen items with exception of item 51 loaded on this one factor above a value of 0.3. Loadings of the items on this factor are shown in Table 1, and are ordered and grouped by size of loading to facilitate interpretation. One suggested interpretive label for this factor might be "Client's Motivation and Self-perceived Need for Treatment." For the purposes of analysis in this study, this factor will be calculated using by summing the item ratings with the sign derived from the factor loading.

Table 1

Factor Loadings, for Principal components extraction on CMRS.

Items Used for Factor "Client's Motivation and Self-Perceived Need for Treatment"	Factor Load
36. I'm willing to enter treatment as soon as possible.	.86
31. I will do whatever I have to do to get my life straightened out.	.82
26. It is more important to me than anything else that I stop using drugs.	.76
32. Basically, I don't see any other choice for help at this time except some kind of treatment.	.70
35. I am really tired of using drugs and want to change, but I know I can't do it on my own.	.65
38. I am willing to sever street ties for a while if it will help me in treatment.	.65
33. I don't really think I can stop my drug use with the help of friends, family or religion, I really need some kind of treatment.	.59
47. I'll stay in this program as long as I have to in order to change my life for the better.	.59
18. Often I don't like myself because of my drug use.	.58
30. I came to this program because I really feel that I am ready to deal with myself in treatment.	.56
29. I don't really believe that I have to be in treatment to stop using drugs, I can stop anytime I want.	-.44
48. Basically, I do feel that drug use is only part of my problem and that I have to change a lot about myself in order to make a new start in life.	.38
43. Overall, I don't think I can adjust well to the demands of this program as it was described to me.	-.33

### *Evaluation of Assumptions*

One case was identified as a multivariate outlier with  $p < .01$ , and was deleted. This case was an male, aged 47, referred by friends, who had only one year of use as compared with the mean of the group 18 years, and he had an exceedingly low score on the CMRS (9 compared with mean of 42). He dropped out of program after only 3 days. He seems to represent someone quite atypical of the program. For the 129 cases retained, the breakdown for the two analysis was as follows: 88 completed CDI/ CDT and 41 did not complete CDI/CDT. Of the 88 that completed CDI/CDT, 41 went on to CDR. From those who went on, 24 completed and 17 did not complete CDR. Evaluation of assumptions of linearity, normality, multicollinearity, and homogeneity of variance-covariance matrices revealed no threat to multivariate analysis.

### *Descriptive Statistics*

The correlations between the various cognitive factors are presented in Table 2. Note that the only significant correlation between the NPI and the CTI is for the View of Future scale. The various CTI scales all correlate with each other significantly with magnitudes in the range of those previously reported.<sup>1</sup>

Table 2 shows all the means of the various cognitive measures broken down by outcome group, including the results of t-tests between

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<sup>1</sup> See Methods section on characteristics of CTI for actual values.

the dropout and completion groups for CDI/CDT treatments and CDR treatments. Figures 1 thru 6 show the information in Table 2 in graphical form by outcome group (dropout vs. completers), by program (CDI/CDT vs. CDR) and by measure.

The NPI total group results ( $\bar{m}=260.19$ ,  $\bar{sd}=47.47$ ) were compared with the previous results of Novaco (1977) for a group of college students ( $n=353$ ,  $\bar{m}=241.40$ ,  $\bar{sd}=42.85$ ) cited earlier<sup>2</sup> using a pooled t-test. A significant difference is shown between these two scores,  $t(480) = 4.14$ ,  $p < .001$ . The NPI combined group results were also compared with a psychiatric group with admitted anger problems ( $n=16$ ,  $\bar{m} = 273.31$ ,  $\bar{sd} = 51.83$ ) also reported by Novaco (1977). No significant difference is shown between these groups using the pooled t-test,  $t(143) = -1.03$ ,  $p > .10$ . Zwerdling and Thorpe (1987) classified users into three groups by the following classification using the NAS: Low-Anger: Range 154-222; Moderate-Anger: Range 266-288 and High-Anger 316-388. Comparing the NPI results from this study, places the average slightly below the Moderate-Anger range.

For the Cognitive Triad Inventory, it is a little more difficult to report results as data are only reported for a diagnosed depressed population ( $n=28$ ) as reported by Beckham et al. (1986b). Beckham's results were compared to the group results of the present study for each scale and the total and are shown in Table 3. Since the CMRS scale is

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<sup>2</sup> See Methods section concerning the NPI.



preliminary with no normative data, it's data is merely reported and will not be used in further statistical analyses. The CMRS scale did not yield consistent results between completer and dropout groups, with a significantly higher score for completers in the CDI/CDT group and a significantly lower score for completers in the CDR group. (See Figure 2).

Table 2

Correlation Coefficients for Cognitive Measures:Novaco Provocation Inventory, Cognitive Triad Inventory, and  
Circumstances, Motivation, Readiness and Suitability

	<u>CTI Measures</u>					
	CMRS	NPI	SELF	FUTURE	WORLD	TOTAL
CMRS	1.00					
NPI	.20*	1.00				
View of Self (CTI)	.16	.08	1.00			
View of World (CTI)	.20*	.20*	.62**	1.00		
View of Future (CTI)	.00	.06	.64**	.53**	1.00	
Total (CTI)	.14	.13	.89**	.83**	.85**	1.00

\* – Significant at  $\alpha=.05$       \* – Significant at  $\alpha=.01$       (2-Tailed)

Table 3

Comparison of Cognitive Triad Inventory Results between Salvation Army Rehabilitation Clients and a Previously Reported Depressed Sample.

CTI Scales		t-test Results					
		N	<u>M</u>	<u>SD</u>	<u>df</u>	<u>t</u>	<u>p</u>
View of Self	Psychiatric group	28	36.96	14.86	155	1.66	ns
	Salvation Army	129	33.02	10.52			
View of World	Psychiatric group	28	35.11	11.21	155	5.40	<.01
	Salvation Army	129	23.47	10.15			
View of Future	Psychiatric group	28	31.93	13.56	155	-1.18	ns
	Salvation Army	129	34.50	9.67			
Total View	Psychiatric group	28	104.00	34.96	155	2.20	<.05
	Salvation Army	129	91.28	25.99			

Table 4

Means and Standard Deviations of Cognitive Measures.

Measure	<u>n</u>	<u>M</u>	<u>SD</u>	<u>df</u>	<u>t</u>	<u>p</u>
CMRS Derived factor <sup>3</sup>						
Total Group	129	41.97	8.29			
CDI/CDT dropouts	41	40.54	8.82	127	-1.34	.18
CDI/CDT completers	88	42.64	8.00			
CDR dropouts	17	46.59	5.79	39	1.48	.15
CDR completers	24	42.92	9.00			
NPI						
Total Group	129	260.19	47.47			
CDI/CDT dropouts	41	270.93	41.15	127	1.77	.080
CDI/CDT completers	88	255.19	49.57			
CDR dropouts	17	268.65	49.72	39	1.90	.065
CDR completers	24	241.71	41.01			
View of Self (CTI)						
Total Group	129	33.02	10.52			
CDI/CDT dropouts	41	33.02	10.64	127	-.20	.84
CDI/CDT completers	88	33.43	10.52			
CDR dropouts	17	33.58	11.09	39	-1.10	.28
CDR completers	24	37.13	9.51			

<sup>3</sup>Note: Client's Motivation and Perceived Need of Treatment factor. See Appendix 1a footnote for formula for computation.

