Purpose in life, depression, and outcome of treatment for alcohol dependence.

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PURPOSE IN LIFE, DEPRESSION, AND OUTCOME
OF TREATMENT FOR ALCOHOL DEPENDENCE

by

Jodie L. Waisberg
M.A., University of Windsor, 1984
B.Sc., University of Toronto, 1981

A Dissertation
Submitted to the Faculty of Graduate Studies
through the Department of Psychology
in Partial Fulfillment of the
Requirements for the Degree
of Doctor of Philosophy at the
University of Windsor
Windsor, Ontario, Canada
1990
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ABSTRACT

A number of studies have linked the development of substance abuse problems to a lack of purpose or meaning in life, and a few studies have demonstrated an increase in sense of life purpose through substance abuse treatment programs. The present study extended past research by examining the relationship of purpose in life to treatment outcome assessed three months post-treatment, and by examining the relationship between depression and sense of purpose in life.

One hundred and forty-six people in inpatient treatment programs or awaiting treatment for alcoholism (in some cases in addition to other drug addictions) comprised the subject sample. There were four groups of subjects -- three treatment groups and one waiting list nonequivalent control group. Patients in the three treatment groups completed the Purpose in Life Test, Beck Depression Inventory, Alcohol Dependence Scale, and Personality Research Form Desirability Scale at the commencement of their treatment programs. The waiting list group completed the same tests. The Purpose in Life Test and the Beck Depression Inventory were administered to the treatment groups again at the end of inpatient treatment, and to the waiting list group three weeks after the initial testing session. Three months later, the treatment groups were sent a questionnaire assessing drinking and drug use, ratings of five life areas, and
participation in aftercare. These follow-up data were corroborated by a person close to the patient and/or treatment personnel whenever possible.

Results of the present study suggest that depression and sense of purpose in life are different, albeit overlapping, constructs. The correlation coefficient between pre-treatment Beck Depression Inventory and Purpose in Life Test scores was -.70. Post-treatment Beck Depression Inventory and Purpose in Life Test scores were differentially predictive of follow-up variables.

The mean pre-treatment Purpose in Life Test score of the subjects was significantly lower than average. The mean post-treatment score of treatment completers was in the average range. The waiting list group mean score remained low. The post-treatment Purpose in Life Test score was predictive of changes in intimate relationships and health at follow-up. It was also predictive of follow-up drinking/drug use status. However, the pattern of prediction varied according to the orientation of the treatment program. Possible interpretations of the differing patterns are presented.
ACKNOWLEDGEMENTS

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Others whose participation moulded the research were Peter Horton, anonymous reviewers at Health and Welfare Canada, and particular staff members at Facilities A, B, and C. I wish to thank those staff and management people at the three treatment centres who facilitated my research. Unfortunately, to protect the anonymity of their institutions, I cannot list their names. I would like also to express my appreciation for the generosity of my research subjects and for the capable assistance of Rhonda Loomis, Robin Roberts, Heather Hallam, and John Mymryk.
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CHAPTER I
INTRODUCTION

The Recovering Alcoholic
and Spirituality

Alcoholism has physiological, psychological and cultural roots, which have been investigated by biomedical specialists, mental health researchers and sociologists, respectively. Frankl (1969) points out that as research advances and findings in different disciplines become more detailed, the pictures by which each discipline depicts reality become more disparate and less easily integrated. He warns of the danger of specialists who generalize, i.e., those who claim that they can explain human functioning totally in terms of their own specialty. This trend is particularly evident in the alcoholism field, where research studies investigating physiological, behavioural and sociocultural variables have yielded significant findings. It is important for the field that researchers studying these different factors resist the temptation to offer simplistic and reductionistic explanations of a complex, multidisciplinary problem (Zucker & Gomberg, 1986). The factors which contribute to the onset of heavy drinking, the maintenance of this pattern, the development of physiological dependence, and the recovery from alcoholism are not the same. Different levels of explanation are required to account for all of these phenomena, and the relative importance of the contributing factors varies at
different stages of the alcoholic process (Zucker & Gomberg, 1986).

One level of explanation which has been given attention by treatment personnel and recovering alcoholics, but which has generally been neglected by researchers, is the spiritual dimension. The word "spiritual" is not being used here as a synonym for "religious", but rather it refers to a dimension of human psychological functioning which encompasses cognitive, emotional and moral elements. Alcoholics Anonymous (A.A.) views alcoholism as an illness which is spiritual, mental and physical (Ward, 1985). Some of A.A.'s concepts are explicitly spiritual (e.g., "hitting bottom" and "self-surrender"). Recovering alcoholics, whether affiliated with A.A. or not, often point to specific events or experiences as pivotal in their recognition that they are alcoholics, and thus in beginning their recoveries. During the recovery process, they frequently experience a profound change in unconscious epistemology, affecting their views of themselves, the people in their world, and their values.

Denzin (1987) interviewed and observed several hundred alcoholics in A.A. and proposed a phenomenological theory of alcoholism which incorporates relational, intrapersonal and sociological elements. He describes the recovery process as a shift from an alcohol-centered life to a life in which the alcohol has been replaced with an alternative structure of
experiences. He views relapse as the effect of symbolic or phenomenological craving (as distinguished from nonsymbolic or physiological craving) occurring in an individual who has not yet replaced the alcohol at the center of his life. Denzin criticizes motivational, personality and learning theories of alcoholism as inadequate because they fail to deal with the centrality of the self in the alcoholism process. He studies alcoholism as a form of lived experience which traps the individual in a self-destructive cycle. Perhaps the theories Denzin criticizes lose some dimensions of alcoholism in an attempt to objectify their subjects, but there is no reason why a subjective aspect of human experience cannot be studied in a relatively objective way.

The sense of purpose or meaning in life is one such subjective phenomenon which has been studied and for which a measure has been developed (Purpose in Life Test; Crumbaugh & Maholick, 1964, 1969). Crumbaugh and Carr (1979) discuss the high prevalence of lack of meaning and purpose in life among alcoholics. Frankl (1969, 1972) believes that all people have an innate "will to meaning" or basic striving to find and fulfill meaning and purpose. Paloutzian (1981) conceptualizes this striving by means of a cognitive need model, similar to the Gestalt principle of closure. People have cognitive needs to perceive wholeness, pattern, purpose or meaning in stimuli, including themselves in relation to the world. Frankl (1969) suggests that the frustration of
the will to meaning can result in negative consequences, such as neurotic symptoms and substance abuse. Frankl (1969, 1972) emphasizes that the direct pursuit of happiness is futile and that happiness is available only as a by-product of personally meaningful, fulfilling other-directed activities. Toler (1975) found that the personal values of alcoholics and drug addicts were more concerned with personal goals and less concerned with social goals than were those of nonaddicts. An inverse relationship appears to exist between sense of purpose in life and values associated with a search for momentary pleasure (Crandall & Rasmussen, 1975; Simmons, 1980). Simmons (1980) also found that a sense of purpose in life was reflected in current satisfactions and in future aspirations, but was independent of the quality of the individual's past living conditions. The optimistic implication of this finding for alcoholics in treatment is that past hardship is not an impenetrable barrier to gaining or regaining a sense of purpose in life.

Psychoanalytic therapy with alcoholics has been notoriously ineffective. Johnson, Griffin-Shelley and Sandler (1987) present a cogent argument for the superiority of an existential approach. Existential therapy addresses issues of death, freedom, isolation and meaninglessness, which are immediately relevant to the alcoholic's situation. Johnson et al. (1987) suggest that so many alcoholics respond positively to A.A. because it addresses these issues
through its spiritual language and principles. Johnson et al. believe that their existential approach can integrate the language of psychology and spirituality by addressing in therapy the universal life crises which the alcoholic has such difficulty resolving. One of these crises is the attainment of life meaning and the recognition that if our lives are to have meaning, it will be of our own creation. The existential approach of Johnson et al. (1987) translates into a pragmatic and present-oriented therapy, despite the common association of existentialism with abstraction.

Recovering alcoholics often report an increased sense of purpose in life concomitant with behavioural changes in the areas of drinking, family relations and employment (Crumbaugh, Wood, & Wood, 1980). Little research has been carried out to explore the role of purpose in life in recovery from alcoholism, although the theoretical and empirical literature supports the notion that lack of purpose in life is prevalent among alcoholics (Crumbaugh, 1968; Crumbaugh & Carr, 1979; Frankl, 1969; Jacobson, Ritter, & Mueller, 1977). Frankl acknowledges the multidetermined nature of alcoholism, while putting forth the view that filling up the existential vacuum is a prerequisite for therapeutic success (Crumbaugh et al., 1980, Foreword). The majority of empirical studies regarding purpose in life and addiction to alcohol or drugs have been investigations of the role of purpose in life in the development of substance abuse problems.
Purpose in Life and the Development of Substance Abuse Problems

A number of studies have suggested an inverse relationship between a sense of meaning or purpose in life and degree of substance abuse. Padelford (1974) found a significant negative relationship between the extent of student drug involvement and Purpose in Life Test (PIL) scores. Harlow, Newcomb, and Bentler (1986), using confirmatory factor analysis and structural equation procedures, showed that, for females, purpose in life moderated the relationships between self-derogation and substance abuse, and between depression and substance abuse. In other words, the females did not tend to abuse drugs directly as a coping mechanism for feelings of self-derogation or depression, but indirectly as a consequence of a felt lack of life purpose. The males in the Harlow et al. (1986) study were more apt to use drugs directly as a coping mechanism, whereas their suicidal ideation was mediated by a lack of purpose in life. In a related study, Newcomb, Bentler, and Collins (1986) found that adolescent dissatisfaction with lack of life opportunities significantly increased young adult alcohol use when initial levels of alcohol consumption were controlled. Newcomb and Harlow (1986) examined the roles of perceived loss of control and meaninglessness as mediators in the relationship between uncontrollable stress and substance abuse in two
samples of adolescents. They proposed a model in which stressful events lead to a loss of personal control, which leads to a sense of life meaninglessness, which in turn leads to substance abuse. The model fit the younger sample well, while the relationship between stressful events and substance abuse was more direct in the older sample. Newcomb and Harlow (1986) suggest that the mediating constructs played a smaller role for the older sample because the response (drug use) to stress had become overlearned and automatic. The pathway to drug abuse mediated by lack of meaning accounted for a small but significant portion of the variance, indicating it is one of several alternate pathways. Although research has been carried out which links the development of substance abuse problems to a lack of purpose or meaning in life, to date few studies have examined how this sense of purpose might be attained or regained, and whether this is a significant aspect of recovery. Before examining these questions, research on some other variables which are related to the recovery process will be presented.

**Patient Characteristics Related to Recovery in Inpatient Treatment Programs**

Given the diversity of findings on alcoholism treatment, definitive conclusions regarding the relationship of patient characteristics to treatment outcome are rare. Reasons for this lack of consensus include differences among studies in: how data of treatment drop-outs and those lost
to follow-up are handled (Emrick & Hansen, 1983; Gerson, Skvarch, McKenney, & Carter, 1985); how their samples are composed (Emrick & Hansen, 1983; Miller, 1986; Singer, 1983); when follow-up procedures are conducted (Emrick & Hansen, 1983); and choice of outcome measures (Emrick & Hansen, 1983; Voris, 1981-82). In addition, the absence of control groups contributes to the lack of definitive conclusions in this area of research (Cernovsky, 1986). Until studies are more comparable, the number of general conclusions which can be drawn will remain limited. Nonetheless, the research indicates that several patient variables are related to inpatient alcoholism treatment outcome.

Global level of psychopathology in alcoholics is negatively related to treatment outcome (McLellan, Luborsky, & O'Brien, 1986; Rounsaville, Dolinsky, Babor, & Meyer, 1987), as is a sociopathic personality (Pettinati, Sugerman, & Maurer, 1982). Being married, employed and participating in aftercare are all associated with positive treatment outcome (Ornstein & Cherepon, 1985). Clinical depression can be primary or secondary to a drinking problem, with possible differential treatment implications resting upon the distinction (McMahon & Davidson, 1985). Conceptual level, which reflects elements of interpersonal and cognitive development, interacts with degree of structure in psychotherapy to produce varying outcomes in matched and
unmatched patients (McLachlan, 1974). Higher levels of physiological dependence on alcohol make abstinence the treatment goal of choice (Miller & Joyce, 1979; Polich, Armor, & Braiker, 1980). Patient motivation is influenced by the perceived adverse effects of drinking (Hingson, Mangione, Meyers, & Scotch, 1982), social factors (Nordstrom & Berglund, 1986), and characteristics of treatment personnel (Miller, 1985). Active coping styles which are flexible, and which include cognitive coping responses, are associated with prevention of relapse (Billings & Moos, 1981; Litman, Eiser, Rawson, & Oppenheim, 1979). While abstinence may be an appropriate treatment goal, the teaching of the inevitability of relapse upon taking one drink may be ill-advised (Heather, Winton, & Rollnick, 1982).

Four of these variables -- depression, demographic characteristics, alcohol dependence and motivation -- may be linked with purpose or lack of purpose in life. Their possible relationships with a sense of life purpose will be discussed, following a more detailed presentation of the research on each variable.

**Depression**

Clinicians and researchers have long noted a strong association between alcoholism and depression. For example, Hasin, Endicott, and Lewis (1985) assessed levels of drug and alcohol abuse in a large sample of patients with affective syndromes. They found that almost one quarter of
the patients had abused alcohol or drugs at a clinically significant level during their current episode. Schuckit (1983) points out that one-third to one-half of alcoholics display depressive symptoms at some time during the course of their illness. McMahon and Davidson (1985) found that 60% of their group of V.A. inpatient alcoholics showed evidence of significant clinical depression at intake. Schuckit (1983) emphasizes the clinical importance of distinguishing between primary affective disorder accompanied by an increase in drinking, and primary alcoholism with secondary affective disturbances. McMahon and Davidson (1985) subdivided alcoholics who showed significant clinical depression at intake into enduring and transient depressive subgroups, and identified demographic and psychometric variables which discriminated between the two subgroups. Such differentiation is important because alcoholic patients with enduring depression may require supplementary pharmacologic and/or psychotherapeutic interventions in addition to the standard alcoholism treatment.

Demographic Variables

Although several demographic variables have been shown to be related to treatment outcome, none has correlated significantly and in the same direction every time it has been analyzed (Emrick & Hansen, 1983). It is nonetheless important for researchers to describe their
samples in detail so that the mechanisms by which these
demographic characteristics influence treatment outcome can
be further elucidated. Age, employment status and marital
status appear to be important demographic variables
influencing alcoholics' treatment outcomes. Ornstein and
Cherepon (1985) followed up 1210 male alcoholic inpatients
for two years. They found that the best predictors of
outcome were participation in aftercare and number of
aftercare visits. Demographic variables which were
correlated with positive outcome were being older, married,
and employed. Levinson and McLachlan (1973) also found
positive outcome correlations with age and employment.
Nathan and Skinstad (1987), however, describe several
studies suggesting that younger patients are better
treatment prospects than older patients. Being employed is
the variable which has most consistently been associated
with better outcome in the literature (Elal-Lawrence, Slade,
& Dewey, 1986; Emrick & Hansen, 1983; Nathan, 1986; Smart,
1978).

Gender is another variable which should be included in
the description of research samples. Most research studies
on alcoholism have involved samples which were exclusively
or mainly male. There is a lower rate of alcoholism among
women than among men. In addition, women are much less
likely than men to enter treatment (Beckman, 1984; Nathan &
Skinstad, 1987). Once in treatment, women and men seem to
benefit from it to approximately the same extent (Beckman,
1984; Nathan & Skinstad, 1987), although a few studies have suggested otherwise (e.g., Seelye, 1979). Alcoholic women may have different treatment needs than alcoholic men (Beckman, 1984; Straussner, 1985). The clinical course, symptom patterns, and family history of female alcoholics differ from those of male alcoholics (Beckman, 1975; Schuckit, 1972; Straussner, 1985; and Wanberg & Horn, 1970). Alcoholic drinking in women typically has a later onset and faster progression, and is more often secondary to affective illness (Schuckit, 1972). Women are more likely to drink alone at home (Wanberg & Horn, 1970), and are more likely than men to begin heavy drinking in response to a very stressful event, such as a death or divorce (Beckman, 1975).

Alcohol Dependence

Alcohol dependence is viewed as a continuous phenomenon, the alcohol dependence syndrome, in the ICD-9 (World Health Organization, 1978). The revised version of the DSM-III (DSM-III R, American Psychiatric Association, 1987) includes diagnoses of Alcohol Abuse and Alcohol Dependence, and acknowledges variation in severity by including the subcategories of mild, moderate and severe in the diagnostic category of Alcohol Dependence. The World Health Organization ICD-9 (1978) diagnosis of alcohol dependence syndrome includes the spectrum of compulsive alcohol use, with or without evidence of physiological dependence. Edwards and Gross (1976) describe the elements
of this alcohol dependence syndrome as follows: narrowing in the repertoire of drinking behavior; salience of drink-seeking behavior; increased tolerance to alcohol; repeated withdrawal symptoms; repeated relief or avoidance of withdrawal symptoms by further drinking; subjective awareness of a compulsion to drink; and reinstatement of the syndrome after abstinence. These elements need not necessarily all be present in a particular individual, and they may be present to varying degrees, thus giving the syndrome a substantial range of severity (Edwards & Gross, 1975). Edwards and Gross (1976) propose that the alcohol dependence syndrome involves both a biological process and aberrant learning. Research on alcohol dependence suggests that it may have implications for treatment. Degree of alcohol dependence has been found to be negatively correlated with treatment outcome in some studies (e.g., Rounsaville et al., 1987) but not in others (e.g., Heather, Rollnick, & Winton, 1983). The finding that highly dependent individuals had lower relapse rates if abstinent, while less dependent individuals had lower relapse rates if drinking in a controlled fashion (Miller & Joyce, 1979; Polich et al., 1980) suggests that level of alcohol dependence has potentially important treatment implications. For example, measures of dependence could be useful for assigning patients to abstinence-oriented or controlled drinking treatment programs (Skinner, 1981).
Motivation for Treatment

Motivation is thought to be a potent variable in treatment process and outcome (Miller, 1985). However, there is no general agreement on how to define and measure motivation. Poor client motivation has long been used to explain lack of treatment success, especially in the alcoholism field (Miller, 1985). Motivation is a complex concept (Orford & Hawker, 1974) which has sometimes been used too casually, either as a synonym for good treatment outcome or as a synonym for unquestioning acceptance of authority. When motivation is viewed strictly as a static client trait, it tends to carry a moralizing or blaming connotation, which can easily engender self-fulfilling prophecies (Miller, 1985). An experimental study by Leake and King (1977) clearly demonstrates the power of expectancy effects in this context. Alcoholism counselors were informed that personality tests indicated that certain alcoholics were likely to undergo a dramatic recovery through treatment. The counselors later rated these patients, who in reality were selected at random, as more motivated, punctual and cooperative than their peers. These patients also had significantly fewer absences, fewer premature terminations from treatment, more sober days and fewer slips than their fellow patients.

Motivation for treatment has been defined in many ways. Miller (1985) concludes that patients tend to be judged as motivated if they accept the therapist's view of
the problem, if they feel distressed, and if they comply with the treatment program. A comparison by Krassnoff (1976) of patients who completed or withdrew from a hospital alcoholism treatment program lends some support to the idea that compliance and approval-seeking are traits which influence early response to treatment. Completers had higher MMPI Lie scale scores and higher Marlowe-Crowne Social Desirability Scale scores than those who withdrew from treatment. These results suggest that the completers had a greater need to present themselves in a socially desirable way and perhaps a greater need for approval.

The results of a large-scale longitudinal survey (Hingson et al., 1982) indicate that people with drinking problems are most likely to seek treatment if they perceive important life areas (relationship with spouse, work, friendships, health) to be adversely affected by their drinking. It may be that the extent of this perception forms a significant cognitive aspect of motivation. Rees, Beech, and Hore (1984) found that patients who made five or more visits to an outpatient alcoholism clinic rated the effects of drinking on their work as "serious" and rated their social lives as "worse" more often than those who made fewer visits. Nordstrom and Berglund (1986), in a retrospective study, found that 70% of their recovered alcoholic subjects reported some kind of social factor (negative social consequences, changes in social
circumstances or social pressure to stop drinking) as the main cause of improvement. Only 19% attributed their improvement mainly to treatment, while 60% stated that treatment had been of some importance. Nordström and Berglund (1986) noted that their subjects frequently reported the interaction of several change-promoting factors occurring close together in time.

McGovern and Caputo (1983) found that the Motivation for Treatment Scale (MTS), a brief test which assesses what behavioural changes and treatment measures an alcoholic patient is willing to undergo, was positively correlated with length of stay in a detoxification unit and with acceptance of a referral for more treatment. However, the MTS score accounted for a relatively small portion of the variance in these two variables. Using the same scale, Smart and Gray (1978) found an inverse U-shaped relationship between motivation and length of stay, with a moderate level of motivation predictive of staying in treatment. However, this relationship was also complicated by an interaction between motivation and the length of time that drinking had been a problem.