Table 4 (Continued):

Means and Standard Deviations of Cognitive Measures and Results of t-tests between Dropouts and Completers for CDI/CDT and CDR

Measure	<u>n</u>	<u>M</u>	<u>SD</u>	<u>df</u>	<u>t</u>	<u>p</u>
View of Future (CTI)						
Total Group	129	34.50	9.67			
CDI/CDT dropouts	41	34.95	9.68	127	.36	.72
CDI/CDT completers	88	34.30	9.71			
CDR dropouts	17	36.41	10.38	39	-.134	.89
CDR completers	24	36.88	11.26			
View of World (CTI)						
Group	129	23.47	10.15			
CDI/CDT dropouts	41	22.20	10.35	127	-.976	.33
CDI/CDT completers	88	24.07	10.06			
CDR dropouts	17	24.77	9.34	39	-.57	.57
CDR completers	24	26.88	13.14			
Total View (CTI)						
Group	129	91.28	25.99			
CDI/CDT dropouts	41	90.17	27.04	127	-.329	.74
CDI/CDT completers	88	91.80	25.62			
CDR dropouts	17	94.77	24.96	39	-.70	.49
CDR completers	24	100.88	29.24			

Figure 1

NPI Scores for CDI/CDT Dropouts vs CDI/CDT Completers and CDR  
Dropouts vs CDR Completers (Showing 95% Confidence Intervals).

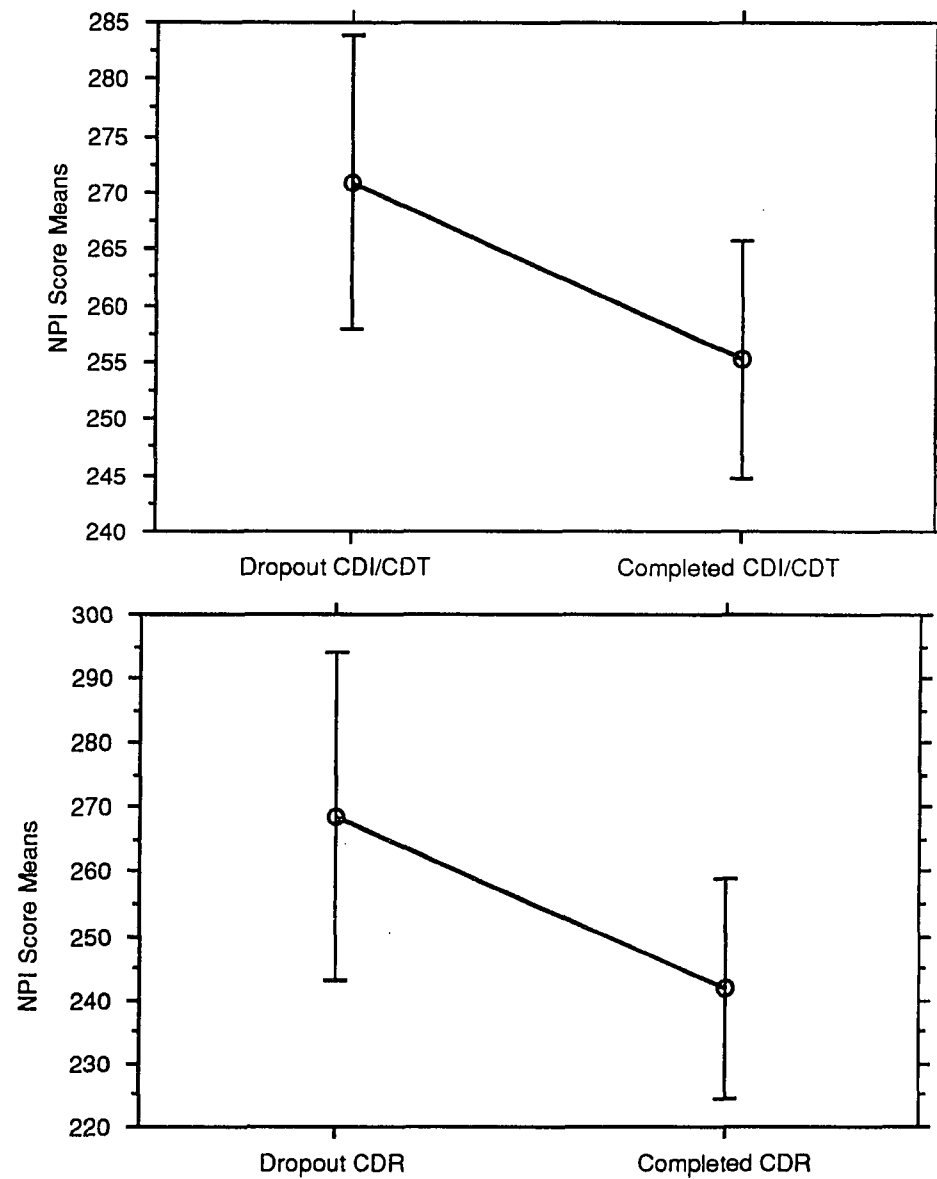


Figure 2

Circumstances, Motivation, Readiness and Suitability Factor (Client's Motivation and Perceived Need for Treatment Scores for CDI/CDT Dropouts Versus CDI/CDT Completers and CDR Dropouts versus CDR Completers (Showing 95% Confidence Intervals).

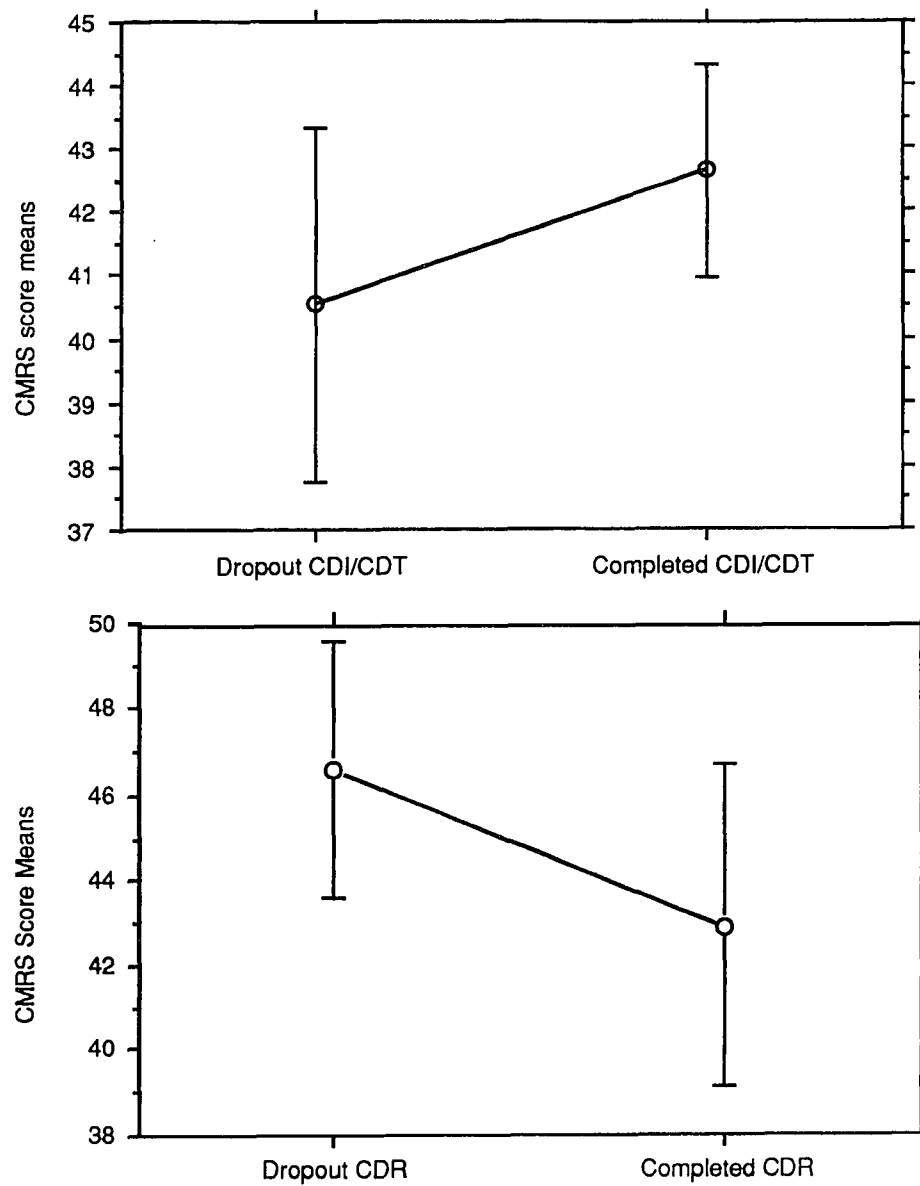


Figure 3

Cognitive Triad Inventory: View of Self scores for CDI/CDT Dropouts Versus CDI/CDT Completers and CDR Dropouts versus CDR Completers (Showing 95% Confidence Intervals).

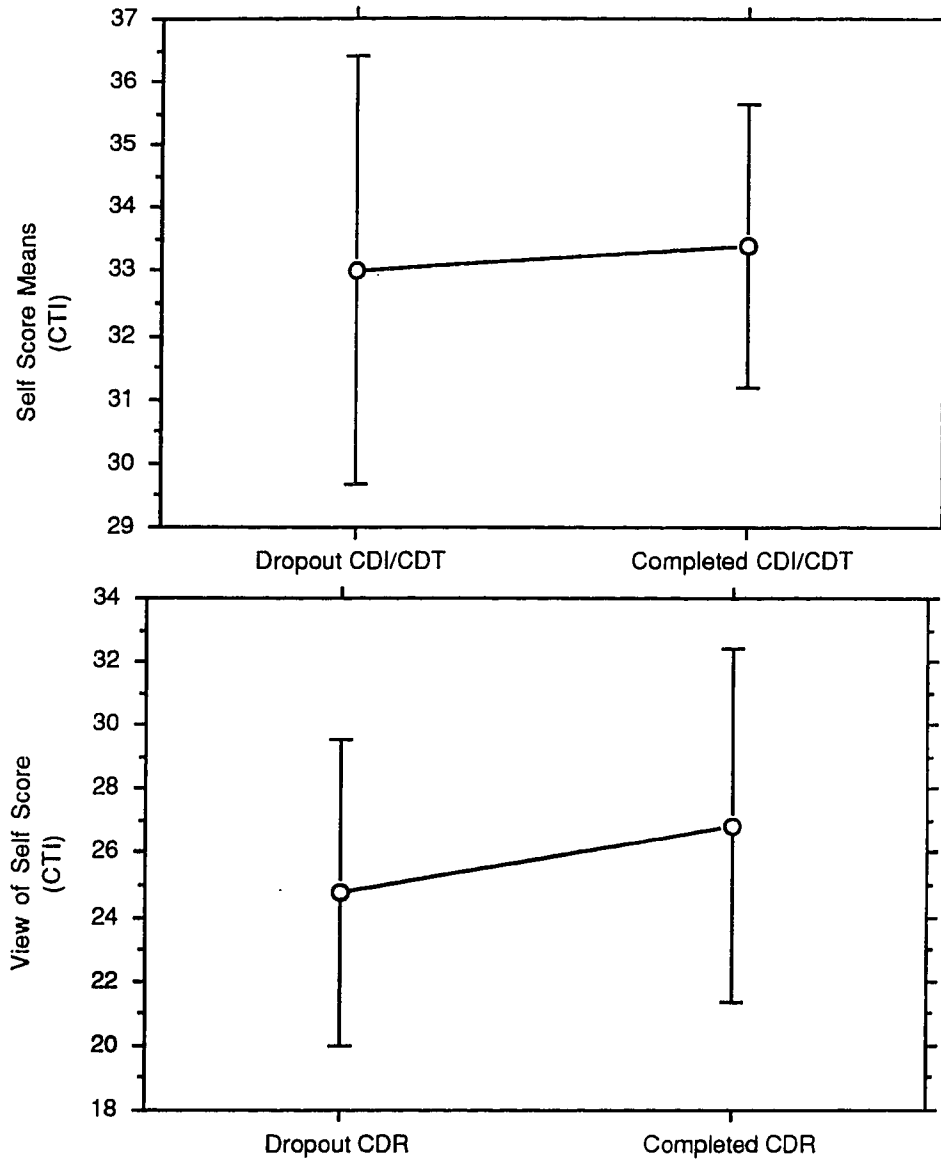




Figure 4

Cognitive Triad Inventory: View of World scores for CDI/CDT

Dropouts Versus CDI/CDT Completers and CDR Dropouts versus CDR

Completers (Showing 95% Confidence Intervals).

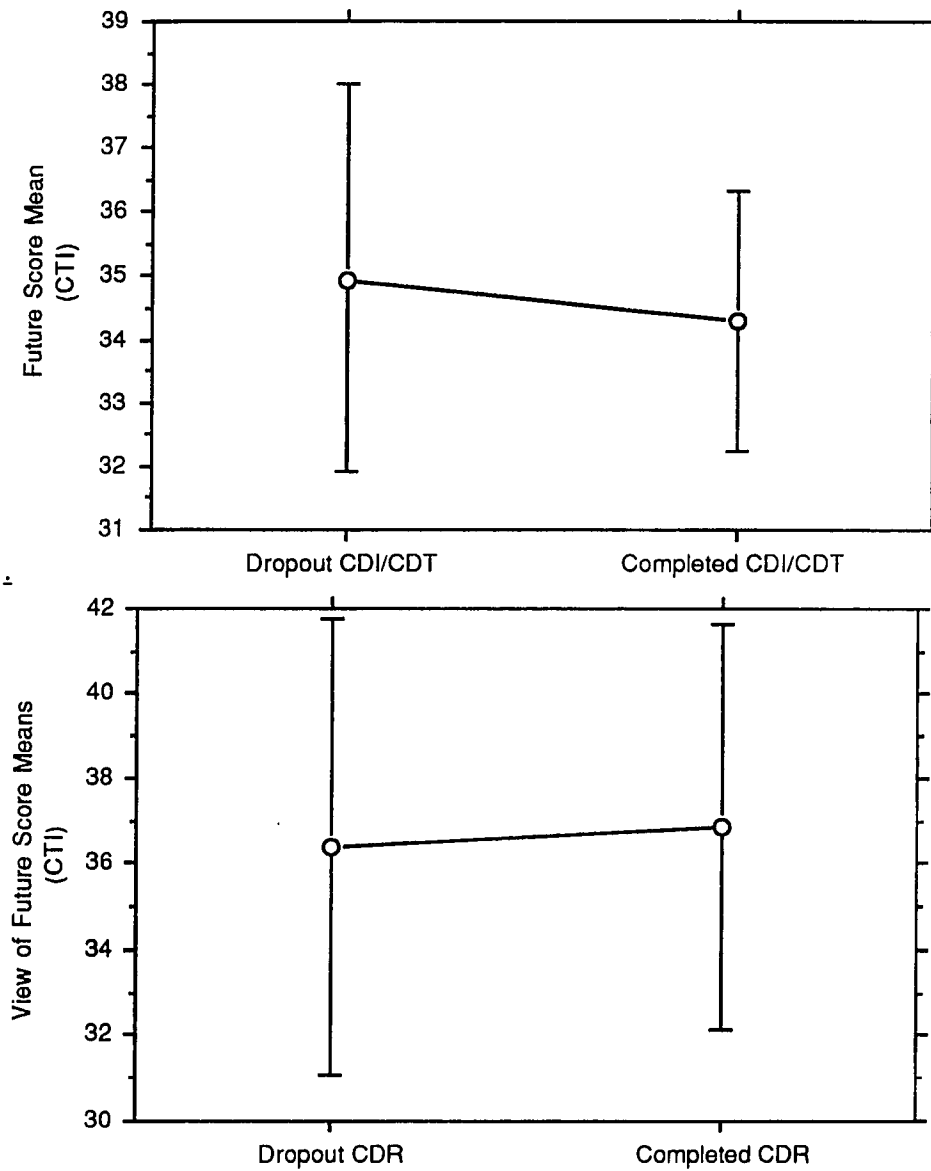


Figure 5

Cognitive Triad Inventory: View of Future Scores for CDI/CDT

Dropouts Versus CDI/CDT Completers and CDR Dropouts versus CDR

Completers (Showing 95% Confidence Intervals).