Miller (1985) discusses some attempts to increase patient motivation and he suggests further exploration of some promising motivational interventions. These include: maintaining contact with the patient after the initial visit, through letters or phone calls; shortening the length of time a patient must wait for treatment to commence;
helping the patient to set specific goals; providing models for patients to increase the accuracy of their expectations of treatment; providing some choices to the patient regarding his treatment; and ensuring that therapists are empathic and optimistic about prognosis, and not hostile. In summary, research on motivation in alcoholism treatment seems to point to a conceptualization of treatment motivation, not as a trait, but as a quality which emerges from interactions among person variables, life experiences and the treatment environment.

The Relationship Between Spiritual and Nonspiritual Variables

Recovery from alcoholism can be viewed as a process where sense of purpose in life, a spiritual variable, is linked to several nonspiritual variables in a mutually reciprocal way. Positive behavioural, affective and cognitive changes which result in improved interpersonal and employment functioning may lead to an increased sense of purpose in life as a by-product. A heightened sense of purpose in life may then propel the alcoholic to continue to consolidate his gains. The changes most relevant to purpose in life would be those involving engagement of the alcoholic with other persons and with meaningful tasks (Crumbaugh et al., 1980). The sense of purpose in life of an alcoholic who is actively involved in an effective treatment program will likely increase during treatment (Crumbaugh & Carr,
1979; Jacobson et al., 1977). It might be that an increased sense of life purpose may help an individual to maintain sobriety once he leaves the treatment facility.

Some pre-treatment characteristics of the alcoholic may influence the process of changing sense of purpose in life by constraining or facilitating change. For example, it may be more difficult for a highly physically dependent alcoholic to replace alcohol with other sources of gratification than it would be for a less dependent individual. Alternatively, it may be the case that once a person is committed to the recovery process, physiological dependence plays a minor role. Motivation is thought to play an important role in treatment outcome. One aspect of motivation is the extent to which the alcoholic perceives adverse effects of alcohol on major areas of his life. If the perceived adverse effects are great enough, then some improvement in these life areas might well lead to a substantial increase in sense of purpose in life, which would in turn help to continue the process of recovery. Frankl (1969) suggests that people can find life meaning and purpose regardless of the constraints of their life contexts. However, it may be easier for someone with at least a minimal level of stability (e.g., employment, no legal charges pending) than for someone without it.

As stated above, many alcoholics are depressed. Some depressed alcoholics are primary alcoholics who are depressed as a result of drinking, while others are primary
depressives who drink to relieve their depression. Crumbaugh and Maholick (1964) point out that lack of life meaning can be both a cause and an effect of depression, and also that both conditions can result from other causes. Once a depressed alcoholic abstains from alcohol, the rate at which his depression will lift depends upon the nature of the depression. Primary alcoholics tend to experience a rapid improvement in mood, while the depression of secondary alcoholics may remain or worsen until it is dealt with more directly. Thus, the two subgroups of depressed alcoholics may respond differently to alcoholism treatment along the dimension of purpose in life.

Measuring Purpose in Life: Crumbaugh and Maholick's Inventory

The Purpose in Life Test (PIL) is a 20-item attitude scale designed to measure Frankl's concept of "existential vacuum" -- the failure to find meaning and purpose in life (Frankl, 1972). Based on Frankl's conceptions, Crumbaugh and Maholick (1964), authors of the PIL, defined "purpose in life" as "the ontological significance of life from the point of view of the experiencing individual" (p. 201). They attempted to show that the PIL measures "something which is (a) what Frankl is referring to by the phrase in question, (b) different from the usual pathology, and (c) identifiable as a distinguishing characteristic of pathological groups in contrast to 'normal' populations"
(p. 201). Crumbaugh and Maholick (1964) found that PIL scores were highly correlated with scores on the Frankl Questionnaire, an "informal" measure of existential frustration. The PIL distinguished between patient and nonpatient populations, yet did not simply measure aspects of psychopathology measured by the MMPI, except for some overlap with the Depression scale. Some correlations with more general measures of personality have been found for some samples. These include a positive correlation with internal locus of control in a sample of Air Force men and a sample of hospitalized schizophrenic men (Yarnell, 1971), a negative correlation with present state of anxiety in these two samples (Yarnell, 1971), and a negative correlation with the Eysenck Personality Inventory Neuroticism scale in a sample of neurotic outpatients (Pearson & Sheffield, 1974).

Support for construct validity was provided by Reker and Cousins (1979), who showed that high PIL scores were associated with satisfaction with current life and with positive expectations of the future. They also found PIL scores to be inversely related to Present-Future Life discrepancy scores on the Life Areas Survey. The absence of significant correlations between the California Personality Inventory subscales and the PIL (Garfield, 1973) lends support to Crumbaugh and Maholick's assertion that the PIL measures something different than existing inventories of personality assessment. Harlow, Newcomb and Bentler (1987) found significant (p<.001) correlations between a slightly
revised version of the PIL and three-item scales of happiness ($r=0.84$), meaninglessness ($r=-0.89$), and suicidality ($r=-0.57$). Crumbaugh (1968) found low correlations between the PIL and education and income levels, supporting Frankl's assertion that purpose in life is independent of conventional notions of success. Simmons (1980) and Crandall and Rasmussen (1975) used the PIL in their studies of values. Both studies found negative associations between PIL scores and values associated with search for momentary pleasure. PIL scores were positively associated with values of responsibility, self-control (Simmons, 1980) and intrinsic religiosity (Crandall & Rasmussen, 1975).

Paloutzian (1981) used the PIL to study four groups of religious converts and one group of nonconvert controls. The four convert groups differed in the length of time they had been converted (less than one week, one week to one month, one month to six months, longer than six months). The newest converts (less than one week) had the highest PIL scores; the scores of those converted for up to one month were as low as those of the controls; the scores of those converted for up to six months were intermediate, as were those of the group converted for longer than six months. Although the study was cross-sectional, it suggests an interesting pattern which might apply to other major life changes: a sharp rise in PIL, followed by a drop, followed
by another less dramatic rise and stabilization. Jacobson et al. (1977) and Crumbaugh and Carr (1979) found that the PIL scores of alcoholics in inpatient treatment programs increased significantly during treatment. Because the patients were not followed up, there is no information on later levels of PIL in the groups studied. Further research on the relationship of the PIL to measures of depression and social desirability is needed (L.L. Harlow, personal communication, November 10, 1989). Nonetheless, the PIL has yielded interesting and useful findings regarding a range of phenomena concerning both pathological and nonpathological populations. It may prove to be a valuable tool in the study of treatment processes also.

Statement of the Problem

Graham and Strenger (1988) emphasize the need for more research to clarify relationships among subgroups of alcoholics, treatment processes, and outcome measures. Research has suggested that an increasing sense of purpose in life is one effect of inpatient treatment for alcoholism (Crumbaugh and Carr, 1979; Jacobson et al., 1977). But how does this happen? And is purpose in life a factor which is significantly related to treatment outcome? The present study aimed to extend the studies of Jacobson et al. (1977) and Crumbaugh and Carr (1979) by investigating the relationship between increase in purpose in life during inpatient treatment and treatment outcome as measured three
The following hypotheses were proposed:

1. Alcoholics prior to treatment would have depressed PIL scores compared with non-alcoholic norms.

2. PIL scores of alcoholics undergoing treatment would increase significantly during treatment, while those of comparable alcoholics on a waiting list for treatment would not.

3. Patient characteristics which have been associated with treatment outcome might predispose patients to respond to treatment with increasing sense of purpose in life. These pre-treatment patient variables are: motivation for treatment, level of depression, level of alcohol dependence, employment status and legal status.

4. An increase in PIL score during treatment would be positively associated with continuing in aftercare.

5. The PIL score at the end of inpatient treatment and the PIL change score would be positively associated with measures of outcome three months following the completion of inpatient treatment.
CHAPTER II

METHOD

Subjects

The subject sample included people from three inpatient programs (facilities A, B and C) and from a waiting list for treatment at facility A.

Treatment Programs

Treatment facility A is located in a large Ontario city and treatment facilities B and C are both located in a smaller city in Southwestern Ontario. The duration of facility A’s inpatient program is 21 days. Different aspects of alcoholism are addressed in program A by means of group therapy, medical information, relaxation training, assertiveness training, exercise, nutrition, spiritual aspects, goal planning, films and family programs. The duration of the weekly aftercare program is two years. Facility B’s program is based on the Alcoholics Anonymous model, with an emphasis on spirituality and confrontation by fellow alcoholics. The treatment program consists of individual and group counseling, lectures given by the director of the program, contact with alumni, and A.A. meetings. Facility B offers 28 day, 60 day and 90 day inpatient programs. Patients at facility B are expected to participate in aftercare for an indefinite period of time. Aftercare includes sessions at facility B and/or A.A. meetings. Facility C is a small women’s residential treatment center, offering 28 day, 60 day and 90 day
programs. The program at Facility C includes individual, group and family therapy, A.A. meetings, contact with alumnae, films and lectures. Patients contract individually for aftercare arrangements. The patients at all three facilities did not pay for their treatment; the agencies were funded by external sources.

The Groups

One hundred and forty-six people who were in treatment or awaiting treatment for alcohol addiction (in some cases in addition to other drug addictions) comprised the subject sample. There were four groups of subjects in the sample. Table 1 presents demographic data for the four groups, as well as data on drug use and length of stay in the treatment center. Initially an effort was made to exclude cross-addicted patients. However, it soon became apparent that this exclusion criterion was unrealistic.