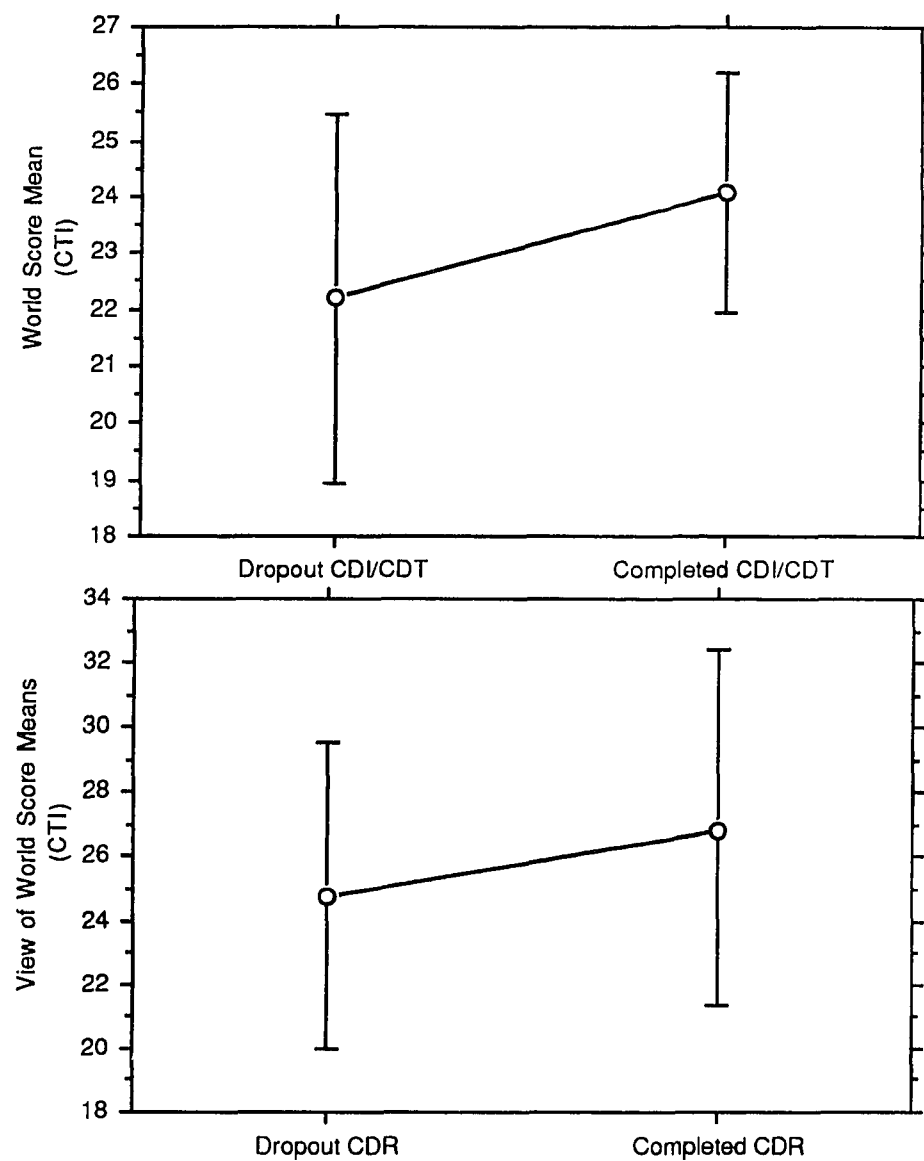
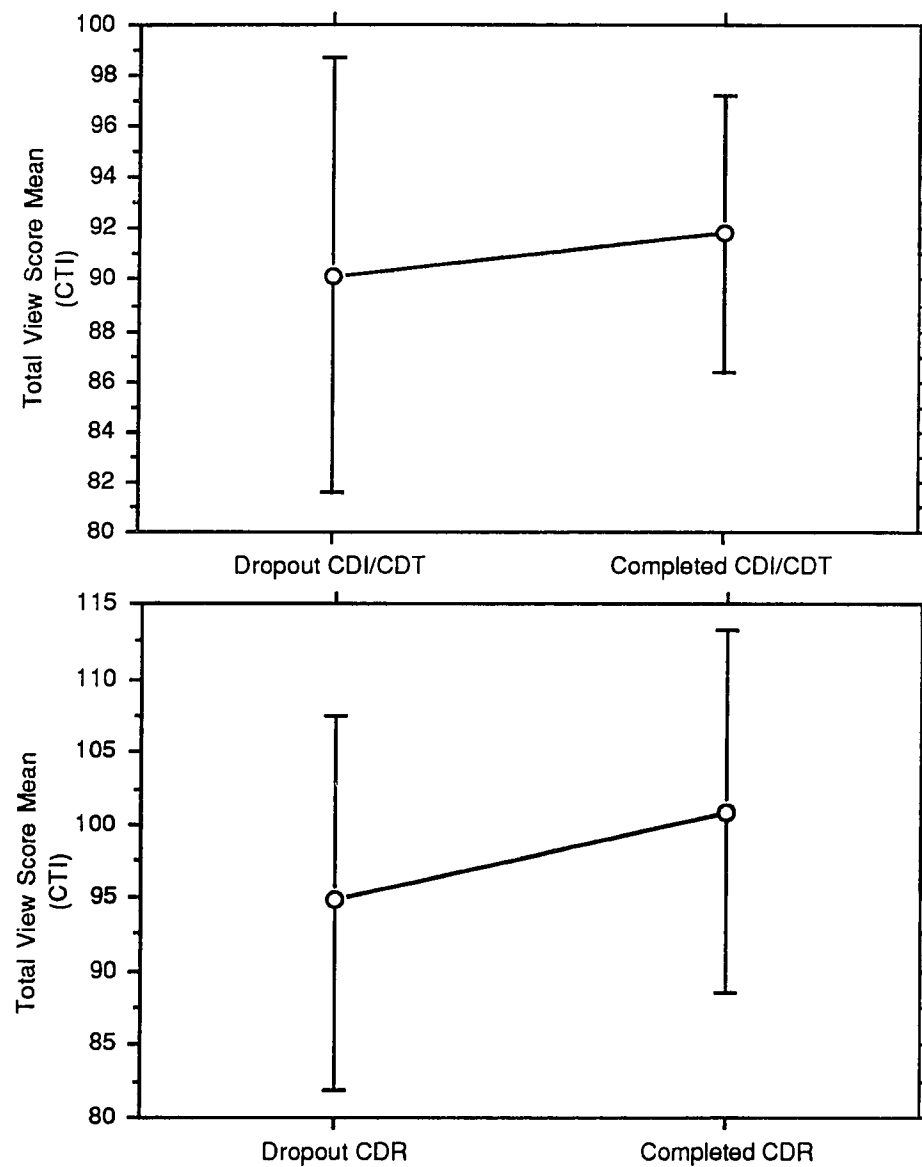


Figure 6

Cognitive Triad Inventory: Total View Scores for CDI/CDT Dropouts  
Versus CDI/CDT Completers and CDR Dropouts versus CDR  
Completers (Showing 95% Confidence Intervals).



### *Discriminant Analyses*

Overall, about 31.8% of clients dropped out of CDI/CDT and 41.5% did not complete CDR. This places the Salvation Army program towards the upper end of dropout rates reported for inpatient facilities by Baeklund et al. (1975). Two separate stepwise discriminant function analyses were performed to assess prediction of either dropout or completion for CDI/CDT treatment and either dropout or completion for CDR treatment programs respectively.<sup>4</sup> Thirteen demographic factors were added first to the analyses, and then the four cognitive-related factors. The demographic factors consisted of Age, Sex, Race (White vs. other), Number of children (Children vs. No Children)<sup>5</sup>, Income, SES Living Status<sup>6</sup>, Previous Jail Time, Years of Drug Use, Frequency of use (Occasional vs. Regular), Religious affiliation (Protestant vs. other)<sup>7</sup>, Employment status<sup>4</sup>, Primary Problem (Social

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<sup>4</sup> It was decided to perform two separate analyses separating CDI/CDT dropout separately from CDR dropout, rather than integrating the two. The reason for this is that there are too many external confounding influences affecting those CDI/CDT graduates who do not continue on, which are due to results other than simple treatment dropout. For instances, some CDI/CDT attendees who are court-referred for only CDI/CDT program, and cannot continue even if they desired to, because of other commitments. Others never had any intention of continuing on to CDR. Also, often there are some clients wanting to continue on to CDR who are not admitted due either to lack of available space, or to not being recommended by their counselor. Therefore in the analysis only those admitted to CDI/CDT can be later considered as dropouts, and only those admitted to CDR are considered as dropouts to CDR.

<sup>5</sup> Converted from continuous value to discrete to deal with skewness. See Appendix 1a.

<sup>6</sup> Converted from discrete values to continuous value to maximize available information. See Appendix 1a.

<sup>7</sup> The discrete variables were recategorized into dummy variables in order to insure linearity. Due to the large number of possible combinations of dummy variables available from the demographic data and the limitations as to degree of freedom (suggested number being less than number in smallest group (Tabachnik & Fidell, 1989)

vs. Other) and Referral source (Court-referred vs. other). The cognitive factors were Cognitive Triad Inventory, View of Self, View of World and View of Future scales, and the Novaco Provocation Inventory score.

For the CDI/CDT dropout vs. completers, there was no statistically significant difference between the two groups from the demographic predictors alone,  $F(6, 122) = 1.904, p > .05$ . With the addition of the four cognitive variables, a statistically significant result was obtained,  $F(10, 118) = 2.02, p < .05$ . With all predictors in the equation, 78.3% of the clients were successfully classified. McNemar's  $\chi^2$  test for the change indicated reliable improvement in classification with addition of the cognitive predictors to the demographic predictors,  $\chi^2(1) = 4.26, p > .05$ . Classification results may be found in Table 5a and 5b.

In the case of the discriminant analysis for CDR, a statistically significant result was obtained using demographic variables alone,  $F(3, 37) = 5.10, p < .005$ . The rate of correct classification into groups was 78.05%. The classification rate remained exactly the same with the addition of the cognitive variables, and therefore only the equation

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), variables were chosen to reflect those which previous research suggests might be predictive of dropout. Some demographic variables i.e. Education, were not used due to significant values of kurtosis and skewness. For reference as to which items were used from demographic sheet and how they were coded into dummy variables, see Appendix 1a.

using the demographic variables will be reported. For summary of results see Tables 6a and 6b.

For classification, sample sizes were used to estimate prior probabilities of group membership. The predicted classification using prior probability yields about 56.5% by random chance for CDI/CDT and 51.2% for CDR. On the basis of predictors for CDI/CDT and CDR, there was reliable correlation between groups and predictors,  $\chi^2(7) = 16.5$ ,  $p < .05$ , for CDI and  $\chi^2(3) = 12.99$ ,  $p < .01$  for CDR.

The loading matrix of correlations between the predictor variables and the discriminant functions, are shown for CDI/CDT in Table 5a and for CDR in Table 6a. The primary predictor for CDI/CDT (loadings above .45) shows that women are more likely to complete the program than men. For CDR, the primary predictor is SES Living Status, which indicates that people who are homeless, and lack independent living facilities are more likely to remain in program to completion.

The pooled within-group correlations for variables are shown in Table 7. The items that show an a priori statistical significance at the .05 level and above are indicated. These correlations indicate that males tend to have higher incomes and more jail time than the women. Whites have more income, less jail time, less years use, are more likely to be protestant, and have a more positive view of world and future than non-whites. Surprisingly, those who are married report having a

more negative view of future, and those with children report a more negative view of self and future. Finally, there is a relationship between SES Living Status and years use indicating that those who use longer are less likely to live independently and more likely to be homeless.

Table 5a

Results of Discriminant Function Analysis of Demographic Variables  
Plus Attitudinal Variables Included in Analysis For CDI/CDT Dropouts  
vs Completers

Predictor variable	Discriminant function coefficients	Correlation of predictor variable with discriminant function	Wilk's Lambda	p
Demographic				
SEX	-0.347	-.466	.96	.03
OCCASIONAL <sup>8</sup>	0.300	.220	.95	.04
INCOME	0.503	.319	.94	.05
JAIL TIME	0.472	.372	.93	.05
CHILDREN	-0.373	-.156	.92	.06
SES LIVING STATUS	0.298	.169	.91	.06
COURT REFERRED	0.257	.157	.90	.07
Cognitive Variables				
NPI	0.420	.379	.88	.04
WORLD (CTI)	-0.497	-.209	.86	.03
FUTURE (CTI)	0.311	.077	.85	.04
Canonical R	.35			
Eigenvalue	.14			

<sup>8</sup>Definitions of derived demographic variables found in Appendix 1a.



Table 5b

Results of Discriminant Function Analysis of Demographic Variables  
Plus Cognitive Variables Not Included in Analysis For CDI/CDT  
Dropouts vs Completers

Excluded variables	Correlation of excluded variable with discriminant function
Demographic	
SOCIAL PROBLEM	.131
YEARS OF USE	-.045
WHITE	-.049
AGE	.045
PROTESTANT	-.044
MARRIED	-.026
Cognitive Variables	
SELF	-.034

Table 6a

Results of Discriminant Function Analysis of Demographic Variables  
Plus Attitudinal Variables Included in Analysis For CDR Dropouts vs.  
Completers

Predictor variable	Discriminant function coefficients	Correlation of predictor variable with discriminant function	Wilk's Lambda	p
Demographic				
SES LIVING STATUS	0.616	.745	.81	.005
INCOME	0.328	.439	.73	.003
PROTESTANT	-0.870	-.241	.71	.005
Canonical R	.54			
Eigenvalue	.41			

Table 6b

Results of Discriminant Function Analysis of Demographic Variables  
Plus Cognitive Variables Not Included in Analysis For CDR Dropouts  
vs Completers

Excluded variables	Correlation of excluded variable with discriminant function
Demographic	
WHITE	-.318
JAIL TIME	-.273
MARRIED	-.221
YEARS OF USE	.113
CHILDREN	-.112
SEX	.063
SES LIVING STATUS	.061
AGE	.056
SOCIAL PROBLEM	-.045
COURT REFERRED	-.024

## Salvation Army Treatment Dropout

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## DISCUSSION

As explicated earlier, three hypothesis were tested. The first two of these concerned the relationship of the measured cognitive variables to other research and to each other. It was hypothesized that both the NPI and CTI would be elevated relative to non-drug or normative populations. As found, the NPI score combined for CDI dropouts and completers was significantly elevated compared to a base college population, but not significantly different from that of a psychiatric population. The CTI combined mean score was slightly lower than a depressed population, but not significantly so. These results are consistent with research confirming a generally higher level of anger and depression among substance abusers.

An interesting sidenote to the correlation results is the relationship between being non-white and negative view of future and world. This may tie in with the relationship that non-whites tended to have lower income, poorer living status and higher levels of substance use. Non-whites may be actually justified in being more depressed! Due to the correlative nature of the research, however, no conclusions can be made as to causation. Whether the generally lower economic conditions lead to a lowered assessment of the future and world, or vice versa, is a very interesting question that might be worthwhile to research.