Group one

At facility A, patients who were heavy users of cocaine or heroine were not recruited. Fifty-five inpatients (41 male, 14 female) participated in the study. The majority (69%) used no drugs other than alcohol, and for a larger majority (89%) alcohol was considered by the patient to be the main problem substance. The remaining 11% considered prescription drugs to be more of a problem for them than alcohol.
Table 1

Demographic Characteristics, Primary Abused Substance and Length of Treatment Programs

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Facility A</th>
<th>Facility B</th>
<th>Facility C</th>
<th>Waiting List</th>
</tr>
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<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>74.5</td>
<td>92.5</td>
<td>0.0</td>
<td>86.1</td>
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<tr>
<td>female</td>
<td>25.5</td>
<td>7.5</td>
<td>100.0</td>
<td>13.9</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unemployed</td>
<td>29.1</td>
<td>25.0</td>
<td>66.7</td>
<td>13.9</td>
</tr>
<tr>
<td>employed</td>
<td>58.2</td>
<td>55.0</td>
<td>26.7</td>
<td>69.4</td>
</tr>
<tr>
<td>student</td>
<td>1.8</td>
<td>15.0</td>
<td>6.7</td>
<td>2.8</td>
</tr>
<tr>
<td>homemaker</td>
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<td>2.5</td>
<td>0.0</td>
<td>2.8</td>
</tr>
<tr>
<td>retired</td>
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<td>0.0</td>
<td>11.1</td>
</tr>
<tr>
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<td>2.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
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<td></td>
</tr>
<tr>
<td>married/common law</td>
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<td>45.0</td>
<td>20.0</td>
<td>63.9</td>
</tr>
<tr>
<td>single</td>
<td>23.6</td>
<td>32.5</td>
<td>46.7</td>
<td>19.4</td>
</tr>
<tr>
<td>separated/divorced</td>
<td>25.5</td>
<td>22.5</td>
<td>33.3</td>
<td>13.9</td>
</tr>
<tr>
<td>widowed</td>
<td>5.5</td>
<td>0.0</td>
<td>0.0</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Education Completed</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>elementary</td>
<td>16.4</td>
<td>22.5</td>
<td>33.3</td>
<td>11.1</td>
</tr>
<tr>
<td>high school</td>
<td>41.8</td>
<td>55.0</td>
<td>53.3</td>
<td>55.6</td>
</tr>
<tr>
<td>college/university</td>
<td>27.3</td>
<td>17.5</td>
<td>13.3</td>
<td>25.0</td>
</tr>
<tr>
<td>graduate/professional</td>
<td>14.5</td>
<td>5.0</td>
<td>0.0</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Legal Problems</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>present</td>
<td>14.5</td>
<td>30.0</td>
<td>46.7</td>
<td>16.7</td>
</tr>
<tr>
<td>absent</td>
<td>85.5</td>
<td>70.0</td>
<td>46.7</td>
<td>80.6</td>
</tr>
<tr>
<td>no answer</td>
<td>0.0</td>
<td>10.0</td>
<td>6.7</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Primary Abused Substance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alcohol</td>
<td>89.1</td>
<td>72.5</td>
<td>60.0</td>
<td>100.0</td>
</tr>
<tr>
<td>cocaine</td>
<td>0.0</td>
<td>7.5</td>
<td>26.7</td>
<td>0.0</td>
</tr>
<tr>
<td>heroine</td>
<td>0.0</td>
<td>7.5</td>
<td>13.3</td>
<td>0.0</td>
</tr>
<tr>
<td>prescription drugs</td>
<td>10.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>other</td>
<td>0.0</td>
<td>12.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Length of Stay</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>completed 21-day program</td>
<td>87.3</td>
<td>0.0</td>
<td>0.0</td>
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</tr>
<tr>
<td>completed 28-day program</td>
<td>0.0</td>
<td>30.0</td>
<td>6.7</td>
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</tr>
<tr>
<td>completed 60-day program</td>
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<td>2.5</td>
<td>13.3</td>
<td>---</td>
</tr>
<tr>
<td>completed 90-day program</td>
<td>0.0</td>
<td>25.0</td>
<td>33.3</td>
<td>---</td>
</tr>
<tr>
<td>incomplete program</td>
<td>12.7</td>
<td>42.5</td>
<td>40.0</td>
<td>---</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>40.40</td>
<td>33.35</td>
<td>27.07</td>
<td>41.39</td>
</tr>
<tr>
<td>SD</td>
<td>12.77</td>
<td>10.12</td>
<td>7.47</td>
<td>12.34</td>
</tr>
<tr>
<td>n</td>
<td>55</td>
<td>40</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>28,120</td>
<td>31,980</td>
<td>13,550</td>
<td>43,575</td>
</tr>
<tr>
<td>SD</td>
<td>25,268</td>
<td>32,606</td>
<td>10,803</td>
<td>31,535</td>
</tr>
<tr>
<td>n</td>
<td>50</td>
<td>35</td>
<td>8</td>
<td>32</td>
</tr>
</tbody>
</table>
Group two

Forty (37 male, 3 female) inpatients at facility B comprised the second treatment group. Fifty-five percent of these inpatients used other drugs in addition to alcohol. Alcohol was considered the main problem substance of 73% of this group.

Group three

The third treatment group included 15 female inpatients at facility C. Seventy-three percent of these women reported using drugs in addition to alcohol. Sixty percent considered alcohol to be their main problem substance. Cocaine and heroine were considered the main problem substances of 27% and 13% of this group, respectively.

Group four

Thirty-six (31 male, 5 female) alcohol-addicted people on the waiting list for treatment at facility A comprised the waiting list nonequivalent control group. All 36 rated alcohol as their main problem substance and 94% reported not using other drugs.

Group differences

Comparisons of age, income, employment status, marital status, legal status and education level among the three treatment groups revealed significant differences for age ($\chi^2[2, n = 108] = 10.22, p < .0001$), legal status ($\chi^2[2, n = 105] = 9.01, p < .01$) and employment status ($\chi^2[8, n = 110] = 19.51, p < .01$). Patients at facility A
were significantly ($p < .05$) older ($M = 40.4$) than patients at facilities B and C ($M = 33.4$ and $M = 27.1$, respectively). The ANOVA summary is presented in Appendix I. Patients at facilities B and C were more likely than patients at facility A to have legal problems, and patients at facility C were more likely than patients at facilities A and B to be unemployed.

Comparisons between the facility A treatment group and the facility A waiting list group on age, income, employment status, marital status, legal status and education level revealed a significant difference between the two groups on income level ($F[1, 80] = 6.00$, $p < .05$; see Appendix I). The waiting list group's mean income ($43,575$) was higher than the treatment group's mean income ($28,120$).

**Materials**

**Purpose in Life Test**

Part A of the Purpose in Life Test (PIL) is a 20-item 7-point attitude scale (see Appendix A) designed to measure Frankl's concept of "existential vacuum" (Crumbaugh & Maholick, 1964). Validity data have been presented in Chapter 1. The research on the temporal stability and internal consistency reliabilities of the PIL have been found to be very good. Split-half reliabilities of .87 and .92 were reported by Reker and Cousins (1979) and by Crumbaugh (1968), respectively. Test-retest reliabilities of
.83 and .79 were reported by Meier and Edwards (1974) and Reker and Cousins (1979), respectively.

**Beck Depression Inventory**

The Beck Depression Inventory (BDI) is a 21-item measure (see Appendix A) of syndromal depression (Kendall, Hollon, Beck, Hammen, & Ingram, 1987). It assesses the presence and severity of affective, cognitive, motivational, vegetative and psychomotor components of depression. The BDI has good to excellent validity (Corcoran and Fischer, 1987), shown by significant correlations with a number of other depression measures and correlations with clinicians' ratings of depression. In a sample of 99 chemically dependent male inpatients, the BDI correlated .67 with clinicians' global ratings of depression and .68 with another rating based on 13 dichotomous items from DSM-III criteria (Schaefer et al., 1985). Dorus, Kennedy, Gibbons, and Ravi (1987) used the BDI to monitor levels of depression in alcoholics during active drinking, withdrawal and abstinence phases. Based on correlations between BDI scores and NIMH Diagnostic Interview Schedule (DIS) results, Dorus et al. (1987) concluded that the BDI is a valid instrument for screening for depression in alcoholic patients. Split-half reliabilities ranging from .78 to .93 have been reported (Corcoran and Fischer, 1987), indicating good to excellent internal consistency. Test-retest reliabilities have been good to very good, ranging from .48 for
psychiatric patients after three weeks to .74 for undergraduate students after three months (Corcoran & Fischer, 1987).

**Alcohol Dependence Scale**

The Alcohol Dependence Scale (ADS; Skinner & Horn, 1984) is a 25-item scale (see Appendix A) which measures the extent to which the use of alcohol has progressed from psychological involvement to a physical dependence syndrome. The ADS was derived by factor analysis from four scales of the Alcohol Use Inventory (Skinner, 1981). These scales are: (1) loss of behavioural control; (2) psychophysical withdrawal symptoms; (3) psychoperceptual withdrawal symptoms; and (4) obsessive-compulsive drinking style. Scores on the ADS correlate highly with scores on the Michigan Alcoholism Screening Test, with the prevalence of alcohol-related digestive disorders, with quantity of alcohol consumed, and with the probability of keeping the first treatment appointment (Skinner & Horn, 1984). The internal consistency reliability (alpha) was found to be excellent at .92; the test-retest reliability is also .92 (Skinner & Horn, 1984).

**Personality Research Form Desirability Scale (PRF-Dy)**

The Desirability Scale of the Personality Research Form (PRF- Form E; Jackson, 1974) is a 16-item True-False scale (see Appendix A) which measures the degree to which a person presents a favorable picture of himself in responses to
personality statements. Equal numbers of true and false items were included in the PRF to suppress the effects of the response style of acquiescence. High scores on the Desirability scale sometimes indicate impression management (Jackson, 1974), a form of response bias which could contaminate scores on self-report measures such as the PIL. Factor analyses of personality tests have often revealed a high degree of desirability variance, the suppression of which was a goal in the construction of the PRF (Jackson, 1974). The PRF Desirability scale was developed through a series of steps. A large set of heterogeneous items scaled for desirability and for lack of psychopathological content formed the initial pool of items. Sixty from each extreme of the distribution were chosen, examined for content homogeneity and edited. Of these items, 107 were administered to 305 college students, subjected to item analysis and examined to ensure content heterogeneity (Jackson, 1974). Norms and reliability data for the PRF-Form E are provided for samples of college students, psychiatric patients, military personnel and school children. The split-half reliability of the Desirability scale was found to be .52 and .68 for the psychiatric sample and college sample, respectively (Jackson, 1974).

**Questionnaires**

**Treatment group**

The pre-treatment questionnaire (Appendix B)
included questions on demographic characteristics and perceptions of the effect of alcohol on five life areas. Demographic and motivation variables were obtained from this questionnaire, as described in Appendix F.

A questionnaire regarding aftercare plans (see Appendix C) was given to the patient groups at their post-treatment testing sessions to obtain an aftercare decision variable (see Appendix F).

A follow-up questionnaire (Appendix D) was sent to completers of the treatment programs, along with the PIL, three months after the completion of inpatient treatment. The outcome variables of drinking/drug use status and changes in functioning in five life areas were obtained from this questionnaire (see Appendix F). Four drinking/drug use categories were defined: abstinent (fewer than one occasion of alcohol/drug use per month over the three months [Heather & Tebbutt, 1989]); improved (categorical rating of "improved" and consumption frequency less than two-thirds of pre-treatment frequency); relapsed (categorical rating of "relapsed", or categorical rating of "improved" with consumption frequency equal to or greater than two-thirds of pre-treatment frequency); unknown (no information). The one-third reduction criterion to distinguish between improved and relapsed cases was adapted from Heather and Tebbutt, 1989.

In addition, the patients' participation or lack of
participation in aftercare was established as a verification of the aftercare decision variable obtained in the post-treatment data collection.

A similar follow-up questionnaire (Appendix D) was sent to treatment personnel and nontreatment corroborators in cases where the patient gave consent for their participation.

**Waiting list group**

In the first testing session, a questionnaire identical to the treatment groups' pre-treatment questionnaire was given to the waiting list group to obtain demographic and motivation variables (see Appendices B and F).

A questionnaire (Appendix E) inquiring whether and when the waiting list subjects had used alcohol since the first testing session was sent to them three weeks later, along with their second PIL and BDI.

**Design and Procedure**

**Design**

The relationships of selected patient variables to PIL change scores, the relationship of PIL change scores to participation in aftercare, and the relationship of post-treatment PIL scores and change scores to patient functioning at three months post-treatment were examined. Four categories of variables were analyzed for their predictive value with respect to PIL scores; these were a motivation-related variable, demographic characteristics,
degree of physiological dependence on alcohol, and depression. Patients in the three treatment facilities were tested at the beginning and end of their inpatient treatment programs. In addition, a comparison group of alcoholics on a waiting list for treatment at facility A was tested twice, with an interval of three weeks between testings. This group provided a comparison for the facility A treatment group. Facilities B and C did not have waiting lists. Follow-up of the treatment groups at three months tapped drinking status and functioning in important life areas. These data were obtained from patients and, wherever possible, corroborated by a close friend or relative or by treatment personnel.

The comparison between the facility A treatment and waiting list groups falls into Campbell and Stanley's (1966) Nonequivalent Control Group Design, because the patients were not randomly assigned to waiting list or treatment groups. The relationships examined between patient variables and PIL change scores and between PIL post-treatment score, PIL change score and short-term outcome were correlational in nature.

Procedure

Treatment groups

The Purpose in Life Test (PIL), Beck Depression Inventory (BDI), Alcohol Dependence Scale (ADS) and Personality Research Form Desirability Scale (PRF-Dy) were administered to consenting (see Appendix G) inpatients
at facilities A, B and C at the commencement of their treatment. As well, demographic data, motivation data and date of last drink were obtained at that time. At the end of inpatient treatment the patients were given the PIL and BDI again and asked about their aftercare decision. Three months after completion of their inpatient programs, the patients were sent the PIL and a questionnaire assessing drinking status, ratings of life areas, and participation in aftercare. These follow-up data were corroborated by a person close to the patient and/or treatment personnel whenever possible.

All of the inpatients (n=110) were given the pre-treatment questionnaires. Patients who completed their inpatient programs were administered the post-treatment questionnaires. At facility A, 48 of the 55 patients completed treatment. Forty-five of these treatment completers were available to fill out the post-treatment questionnaires. Twenty-three of the forty patients at facility B completed their treatment programs. Twenty-one of these 23 were able to complete the post-treatment questionnaires. Eight of the fifteen facility C patients completed treatment and seven of the eight completers filled out the post-treatment questionnaires.

Follow-up data were obtained from at least one of the patient, treatment center, or other corroborator for 39 of the 45 patients at facility A for whom follow-up
questionnaires were sent; for 19 of the 21 facility B patients for whom follow-up questionnaires were sent; and for seven of the eight facility C patients for whom follow-up questionnaires were sent.

**Waiting list group**

The waiting list group included 36 consenting (see Appendix G) alcoholics waiting for treatment at facility A. The PIL, BDI, ADS and PRF-Dy were administered to the waiting list group, and demographic data, motivation data and date of last drink were obtained at that time. Three weeks later the waiting list group was sent the PIL and BDI to do again. They were also asked whether and when they drank during the three week interval and whether their treatment programs had commenced.

Of the 36 people in the waiting list group who completed the first set of questionnaires, 17 who were still on the waiting list at the time of the second testing filled out the second set of questionnaires. The majority of those who did not had begun their treatment programs already.

**Data Analysis**

Analyses of variance (ANOVA) and chi-square tests were used to determine whether the four groups differed significantly from one another on demographic variables and on pre-treatment psychological test scores.

The internal consistency of the PIL test was determined using the SPSS-X Reliability program. Calculations of the
correlation coefficients between PIL test scores and scores on the BDI, ADS and PRF tests yielded information on convergent and divergent validity.

T-tests were used to compare the initial mean PIL score of the total sample to the nonalcoholic population mean score. Paired-comparison t-tests were performed for each of the four groups to determine whether changes in PIL and BDI scores were statistically significant. Multiple regression was employed to determine the predictive value of motivation score, ADS score and pre-treatment BDI score, with PIL change score as the criterion.

ANOVARs and chi-square tests were used to investigate the predictive ability of pre-treatment variables for completion of treatment. ANOVAs were also employed to determine whether participation in aftercare was related to PIL change score, post-treatment PIL score and post-treatment BDI score.

Only facility A and facility B data were used in the prediction of follow-up status analyses because the number of subjects at facility C for which follow-up information was obtained was very small (seven). ANOVAs were carried out with treatment center and drinking/drug use category as independent variables and post-treatment PIL score, PIL change score and post-treatment BDI score as dependent variables. Regression analyses were carried out with post-treatment PIL score and treatment center (dummy coded) as predictor variables and the five patient-rated life change
variables as criteria. Similar regression analyses were performed with post-treatment BDI score replacing post-treatment PIL score in the regression statements.
CHAPTER III

RESULTS

The results will be presented in the following order: initial psychological test scores (including hypothesis 1); changes in test scores during treatment (including hypotheses 2 and 3); prediction of treatment completion and drop-out; participation in aftercare (including hypothesis 4); and the analysis of follow-up variables (including hypothesis 5).

Initial Psychological Test Scores

Group Comparisons

Mean initial (pre-treatment) scores on the Purpose in Life Test (PIL), Beck Depression Inventory (BDI), Personality Research Form Desirability Scale (PRF-Dy), and Alcohol Dependence Scale (ADS) for the three treatment groups and the waiting list group are presented in Table 2. Comparisons among the three treatment groups and between the facility A treatment and waiting list groups revealed no significant differences with regard to PIL and BDI scores. Between group differences were significant on the ADS ($F[2, 107] = 3.72, \ p < .05$) and on the PRF-Dy ($F[2, 106] = 5.71, \ p < .01$). Tukey pairwise comparisons revealed significant differences ($p < .05$) on the ADS between facilities B ($M = 17.80$) and C ($M = 25.20$) and on the PRF-Dy
Table 2

Mean Pre-Treatment Psychological Test Scores

<table>
<thead>
<tr>
<th>Group</th>
<th>PIL</th>
<th>BDI</th>
<th>PRF-Dy</th>
<th>ADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fac. A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>M</td>
<td>87.82</td>
<td>16.27</td>
<td>9.15</td>
<td>21.65</td>
</tr>
<tr>
<td>SD</td>
<td>20.25</td>
<td>9.19</td>
<td>3.75</td>
<td>9.83</td>
</tr>
<tr>
<td>Fac. B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>40</td>
<td>39</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>M</td>
<td>86.08</td>
<td>17.05</td>
<td>6.93</td>
<td>17.80</td>
</tr>
<tr>
<td>SD</td>
<td>20.79</td>
<td>9.85</td>
<td>3.60</td>
<td>9.21</td>
</tr>
<tr>
<td>Fac. C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>M</td>
<td>79.20</td>
<td>21.20</td>
<td>6.57</td>
<td>25.20</td>
</tr>
<tr>
<td>SD</td>
<td>16.46</td>
<td>11.43</td>
<td>2.74</td>
<td>10.05</td>
</tr>
<tr>
<td>A. W. L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>M</td>
<td>93.78</td>
<td>14.22</td>
<td>9.42</td>
<td>16.06</td>
</tr>
<tr>
<td>SD</td>
<td>21.13</td>
<td>9.28</td>
<td>4.08</td>
<td>7.59</td>
</tr>
</tbody>
</table>

Note. Fac. A = facility A; Fac. B = facility B; Fac. C = facility C; A. W. L. = facility A waiting list.
between facility A ($\bar{M} = 9.15$) and facilities B and C ($\bar{M} = 6.93$ and $\bar{M} = 6.57$, respectively). Differences were also significant on the ADS ($F[1, 89] = 8.39$, $p < .01$) between the facility A treatment group ($\bar{M} = 21.65$) and the facility A waiting list group ($\bar{M} = 16.06$). The group comparison ANOVAs are summarized in Appendix J.

**Purpose in Life Test Reliability**

A measure of internal consistency indicated that the reliability of the PIL was high. Coefficient alpha was .9078. The alphas with each item deleted one at a time were also calculated. Only the deletion of items 14 and 15 raised the alpha slightly.

**Relationships among Test Variables**

Pearson correlation coefficients between pairs of test scores were calculated for the total subject sample. PIL scores were significantly correlated with BDI scores ($r = -.70$, $p < .0001$), PRF-Dy scores ($r = .79$, $p < .0001$) and ADS scores ($r = -.34$, $p < .0001$). BDI scores were significantly correlated with PRF-Dy scores ($r = -.63$, $p < .0001$) and with ADS scores ($r = .44$, $p < .0001$). ADS scores were significantly correlated with PRF-Dy scores ($r = -.36$, $p < .0001$).

Figure 1 is a plot of initial PIL scores versus initial BDI scores. The sloping middle section of the curve and the flat portions at each end suggest that there are both linear and nonlinear components in the relationship between the two variables. A regression analysis was carried out with PIL
Note: One observation had missing values.
A = 1 observation, B = 2 observations, etc.

Figure 1: Plot of Initial PIL Score vs. Initial BDI Score
score as the criterion variable and BDI score, BDI score squared and BDI score cubed as the predictor variables. The overall $R^2$ (.52) was significant ($F[3, 141] = 51.24, p < .0001$) and significant $F$ values based on Type I Sums of Squares (SS) were found for all three components: the BDI ($F[1, 141] = 143.29, p < .0001$); BDI$^2$ ($F[1, 141] = 4.87, p < .05$); and BDI$^3$ ($F[1, 141] = 5.57, p < .05$). The Type 3 SS $F$ value for BDI$^3$ was significant, ($F[1, 141] = 5.57, p < .05$), while the Type 3 SS $F$ value for BDI$^2$ was not. A regression with only linear and cubic components (summarized in Table 3) accounted for almost as much of the variance ($R^2 = .51$) as the original regression ($F[2, 142] = 73.62, p < .0001$). The linear component is revealed in the sloping of the curve from the upper left corner of the page to the lower right, while the cubic component is evident in the two flat portions at each end which impart a snakelike appearance to the curve.