The predicted relationship between the CTI and the NPI was weak and not significant ( $r = .13$ ,  $p > .05$ ). Other studies have found large correlations between rational belief scales and anger provocation (e.g. Shorkey, & Whiteman (1977) found a correlation ( $r = .38$ ) between RBI & NPI; Hogg, & Deffenbacher (1986) found a correlation ( $r = .38$ ) between the AI and the IBT). One possible explanation of this disparity relates to the differences in the constructs being measured. The CTI (Beckham, et al, 1986b) purports to measure the cognitive triad which is a description of a schemata theorized to be present in depression and substance abuse (Beck, 1993). The various belief scales purport instead to measure irrational beliefs (Bessai, 1977; Jones, 1969). Schemata and beliefs are seen to be different aspects of the cognitive process. This has been explicitly delineated by Ellis who sees schemata as part of the interpretation and distortion of the Activating event, whereas Beliefs are part of the meaning and significance that a person attaches to that event. The emotional reaction, in this view, is seen as primarily arising from the beliefs rather than the schemata (Ellis, 1979). The results found here might be used to support this view.

Looking at the individual scales of the CTI and their correlation with the NPI, only the View of Future scale is significantly correlated with the NPI ( $r = .20$ ,  $p < .05$ ). This may be due to the connection that has been postulated by many theorists between anger and the perception of obstacles in the environment or frustration (Plutchik and

Kellerman, 1980; Folkman et al., 1986; Dollard et al., 1939; Berkowitz, 1962). It might have been expected that the View of Self scale would have been significantly correlated as well resulting from the commonly postulated link between lowered self-esteem and anger provocation (see Veldman, & Worchel, 1961; Toch, 1969; Green & Murray, 1973; Folkman et al., 1986). This might point to other factors that might mitigate this connection.

The main hypothesis of this study postulates that cognitive factors would significantly contribute to predicting outcome over and above the influence of the demographic factors. This result was supported in the case of CDI/CDT treatment, but not in the case of CDR. Several possible conjectures might be advanced to explain these apparently conflicting results. As explained earlier, those who enter CDR represent a sub-group of the original population, namely those who have completed CDI/CDT, have expressed a desire to continue, and have been selected to continue. The factors which are important to dropout may be different due to the fundamental differences between CDI/CDT and CDR groups. In studying the different NPI results, the difference in mean scores between the CDR dropouts and completers is actually larger (Mean difference = 26.9) than the difference between CDI/CDT dropouts and completers (mean difference = 19.8). Both results reflect an a priori statistical significance between the two groups (See Table 4). So the difference in discriminant results suggest that the

demographic information may play a greater role in determining outcome for CDR than CDI/CDT, accounting for more of the variance. Another plausible explanation is that the relatively much smaller size of the CDR sample group may result in less variables being needed to account for available variance.

Interpreting the individual variables that go into predicting the outcome must be done with great caution as a hierarchical stepwise analysis was used, which might tend to favor some predictors over others by chance. It is highly recommended that these results be cross-validated on another similar population. Nevertheless, some general comments will be made on the demographic predictors. SEX was an important factor in predicting dropout. Generally, a larger percentage of the males dropped out of CDI/CDT treatment than the females. This is the reverse of the trend found by most other researchers. Curiously, however, a smaller percentage of females did go on to enroll in CDR treatment. The demographic predictors apart from SEX differences important to CDI/CDT dropout seem to reflect three broad categories: Socioeconomic/social factors (INCOME and SES LIVING STATUS, CHILDREN), Legal Status (COURT REFERRED and JAIL TIME) and Severity of Use (OCCASIONAL). All of these reflect factors that have been found by previous research to be relevant to treatment dropout, but many, for example, SES LIVING STATUS and INCOME show a relationship opposite to that expected. Primarily, these factors seem to



reflect a lack of alternative viable options (tendency towards lower living status, and low income) to remaining in treatment. Those factors most compatible with previously reported results show those who are court-referred, have less jail-time, have a pattern of less severe drug use and have children are more likely to complete as well.

In addition, the pattern of cognitive factors predicting dropout also contains some paradoxical results. Besides the NPI results already discussed, the CTI subscale results are somewhat unexpected. Both a more negative View of World and a more positive View of the Future predicts dropout. The more negative View of World is consistent with the results found by Moos et al. (1978) who found dropouts tend to view the treatment environment more negatively. An alternative explanation of this might also be that since many of the View of World items reflect trust and relationships with others, a negative rating on this scale may reflect lack of trust and consequent difficulty in being able to work in an intensive treatment environment. Positive View of Future, on the other hand, may indicate client's belief in a positive future leading them to be better able to contemplate other options other than treatment, which in turn leads them to pursue these other options.

The factors that are important to dropout in the long term CDR program are again socioeconomic factors (SES LIVING STATUS and INCOME) which again may reflect lack of other options, and be a direct

result of the occupational training component of the program that the Salvation Army provides. A somewhat contradictory result is that a larger number of protestants dropped out of the long-term program than non-protestants, whereas in the short-term program slightly more non-protestants dropped out. This may be a random result due to the low number in the sample of CDR clients, represented. (A shift of one client from one category to the other would have changed the result in the opposite direction.)

In general, there is a good deal of evidence to support that the discriminant analysis results may not cross-validate to other drug treatment populations, and may only be specific to this particular program or programs of a similar type. The comparatively unique elements of the Salvation army program (especially occupational training, and the spiritual emphasis) may produce a uniquely characteristic pattern of clients who remain with program, that does not generalize to other programs. This may actually indirectly support the idea of matching clients to appropriate treatment programs, as this program seems to be more suited to those of lower economic status. However, in terms of cognitive variables, it seems quite reasonable to expect that the NPI results may well generalize to other treatments, even non-drug treatments. While the NPI scores of clients were somewhat comparatively elevated, they were not so elevated as to suggest an effect unique to substance abusers.

It is suggested that further research be done in terms of cross-validating these results for both this program and other programs with a larger population. In particular, the use of the NPI in predicting dropout in other programs should be investigated. The other forms, the CTI and CMRS, while yielding interesting results that might bear further investigation, did not quite perform in the expected manner in predicting dropout, and further work is needed in cross-validating their use. The CMRS as a form developed specifically to predict treatment dropout, is probably a worthwhile idea to pursue, but in its present state has too many psychometric problems. If the CMRS were to be further developed to be useful in prediction, extensive factor analysis is suggested to produce a reduced set of factors, and reliability and construct and criterion-related validity would need to be further studied as well.

Other ideas worth investigating further involve the role that on-going decision-making processes may play in treatment continuation. Significant to predicting dropout are some variables that seem to reflect other available options to treatment. The interaction of negative treatment experiences, client personality and cognitive factors such as anger provokability, and the client's perception of options available to them present a potentially useful approach to predicting dropout.

In relating what has been discovered to a treatment program, several points might be made. A treatment program can seem to serve

almost as filtering process, whereby the client's who complete the program can be seen as a select sub-group of those who initially enter. Since all the measures were administered at intake, any differences that occur are as a result of selection processes. This can have a profound confounding influence on any measurement of treatment effect, as those of less severity can be precisely those who tend to remain on. In the area of anger, a program can, over time, be seen to "boil off" those who are most readily angered, leaving those who are more stable in that aspect. Because of the potent relationship of anger to relapse, anger can be a very important issue to address, and that those who leave early due to elevated levels of anger provocability are precisely in danger of relapsing for the same reason. As Craig (1985) has demonstrated, a program can take positive steps towards reducing dropout by various means, but these entail a program taking responsibility for elements which might be causing dropout, and changing them, rather than simply placing the blame on the client.