**Hypothesis 1**

Hypothesis 1 stated that the mean initial PIL scores of the three treatment groups and the waiting list group would be lower than the population mean score of non-alcoholics. Because no significant differences among the PIL scores of the four groups were revealed by ANOVA, the PIL scores were pooled ($M = 86.01$) in a $t$ test comparing them to the mean general population score of 102 (Crumbaugh & Maholick, 1969). Significant differences were revealed ($t[145] = -8.3,$
Table 3

Summary of Standard Regression of BDI and BDI^3

Scores on PIL Scores

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>R^2</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>30973.00</td>
<td>2</td>
<td>15486.50</td>
<td>.51</td>
<td>73.62****</td>
</tr>
<tr>
<td>BDI</td>
<td>12851.39</td>
<td>1</td>
<td>12851.39</td>
<td></td>
<td>61.09****</td>
</tr>
<tr>
<td>BDI^3</td>
<td>1391.04</td>
<td>1</td>
<td>1391.04</td>
<td></td>
<td>6.61**</td>
</tr>
</tbody>
</table>

** p < .01; **** p < .0001
\( p < .0001 \), offering strong support for the first hypothesis.

**Changes in Test Scores During Treatment**

**Hypothesis 2**

Hypothesis 2 stated that the mean post-treatment PIL scores of the treatment groups would be greater than their mean pre-treatment PIL scores and that the same would not be true of the waiting list group. This hypothesis was also supported. Table 4 contains the mean initial (pre-treatment for treatment groups) and mean second (post-treatment for treatment groups) PIL scores of people who did both testings in each group. Paired comparisons \( t \) tests comparing pre-treatment and post-treatment PIL scores revealed significant changes in each of the three treatment groups: facility A \((t[44] = 7.44, p < .0001)\); facility B \((t[20] = 5.12, p < .0001)\); and facility C \((t[6] = 2.98, p < .05)\). Scores increased from the low to the average range. The waiting list group \( t \) test was nonsignificant.

**Pre-treatment and Post-treatment BDI Scores**

Paired-comparison \( t \) tests of initial (pre-treatment for treatment groups) and second (post-treatment for treatment groups) BDI scores also revealed significant changes in the three treatment groups: facility A \((t[44] = -10.10, p < .0001)\); facility B \((t[20] = -5.46, p < .0001)\); and facility C \((t[6] = -3.47, p < .01)\). Facility A and B mean
Table 4

Mean Pre-treatment and Post-treatment PIL Scores
of Treatment Completers and Waiting List Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fac. A (n = 45)</td>
<td>M = 89.30</td>
<td>M = 108.00</td>
</tr>
<tr>
<td></td>
<td>SD = 19.78</td>
<td>SD = 16.67</td>
</tr>
<tr>
<td>Fac. B (n = 21)</td>
<td>M = 90.41</td>
<td>M = 109.04</td>
</tr>
<tr>
<td></td>
<td>SD = 21.39</td>
<td>SD = 17.40</td>
</tr>
<tr>
<td>Fac. C (n = 7)</td>
<td>M = 82.3</td>
<td>M = 99.1</td>
</tr>
<tr>
<td></td>
<td>SD = 11.21</td>
<td>SD = 15.57</td>
</tr>
<tr>
<td>A. W. L. (n = 16)</td>
<td>M = 91.06</td>
<td>M = 91.88</td>
</tr>
<tr>
<td></td>
<td>SD = 26.85</td>
<td>SD = 24.61</td>
</tr>
</tbody>
</table>

Note. Fac. A = facility A; Fac. B = facility B; Fac. C = facility C; A. W. L. = facility A waiting list.
scores went from the mild-moderate depression range to the nondepressed range. Facility C's mean score went from the moderate-severe depression range to the nondepressed range. The waiting list group t value was nonsignificant. The mean score remained in the mild-moderate depression range. Table 5 presents the mean initial (pre-treatment for treatment groups) and mean second (post-treatment for treatment groups) BDI scores of people who did both testings in each group.

**Hypothesis 3**

Hypothesis 3 proposed that several pre-treatment variables -- motivation, level of depression, level of alcohol dependence, employment status and legal status -- would be predictive of PIL change scores over treatment. Support was found only with regard to level of depression (see Table 6). A regression analysis (for the three treatment groups pooled together) with motivation score, ADS score and pre-treatment BDI score as the predictor variables and change in PIL score over treatment as the criterion variable was significant ($F[3, 69] = 8.27, R^2 = .26, p < .0001$). However, the only predictor variable which contributed significantly was pre-treatment BDI score ($F[1, 69] = 20.40, p < .0001$). A higher pre-treatment BDI score was associated with a greater increase in PIL score during treatment.

ANOVA's with employment (unemployed versus others) and
Table 5
Mean Pre-treatment and Post-treatment BDI Scores
of Treatment Completers and Waiting List Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fac. A (n = 45)</td>
<td>M = 16.80</td>
<td>M = 4.42</td>
</tr>
<tr>
<td></td>
<td>SD = 9.61</td>
<td>SD = 4.65</td>
</tr>
<tr>
<td>Fac. B (n = 21)</td>
<td>M = 16.77</td>
<td>M = 5.43</td>
</tr>
<tr>
<td></td>
<td>SD = 10.58</td>
<td>SD = 5.39</td>
</tr>
<tr>
<td>Fac. C (n = 7)</td>
<td>M = 23.29</td>
<td>M = 8.29</td>
</tr>
<tr>
<td></td>
<td>SD = 12.50</td>
<td>SD = 7.48</td>
</tr>
<tr>
<td>A. W. L. (n = 17)</td>
<td>M = 16.88</td>
<td>M = 13.88</td>
</tr>
<tr>
<td></td>
<td>SD = 9.46</td>
<td>SD = 9.84</td>
</tr>
</tbody>
</table>

Note. Fac. A = facility A; Fac. B = facility B; Fac. C = facility C; A. W. L. = facility A waiting list.
Table 6

Summary of Regression Analysis: Prediction of Change in PIL Score

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>5058.63</td>
<td>3</td>
<td>1686.21</td>
<td>.26</td>
<td>8.27****</td>
</tr>
<tr>
<td>Motivation Score</td>
<td>110.36</td>
<td>1</td>
<td>110.36</td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>ADS</td>
<td>156.29</td>
<td>1</td>
<td>156.29</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td>Initial BDI Score</td>
<td>4161.97</td>
<td>1</td>
<td>4161.97</td>
<td>20.40****</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>14076.11</td>
<td>69</td>
<td>204.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**** p < .0001
legal status (legal problems versus no legal problems) as independent variables and PIL change scores as the dependent variable were not significant.

**Prediction of Treatment Completion and Drop-out**

A chi-square test of treatment center (facilities A, B, C) by completion status (completed program, did not complete program) was significant ($\chi^2[2, n = 110] = 13.07, p < .001$). Facility A’s completion rate (48 out of 55) was higher than the completion rates of facility B (23 out of 40) and facility C (8 out of 15). Analyses of the relationships between pre-treatment variables and completion status were carried out separately by treatment facility because of this difference. If similar trends were discovered in two or all three of the treatment groups, the data were then pooled and reanalyzed.

**Demographic Variables**

The demographic variables which were examined included marital status, age, employment status, education level, income level and legal status. ANOVAS and a chi-square test revealed no significant relationships between completion status and education level, income level or presence of legal problems. The ANOVA of completion status on age approached significance for facility C ($F[1, 13] = 3.36, p < .09$), with completers ($\bar{M} = 30.13$) tending to be older than noncompleters ($\bar{M} = 23.57$). Marital status (married or common-law versus others) was significantly associated with
completion status for facility B (χ²[1, n = 40] = 5.51, p < .05) and approached significance for facility C (χ²[1, n = 15] = 3.28, p < .07). Married people were more likely to complete their treatment programs in facilities B and C. No significant association was found for facility A. Because facility C showed a similar trend to facility B, the two were pooled in another chi-square analysis of marital status by completion status (χ²[1, n = 55] = 8.35, p < .01).

Employment status (unemployed versus others) was associated with completion status with marginal significance in chi-square analyses for each of the three treatment centers. The associations were in the same direction, i.e., unemployed people were less likely to complete treatment. A chi-square analysis of pooled data from the three facilities yielded a significant result (χ²[1, n = 109] = 9.32, p < .01).

Main Problem Substance

Chi-square analyses of main problem substance (alcohol versus other) by completion status yielded nonsignificant findings for each treatment center, but the pooled data of facilities B and C yielded a significant result (χ²[1, n = 110] = 5.44, p < .05). Patients who considered alcohol to be their primary abused substance were slightly more likely to complete treatment than patients who considered other drugs to be their primary abused substances.
Psychological Test Scores

No significant differences were found between treatment completers and drop-outs on the PIL, BDI or ADS at any of the treatment centers. As shown in Table 7, for a subgroup of people from the total sample who were not depressed at the commencement of treatment (pre-treatment BDI scores ranged from zero to nine), a significant difference was revealed between the pre-treatment PIL scores of the completers and noncompleters of treatment ($F[1, 24] = 8.06, p < .01$). The mean score of the completers ($M = 107.78$) was higher than the mean score of the noncompleters ($M = 91.38$).

The pre-treatment PRF-Dy scores of completers ($M = 7.87$) and noncompleters ($M = 5.65$) at facility B differed significantly ($F[1, 38] = 4.00, p < .05$). A similar, though nonsignificant, trend was evident at facility C. No such trend was present at facility A. An ANOVA with data from facilities B and C pooled was significant ($F[1, 52] = 5.73, p < .05$; see Table 8).

Participation in Aftercare

At the post-treatment testing session all subjects indicated an intention to participate in some form of aftercare. Table 9 presents data on the aftercare participation of patients whose aftercare activities or lack of them were reported by at least one source.

Of the 48 treatment completers at facility A, 28 people participated in at least one type of aftercare, 9
Table 7

Summary of Analysis of Variance of Pre-treatment PIL Score as a Function of Completion Status in Nondepressed Patients

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion Status</td>
<td>1490.13</td>
<td>1</td>
<td>1490.13</td>
<td>8.06**</td>
</tr>
<tr>
<td>Error</td>
<td>4438.99</td>
<td>24</td>
<td>184.96</td>
<td></td>
</tr>
</tbody>
</table>

** p < .01
Table 8

Summary of Analysis of Variance of PRF Score as a Function of Completion Status in Facility B and C Patients (pooled)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion Status</td>
<td>60.09</td>
<td>1</td>
<td>60.09</td>
<td>5.73*</td>
</tr>
<tr>
<td>Error</td>
<td>545.41</td>
<td>52</td>
<td>10.49</td>
<td></td>
</tr>
</tbody>
</table>

* p < .05
<table>
<thead>
<tr>
<th>Service</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fac. A</td>
</tr>
<tr>
<td>treatment center (trt)</td>
<td>4</td>
</tr>
<tr>
<td>Alcoholics Anonymous (AA)</td>
<td>6</td>
</tr>
<tr>
<td>other</td>
<td>3</td>
</tr>
<tr>
<td>trt and AA</td>
<td>0</td>
</tr>
<tr>
<td>trt and other</td>
<td>5</td>
</tr>
<tr>
<td>AA and other</td>
<td>7</td>
</tr>
<tr>
<td>trt, AA, and other</td>
<td>3</td>
</tr>
<tr>
<td>no aftercare</td>
<td>9</td>
</tr>
<tr>
<td>unknown</td>
<td>11</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>
participated in none and data were unavailable on the remaining 11. A fairly large proportion used Alcoholics Anonymous (AA) or "other" (than the treatment center) aftercare services, likely because a large proportion of inpatients at facility A lived out of town.