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## Appendices

### Appendix 1a: Demographic form

Age: \_\_\_\_\_

Sex: 1-Male r 2-Female r

Marital Status:

- r 1-Single (Never married or annulled)
- r 2-Married or cohabitating
- r 3-Separated or divorced
- r 4-Widowed

Number of children: \_\_\_\_\_

Race:

- r 1-White (Not of Hispanic Origin)
- r 2-Black (Not of Hispanic Origin)
- r 3-American Indian
- r 4-Alaskan Native
- r 5-Asian or Pacific Islander
- r 6-Hispanic - Mexican
- r 7-Hispanic - Puerto Rican
- r 8-Hispanic - Cuban
- r 9-Other Hispanic

Education Completed: \_\_\_\_ Yrs (GED = 12).

Usual Employment Pattern, Past 3 Years:

- r 1-Full time (40 hours a week)
- r 2-Part time (reg. hours)
- r 3-Part time (irreg. daywork)
- r 4-Student
- r 5-Service
- r 6-Retired/ Disability
- r 7-Unemployed
- r 8-In controlled environment

Total time you been incarcerated  
(in prison or jail) in your life:

- r 0- Never been incarcerated
- r 1- One week or less
- r 2- One month or less
- r 3- Three months or less
- r 4- Six months or less
- r 5- One year or less
- r 6- Three years or less
- r 7- Five years or less
- r 8- More than Five years

Income (Past year):

- r 0- Not employed
- r 1- Less than \$4,000
- r 2- \$4,000-5,999
- r 3- \$6,000-7,999
- r 4- \$8,000-9,999
- r 5- \$10,000-11,999
- r 6- \$12,000-14,999
- r 7- \$15,000-19,999
- r 8- \$20,000 and over

Religious preference:

- r 1- Roman Catholic
- r 2- Eastern Orthodox
- r 3- Episcopalian
- r 4- Baptist
- r 5- Methodist
- r 6- Lutheran
- r 7- Other Protestant
- r 8- Jewish
- r 9- No religion
- r 10- Other

Current living status:

- r 1- Independent living
- r 2- Live with parents
- r 3- Homeless
- r 4- Dependent living (half-way house)
- r 5- Controlled environment
- r 6- Other \_\_\_\_\_

Which do you consider your most pressing problem  
other than drug addiction (Choose one)

- r 1- Financial problems
- r 2- Family problems
- r 3- Employment problems (Unable to hold down or find job)
- r 4- Legal problems
- r 5- School problems
- r 6- Medical problems
- r 7- Psychological problems (Anxiety, depression, hallucinations, etc.)
- r 8- Social problems (No friends, or trouble getting along with others, etc.)
- r 9- No other problems

r 10- Other

Primary Drug of choice (Choose one): Age of first use: \_\_\_\_\_

r 1-Alcohol

r 2-Heroin

r 3-Methamphetamine

r 4-Other opiates/analgesics (morphine, opium, Darvon, Codeine, etc.)

r 5-Barbituates (Quaaludes, phenobarbitol, Nemutal, Tuinal, Seconal

r 6-Other sedatives/ hypnotics/ tranquilizers (Valium, Librium, etc.)

r 7-Cocaine (including Crack)

r 8-Cannabis

r 9-Hallucinogens (LSD, mescaline, ecstasy, MDA, PCP, etc.

r 10-Inhalants (Glue, Poppers, Amyl Nitrate, etc.)

Secondary drug of choice (Choose one): Age of first use: \_\_\_\_\_

r 1-Alcohol

r 2-Heroin

r 3-Methamphetamine

r 4-Other opiates/analgesics (morphine, opium, Darvon, Codeine, etc.)

r 5-Barbituates (Quaaludes, phenobarbitol, Nemutal, Tuinal, Seconal

r 6-Other sedatives/ hypnotics/ tranquilizers (Valium, Librium, etc.)

r 7-Cocaine (including Crack)

r 8-Cannabis

r 9-Hallucinogens

(LSD, mescaline, ecstasy, MDA, PCP, etc.

r 10-Inhalants (Glue, Poppers, Amyl Nitrate, etc.)

r 11- No other drug

When do you usually drink or use drugs:

r 1- Weekends

r 2- After work or evenings

r 3- Occasionally during the day

r 4- Regularly during the day

r 5- Long, occasional "benders"

r 6- Frequent, short "benders"

r 7- Most of the time

**Variables were coded as follows for discriminant analysis:**

**Age** - Coded as integer; **Sex**- Male -1, Female -2;

**Children/ No Children** <sup>1</sup> derived from **Number of children** as follows:  
0 children -1 /*No Children*, 1-9 children - 2 /*Children*.

**White /Other** - derived from **Race** as follows: 1-1/*White*; 2-9-2/*Other*.

**Social/Other** - derived from **Primary Problem** as follows: 2-Family, 8-Social - 1/*Social*; 1, Items 3-7, 9 - 2/*Other*.

**Years of drug use**- Calculated by formula: *Years of Drug use* = Age - Age of First Use.

**Income**- Coded as integer.

**SES Living Status** - continuous derived from **Living Status** as follows: 1-Independent living-1; 2-Live with parents, 4-Dependent living-0.66; 5-Controlled environment, 6-Other-0.33; 3-Homeless-0.

**Jail Time**-Coded as integer.

**Occasional vs. Regular**- Derived from **Pattern of use** as follows:  
1-Weekends, 2-After work or evenings, 3-Occasionally during day-1/*Occasional*; 4-Regularly, 5-Long benders; 6-Frequent short benders; 7-Most of time- 2/ *Regularly*.

**Protestant vs. Other** - Coded from **Religious affiliation** as follows: 3-Episcopalian, 4-Baptist, 5-Methodist, 6-Lutheran, 7-Other protestant-1/*Protestant*; 1-Roman Catholic, 2-Eastern Orthodox, 8-Jewish, 9-No religion, 10-Other-2/*Other*.

**Court-referred vs. Other**- derived from **Referral source**<sup>2</sup> as follows: 1-Federal Pre-trial, 2-State P & P, 6-Courts, 10- Municipal court, 13- Child Prot. Services- 1/*Court-referred*; 3-Relatives, 4-Friends, 5-Relapse, 7-Hospital, 8-Self, 9-Other treatment, 11- Physician's Aid, 12- Mental Health- 2/*Other*.

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<sup>1</sup> Note: Demographic values which are derived from given data are shown in italic.

<sup>2</sup> Referral source is category which is totally derived from Salvation Army records.

**Appendix 1b: Demographics**

Sex	Count	Percent	-Mode
Male	99	76.2%	
Female	31	23.8%	

Marital Status	Count	Percent	-Mode
Single	63	48.5%	
Married/Cohabiting	21	16.2%	
Separated/Divorced	45	34.6%	
Widowed	1	.8%	

Race	Count	Percent	-Mode
White	72	55.4%	
Black	48	36.9%	
American Indian	4	3.1%	
Alaskan Native	1	.8%	
Asian or Pacific	1	.8%	
Hispanic/Mexican	2	1.5%	
Hispanic/Puerto Rican	1	.8%	
Hispanic/Cuban	1	.8%	

<b>Religion</b>	<b>Count</b>	<b>Percent</b>	
Roman Catholic	18	13.8%	
Eastern Orthodox	2	1.5%	
Episcopalian	1	.8%	
Baptist	41	31.5%	-Mode
Methodist	5	3.8%	
Lutheran	5	3.8%	
Other Protestant	17	13.1%	
Jewish	3	2.3%	
No religion	17	13.1%	
Other	21	16.2%	

<b>Employment Pattern</b>	<b>Count</b>	<b>Percent</b>	
Full-time	67	51.5%	-Mode
Part-time (regular)	18	13.8%	
Part-time (irregular)	13	10.0%	
Student	1	.8%	
Service	0	0.0%	
Retired/disability	3	2.3%	
Unemployed	23	17.7%	
In controlled environment	5	3.8%	