At facility B, 14 of the 23 completers participated in at least one form of aftercare, 3 participated in none, and data were unavailable on the remaining 6. Of the 14 known aftercare participants, 13 attended at least one aftercare meeting at facility B.

Of the eight treatment completers at facility C, seven participated in at least one form of aftercare. All seven attended at least one aftercare meeting at facility C.

**Hypothesis 4**

Hypothesis 4 states that an increase in PIL score during treatment would be positively associated with continuing in aftercare. This hypothesis was not supported. There were no significant differences between the PIL change scores of those who participated in some form of aftercare \( (n = 49) \) and those who did not \( (n = 12) \). Subjects whose aftercare participation was unknown were not included in this analysis. A similar analysis with the unknown and nonparticipators' scores pooled \( (n = 30) \) also revealed no significant differences.

In addition, ANOVAs with post-treatment PIL score and post-treatment BDI score as dependent variables revealed
no significant differences between aftercare participants and others.

Follow-up Variables

Agreement Among The Three Sources of Data on Drinking/Drug Use

Table 10 presents the number of people from each facility who fall into the four drinking/drug use categories: abstinent, improved, relapsed, unknown. The category for each person was based on data from the most conservative follow-up source for that individual.

The agreement among the three sources of follow-up data on drinking/drug use was high. In almost all cases where there was disagreement, the patients' data were the most conservative. More details are presented in Appendix K.

Agreement Among The Three Sources of Data on Life Change Variables

The mean patient-rated life change scores for each treatment center are presented in Appendix L. The five life change variables are: changes in marital or other significant relationship; changes in family relations; changes in friendships; changes in work; changes in health. The ratings were made on a 5-point scale ranging from 1 (much worse) to 5 (much better). Correlation coefficients were obtained between pairs of ratings of the five life change follow-up variables.

Significant correlations were found between the ratings of the patient and the corroborator who was not employed by
Table 10

Frequencies of Follow-up Drinking/Drug Use Categories for Treatment Completers at Each Treatment Center

<table>
<thead>
<tr>
<th>Category</th>
<th>Facility A</th>
<th>Facility B</th>
<th>Facility C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstinent</td>
<td>28</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Improved</td>
<td>6</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Relapsed</td>
<td>5</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>9</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>48</td>
<td>23</td>
<td>8</td>
</tr>
</tbody>
</table>

Note. The follow-up category for each patient was based on data from the most conservative follow-up source for that individual.
the treatment center on three of the five variables. These were changes in significant relationship ($\rho = .52, p < .01$), changes in family relations ($\rho = .43, p < .01$), and changes in health ($\rho = .43, p < .01$). There were no significant correlations between the patients' and treatment centers' ratings on any of the five variables, and there was only one significant correlation between the ratings of the treatment center and those of the other corroborator (changes in significant relationship; $\rho = .78, p < .01$).

Correlations Among Patient-Rated Outcome Variables

Life change variables

Significant correlation coefficients among all five of the patient-rated life change variables with each other were found. Correlation coefficients and probability levels are presented in Table 11.

Drinking/drug use and life-change variables

A MANOVA was performed with patient-rated drinking/drug use category (abstinent, improved, relapsed) as the independent variable and the five patient-rated life change variables as the dependent variables. The MANOVA is summarized in Table 12.

Using Pillai's trace criterion, the overall MANOVA was significant ($F[10, 70] = 2.53, p < .01$). Subsequent univariate ANOVAs were performed for each dependent variable. Significant F values were found for changes in family relations ($F[2, 39] = 3.40, p < .05$), and for
Table 11  
Correlations Among The Five Patient-Rated Life Change Variables

<table>
<thead>
<tr>
<th></th>
<th>Partner</th>
<th>Family</th>
<th>Friends</th>
<th>Health</th>
<th>Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( r = 0.44^{**} )</td>
<td>( r = 0.38^{**} )</td>
<td>( r = 0.42^{**} )</td>
<td>( r = 0.47^{**} )</td>
<td>( n = 47 )</td>
</tr>
<tr>
<td>Family</td>
<td></td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>( r = 0.36^{**} )</td>
<td>( r = 0.41^{**} )</td>
<td>( r = 0.32^* )</td>
<td>( n = 51 )</td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td></td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>( r = 0.31^* )</td>
<td>( r = 0.50^{***} )</td>
<td>( n = 51 )</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( r = 0.36^{**} )</td>
<td>( n = 46 )</td>
</tr>
<tr>
<td>Work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
</tr>
</tbody>
</table>

* \( p < .05 \); ** \( p < .01 \); *** \( p < .001 \).
Table 12

Summary of Multivariate Analysis of Variance of Patient-Rated Life Change Variables as a Function of Patient-Rated Drinking/Drug Use Category

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>4.01</td>
<td>2</td>
<td>2.00</td>
<td>3.40*</td>
</tr>
<tr>
<td>Error</td>
<td>22.97</td>
<td>39</td>
<td>.59</td>
<td></td>
</tr>
</tbody>
</table>

* p < .05

Dependent Variable: Change in Health

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>14.67</td>
<td>2</td>
<td>7.34</td>
<td>11.09***</td>
</tr>
<tr>
<td>Error</td>
<td>25.80</td>
<td>39</td>
<td>.66</td>
<td></td>
</tr>
</tbody>
</table>

*** p < .001
changes in health ($F [2, 39] = 11.09, p < .001$). Mean family relations change scores were highest for the abstinent group ($\bar{M} = 4.41$), intermediate for the improved group ($\bar{M} = 4.00$), and lowest for the relapsed group ($\bar{M} = 3.40$). Mean health change scores were also highest for the abstinent group ($\bar{M} = 4.41$), intermediate for the improved group ($\bar{M} = 4.00$), and lowest for the relapsed group ($\bar{M} = 2.60$).

**Follow-up PIL Score and Outcome Variables**

**Drinking/drug use**

An ANOVA with drinking/drug use category (based on the most conservative follow-up source for each patient) as the independent variables and follow-up PIL score as the dependent variable revealed no significant differences among the groups.

**Life change variables**

Significant correlations were found between the follow-up PIL score and each of the patient-rated life-change variables: significant relationship ($r = .67, p < .001$); family relations ($r = .48, p < .001$); friendships ($r = .30, p < .05$); work ($r = .35, p < .05$); and health ($r = .50, p < .001$). Correlation coefficients, probability levels and numbers of subjects are presented in Appendix M.

**Hypothesis 5**

Hypothesis 5 states that the PIL score at the end of inpatient treatment and the PIL change score would be positively associated with measures of outcome three months
following the completion of inpatient treatment. Post-treatment PIL score was positively associated with some measures of outcome. However, the relationships between PIL score and outcome differed between treatment centers. To facilitate the reading of the sections on prediction of follow-up status, Table 13 presents a verbal summary of the relationships between follow-up variables and post-treatment PIL and BDI scores. PIL change scores were not associated with any of the outcome measures. Therefore, hypothesis 5 was only partially supported.

Only data from facilities A and B were used in the analyses of prediction of follow-up status. The number of patients from facility C whose follow-up status was known was too small for this group to be included (n = 7).

**Drinking/drug use**

An ANOVA was performed with drinking/drug use category (abstinent, improved, relapsed, unknown) and treatment center (facility A, facility B) as the independent variables and PIL change score as the dependent variable. The F value was not significant.

An ANOVA was performed with drinking/drug use category (abstinent, improved, relapsed, unknown) and treatment center (facility A, facility B) as the independent variables and post-treatment PIL test score as the dependent variable. A significant Drinking/drug Use Category by Treatment Center interaction effect was found (F[3, 58] = 2.78, p < .05; see
Table 13

Prediction of Follow-up Status by Post-treatment PIL and BDI Scores

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Follow-up Variable</th>
<th>Treatment Center and Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIL</td>
<td>Drinking/Drug Use</td>
<td>Differentiates relapsed from abstinent and improved at Fac. B; PIL scores of relapsed group were higher; p &lt; .01.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approaches significance in differentiating relapsed and unknown from abstinent and improved at Fac. A; PIL scores of abstinent and improved groups higher than scores of relapsed and unknown; p &lt; .06.</td>
</tr>
<tr>
<td>PIL</td>
<td>Changes in significant relationship</td>
<td>Positive predictor for Fac. A and Fac. B.; p &lt; .01.</td>
</tr>
<tr>
<td>PIL</td>
<td>Changes in health</td>
<td>Positive predictor for Fac. A and Fac. B.; p &lt; .01.</td>
</tr>
<tr>
<td>PIL</td>
<td>Changes in work</td>
<td>Positive predictor for Fac. A; p &lt; .01.</td>
</tr>
<tr>
<td>BDI</td>
<td>Drinking/Drug Use</td>
<td>Differentiates abstinent and improved from relapsed and unknown at Fac. A; p &lt; .01. Differentiates relapsed from abstinent and improved at Fac. A; p &lt; .0001. BDI scores of relapsed and unknown groups higher than BDI scores of abstinent and improved groups.</td>
</tr>
<tr>
<td>BDI</td>
<td>Changes in health</td>
<td>Negative predictor for Fac. A and Fac. B.; p &lt; .01.</td>
</tr>
<tr>
<td></td>
<td>Changes in work</td>
<td>Negative predictor for Fac. A; p &lt; .05.</td>
</tr>
</tbody>
</table>
Table 14), so separate ANOVAs for each treatment center were carried out. These ANOVAs included three planned comparison contrast statements to compare the abstinent and improved patients to the relapsed and unknown patients; to compare the relapsed patients to the abstinent and improved patients; and to compare the abstinent and improved patients to each other.