Living Status	Count	Percent	
Independent living	47	36.2%	-Mode
Live with parents	27	20.8%	
Homeless	24	18.5%	
Dependent living	5	3.8%	
In controlled environment	19	14.6%	
Other	8	6.2%	

Jail	Count	Percent	
Never incarcerated	19	14.6%	-Mode
One week or less	20	15.4%	
One month or less	21	16.2%	
Three months or less	15	11.5%	
Six months or less	10	7.7%	
One year or less	7	5.4%	
Three years or less	21	16.2%	-Mode
Five years or less	5	3.8%	
More than five years	12	9.2%	

Referral	Count	Percent
Federal pretrial	4	3.1%
State Parole and Probation	29	22.3%
Relatives	12	9.2%
Friends	18	13.8%
Relapse	2	1.5%
Courts	2	1.5%
Hospital	5	3.8%
Self	12	9.2%
Other treatment	35	26.9%
Municipal court	1	.8%
Physicians aid	8	6.2%
Mental Health	8	6.2%
Child Protective Services	1	.8%



First drug of choice	Count	Percent	
Alcohol	48	36.9%	
Heroin	4	3.1%	
Amphetamine	12	9.2%	
Other opiates	1	.8%	
Barbituates	1	.8%	
Other sedatives	0	0.0%	
Cocaine	51	39.2%	-Mode
Cannabis	13	10.0%	
Hallucinogens	0	0.0%	
Inhalants	0	0.0%	
No other drug	0	0.0%	

Second drug of choice	Count	Percent
Alcohol	27	20.8%
Heroin	3	2.3%
Amphetamine	11	8.5%
Other opiates	5	3.8%
Barbituates	1	.8%
Other sedatives	1	.8%
Cocaine	25	19.2%
Cannabis	33	25.4%

Hallucinogens	3	2.3%
Inhalants	21	16.2%
No other drug	0	0.0%

Pattern of use	Count	Percent
Weekends	19	14.6%
After work/evenings	13	10.0%
Occasionally/during day	5	3.8%
Regularly/during day	23	17.7%
Long occasional benders	3	2.3%
Frequent short benders	18	13.8%
Most of the time	49	37.7%

-Mode

Primary problem	Count	Percent
Financial	42	32.3%
Family	16	12.3%
Employment	25	19.2%
Legal	16	12.3%
Medical	0	0.0%
Psychological	1	.8%
Social	15	11.5%
No other	7	5.4%
Other	8	6.2%

-Mode

# Salvation Army Treatment Dropout

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Income	Count	Percent	-Mode
Not employed	34	26.2%	
<\$4000	35	26.9%	
\$4,000-5,999	15	11.5%	
\$6,000-7,999	5	3.8%	
\$8,000-9,999	8	6.2%	
\$10,000-11,999	8	6.2%	
\$12,000-14,999	7	5.4%	
\$15,000-19,999	5	3.8%	
\$20,000 and over	13	10.0%	

	Mean	S. D.	Min	Max	Range	Mode	Kurt.	Skew
# of Children	1.35	1.78	0	9	9	0	3.37*	1.69*
Education	11.92	1.81	4	24	20	12	17.08*	1.46
Age	33.05	7.73	19	57	38	33	0.53	0.63
Age of 1st Use	17.62	6.97	2	47	45	15	3.42*	1.42*
Age of 2nd Use	17.92	6.72	9	50	41	16	6.88*	2.28*
<i>Total Yrs. Use<sup>3</sup></i>	18.34	8.5	1	44	43	13	0.55	0.6
<i>SES Living Stat</i>	0.59	0.38	0	1	1	1	-1.3	-0.34
Stay Length	58.72	93.23	3	545	542	15	10.08*	2.88*
CMRS factor <sup>4</sup>	41.95	8.26	15	53	38	41	1.11	-0.96
NPI Total	259.83	47.47	130	357	227	229	0.10	0.21
Self <sup>5</sup>	33.41	10.55	10	57	47	28	-0.70	0.25
Future	34.51	9.63	10	57	47	33	-0.31	-0.35
World	23.49	10.11	10	59	49	16	1.38*	1.17
CTI Total	91.41	25.93	32	164	132	116	0.05	0.21

\* Significant at  $\alpha=0.05$  (Two-tailed)

<sup>3</sup> Items in *italic* are derived factors. See Appendix 1a for further information.

<sup>4</sup> CMRS factor (Client's Motivation and Perceived Need of Treatment) = 18 + 26 - 29 + 30 + 31 + 32 + 33 + 35 + 36 + 38 - 43 + 46 + 47. Factors based on results of factor analysis.

<sup>5</sup> Scales were scored on basis of information sheet provided by Edward Beckham, and are based on sum of items as follows: View of Self = -C5 - C10 - C13 + C17 - C21 + C25 - C29 + C31 + C33 - C35; View of World = C3 + C8 + C12 - C18 + C20 - C23 + C24 - C27 - C30 - C34; View of Future = C6 + C9 + C11 - C15 - C16 - C19 - C26 + C28 - C32 + C36; Total View = View of Self + View of World + View of Future. Note that six items from scale are not used. (Refer to copy of CTI in Appendix 3).

**Appendix 2: CMRS Previous results summary**

PREVIOUS STUDY RESULTS (DELEON, 1986) CORRELATIONS BETWEEN CMRS ITEMS AND LENGTH OF STAY					CURRENT RESULTS
	N≈400	N≈75			N≈130
Item No.	Retention 30 days	Retention 30 days	Retention 60 days	Retention 90 days	Stay Length
1					.05
2		.22**	.24**	.27**	-.10
3					.03
4					-.13
5					.07
6					-.01
7					-.19
8					.00
9			-.20*		-.12
10		-.23**	-.27**	-.25**	.03
11	-.11*				-.16
12					.04
13	.12*				.13
14	.13*				.17

Item No.	Retention 30 days	Retention 30 days	Retention 60 days	Retention 90 days	Stay Length
15					.11
16	-.10*				.04
17	.13*				.08
18	.12*	.24**	.25**	.24**	.06
19					.01
20		.21*			.04
21	.10*				.01
22					.10
23					.03
24					.00
25					.02
26	.10*	.21*			.13
27					-.06
28					.15
29	-.18***	-.30***	-.29**	-.27**	-.19*
30	.15**		.22**	.21*	-.06
31	.10*		.23**	.22**	.09
32	.14**	.20*	.19*	.19*	.11
33	.13**	.30***	.27**	.30***	.20*
34					.01
35	.10*		.19*		.13

Item No.	Retention 30 days	Retention 30 days	Retention 60 days	Retention 90 days	Stay Length
36	.17***	.26**	.25**	.20**	.12
37	.12**				.14
38	.23**	.25**	.21*		.11
39		.40***	.41***	.38***	.10
40					.14
41					.00
42					.02
43	-.15**			-.18*	-.06
44	-.10**				-.10
45					.07
46	-.14**			-.18***	-.13
47	.18***	.35***	.33***	.30***	.14
48	.13**				-.05
49					.15
50					-.07
51	.21**	.24**	.21*	.20*	.05
52					-.05



**TO:** Mark Ireland

**FROM:** Dr. William E. *Wm. E. Schulze* Research Administration  
Schulze, Director,

**DATE:** 19 September 1994

**RE:** Status of human subject protocol entitled:  
"Relation of Socio-economic & Cognitive Variables to  
Dropout in Salvation Army Treatment Program"

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The protocol for the project referenced above has been reviewed by the Office of Research Administration, and it has been determined that it meets the criteria for exemption from full review by the UNLV human subjects committee. Except for any required conditions or modifications noted below, this protocol is approved for a period of one year from the date of this notification, and work on the project may proceed.

Should the use of human subjects described in this protocol continue beyond a year from the date of this notification, it will be necessary to request an extension.

This is a duplicate. This protocol was approved 2/27/92