For facility A, the contrast comparing abstinent and improved patients to relapsed and unknown patients approached significance ($F[1, 41] = 3.70, p < .06$). The mean post-treatment PIL scores of the abstinent and improved patients ($\bar{M} = 108.50$ and $\bar{M} = 117.83$, respectively) were higher than the mean post-treatment PIL scores of the relapsed and unknown patients ($\bar{M} = 101.60$ and $\bar{M} = 100.83$, respectively). Table 15 presents the mean post-treatment PIL scores in each category at facilities A and B, and Table 16 summarizes the ANOVA for Facility A.

For facility B (see Table 17), the contrast comparing the relapsed patients to the abstinent and improved patients was significant ($F[1, 17] = 7.33, p < .01$). The trend was in the opposite direction to the trend discovered at facility A. At facility B, patients in the relapsed category had PIL scores at the end of treatment ($\bar{M} = 126.20$) which were higher than the scores of the abstinent ($\bar{M} = 104.22$) or improved ($\bar{M} = 102.75$) patients (see Table 15).
Table 14

Summary of Analysis of Variance of Post-treatment PIL Score as a Function of Drinking/Drug Use Category (Abstinent, Improved, Relapsed, Unknown) and Treatment Center (Facility A, B)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>3054.30</td>
<td>7</td>
<td>436.33</td>
<td>1.66</td>
</tr>
<tr>
<td>Treatment Center</td>
<td>40.92</td>
<td>1</td>
<td>40.92</td>
<td>.16</td>
</tr>
<tr>
<td>Category</td>
<td>749.55</td>
<td>3</td>
<td>249.85</td>
<td>.95</td>
</tr>
<tr>
<td>Treatment Center X Category</td>
<td>2195.95</td>
<td>3</td>
<td>731.98</td>
<td>2.78*</td>
</tr>
<tr>
<td>Error</td>
<td>15253.64</td>
<td>58</td>
<td>262.99</td>
<td></td>
</tr>
</tbody>
</table>

* * p < .05
Table 15
Mean Post-treatment PIL Scores for Each Follow-up Category at Facilities A and B

<table>
<thead>
<tr>
<th>Category</th>
<th>Treatment Center</th>
<th>Facility A</th>
<th>Facility B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstinent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>28</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>108.50</td>
<td>104.22</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>16.00</td>
<td>19.52</td>
<td></td>
</tr>
<tr>
<td>Improved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>117.83</td>
<td>102.75</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>12.98</td>
<td>13.23</td>
<td></td>
</tr>
<tr>
<td>Relapsed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>101.60</td>
<td>126.20</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>20.50</td>
<td>7.01</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>100.83</td>
<td>103.33</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>18.41</td>
<td>13.20</td>
<td></td>
</tr>
</tbody>
</table>
**Table 16**

**Summary of Analysis of Variance of Post-treatment PIL Score as a Function of Drinking/Drug Use Category at Facility A**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>1100.04</td>
<td>3</td>
<td>366.68</td>
<td>1.35</td>
</tr>
<tr>
<td>Error</td>
<td>11133.87</td>
<td>41</td>
<td>271.56</td>
<td></td>
</tr>
<tr>
<td>Contrast 1 (abstinent and improved vs. relapsed and unknown)</td>
<td>1003.80</td>
<td>1</td>
<td>1003.80</td>
<td>3.70*</td>
</tr>
<tr>
<td>Contrast 2 (relapsed vs. abstinent and improved)</td>
<td>700.13</td>
<td>1</td>
<td>700.13</td>
<td>2.58</td>
</tr>
<tr>
<td>Contrast 3 (abstinent vs. improved)</td>
<td>430.43</td>
<td>1</td>
<td>430.43</td>
<td>1.59</td>
</tr>
</tbody>
</table>

A: $p < .06$
Table 17

Summary of Analysis of Variance of Post-treatment PIL Score as a Function of Drinking/Drug Use Category at Facility B

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>1937.18</td>
<td>3</td>
<td>645.73</td>
<td>2.66</td>
</tr>
<tr>
<td>Error</td>
<td>4119.77</td>
<td>17</td>
<td>242.34</td>
<td></td>
</tr>
<tr>
<td>Contrast 1 (abstinent and improved vs. relapsed and unknown)</td>
<td>569.07</td>
<td>1</td>
<td>569.07</td>
<td>2.35</td>
</tr>
<tr>
<td>Contrast 2 (relapsed vs. abstinent and improved)</td>
<td>1777.33</td>
<td>1</td>
<td>1777.33</td>
<td>7.33**</td>
</tr>
<tr>
<td>Contrast 3 (abstinent vs. improved)</td>
<td>6.00</td>
<td>1</td>
<td>6.00</td>
<td>0.02</td>
</tr>
</tbody>
</table>

** p < .01
Life change variables

Correlation coefficients between PIL change scores and the five life change follow-up variables were not statistically significant.

Homogeneity-of-slopes model regression analyses were performed with treatment center (dummy coded), post-treatment PIL score, and treatment center by post-treatment PIL score as predictor variables and the five life change variables as criterion variables. All significant regression analyses with post-treatment PIL score as a predictor variable and life-change scores as criterion variables are summarized in Appendix N.

The F values of the regressions with changes in significant relationship (R² = .24, F[3, 38] = 3.93, p < .05), changes in health (R² = .23, F[3, 42] = 4.10, p < .01) and changes in work (R² = .22, F[3, 37] = 3.40, p < .05) as criterion variables were significant.

Post-treatment PIL score was a significant positive predictor of changes in significant relationship (F[1, 38] = 7.51, p < .01). Post-treatment PIL score was also a significant positive predictor of changes in health (F[1, 42] = 9.00, p < .01).

A significant interaction effect of Treatment Center by PIL score was found for the change in work variable (F[1, 37] = 5.62, p < .05). Therefore, separate regression analyses were performed for the two treatment
centers. Post-treatment PIL score was found to be a significant positive predictor of change in work at facility A, ($F[1, 27] = 8.77, p < .01$), but not at facility B.

**Prediction of Follow-up Status by Post-treatment BDI score**

**Drinking/drug use**

An ANOVA was performed with drinking/drug use category and treatment center as the independent variables and post-treatment BDI score as the dependent variables (see Table 18). The overall model was significant, ($F[7, 58] = 2.23, p < .05$). Neither main effect was significant, but the interaction effect approached significance ($F[3, 58] = 2.61, p < .06$). Therefore, separate ANOVAs by treatment center were carried out. These ANOVAs included three planned comparison contrast statements to compare the abstinent and improved patients to the relapsed and unknown patients; to compare the relapsed patients to the abstinent and improved patients; and to compare the abstinent and improved patients to each other.

For facility A (see Table 19), the contrast comparing abstinent and improved patients to relapsed and unknown patients was significant ($F[1, 41] = 11.02, p < .01$). The contrast comparing relapsed patients to abstinent and improved patients was also significant ($F[1, 41] = 13.93, p < .001$). Mean post-treatment BDI scores at facility A were higher for the relapsed and unknown groups ($M = 5.80$ and $M = 9.83$, respectively) than for the abstinent and
Table 18

Summary of Analysis of Variance of Post-treatment BDI Score as a Function of Drinking/Drug Use Category (Abstinent, Improved, Relapsed, Unknown) and Treatment Center (Facility A, B)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>328.54</td>
<td>7</td>
<td>46.93</td>
<td>2.23*</td>
</tr>
<tr>
<td>Treatment Center</td>
<td>1.70</td>
<td>1</td>
<td>1.70</td>
<td>.08</td>
</tr>
<tr>
<td>Category</td>
<td>92.18</td>
<td>3</td>
<td>30.73</td>
<td>1.46</td>
</tr>
<tr>
<td>Treatment Center X</td>
<td>164.50</td>
<td>3</td>
<td>54.83</td>
<td>2.61*</td>
</tr>
<tr>
<td>Category</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>1218.08</td>
<td>58</td>
<td>21.00</td>
<td></td>
</tr>
</tbody>
</table>

A: $p < .06$
* $p < .05$
Table 19

Summary of Analysis of Variance of Post-treatment BDI Score as a Function of Drinking/Drug Use Category at Facility A

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>249.33</td>
<td>3</td>
<td>83.11</td>
<td>4.86**</td>
</tr>
<tr>
<td>Error</td>
<td>701.65</td>
<td>41</td>
<td>17.11</td>
<td></td>
</tr>
<tr>
<td>Contrast 1 (abstinent and improved vs. relapsed and unknown)</td>
<td>188.60</td>
<td>1</td>
<td>188.60</td>
<td>11.02**</td>
</tr>
<tr>
<td>Contrast 2 (relapsed vs. abstinent and improved)</td>
<td>238.37</td>
<td>1</td>
<td>238.37</td>
<td>13.93***</td>
</tr>
<tr>
<td>Contrast 3 (abstinent vs. improved)</td>
<td>18.61</td>
<td>1</td>
<td>18.61</td>
<td>1.09</td>
</tr>
</tbody>
</table>

** p < .01; *** p < .001
improved groups (M = 3.61 and M = 1.67, respectively).

For facility B none of the three contrasts yielded significant F values. Table 20 presents the mean post-treatment BDI scores for each category at facilities A and B.

Life change variables

Homogeneity-of-slopes model regression analyses were performed with treatment center (dummy coded), post-treatment BDI score, and treatment center by post-treatment BDI score as predictor variables and the five life change variables as criterion variables. All significant regression analyses with post-treatment BDI score as a predictor variable and life-change scores as criterion variables are summarized in Appendix O.

The F value of the regression with change in health as the dependent variable was significant (R² = .20, F[3, 42] = 3.50, p < .05). The main effect of post-treatment BDI score was the only significant contributor to the regression (F[1, 42] = 9.56, p < .01). Post-treatment BDI score was a significant negative predictor of changes in health.

Although the overall F values were not significant in the regressions with change in family relations and change in work as dependent variables, Treatment Center by BDI Score interaction effects were significant (for change in family relations F[1, 42] = 4.36, p < .05 and for change in work, F[1, 37] = 4.08, p < .05). Separate
<table>
<thead>
<tr>
<th>Category</th>
<th>Facility A</th>
<th>Facility B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstinent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td>M</td>
<td>3.61</td>
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</tr>
<tr>
<td>SD</td>
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<td>7.07</td>
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<tr>
<td>Improved</td>
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<td></td>
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<tr>
<td>n</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>M</td>
<td>1.67</td>
<td>3.75</td>
</tr>
<tr>
<td>SD</td>
<td>1.81</td>
<td>0.50</td>
</tr>
<tr>
<td>Relapsed</td>
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<td></td>
</tr>
<tr>
<td>n</td>
<td>5</td>
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</tr>
<tr>
<td>M</td>
<td>5.80</td>
<td>3.80</td>
</tr>
<tr>
<td>SD</td>
<td>3.27</td>
<td>2.59</td>
</tr>
<tr>
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<td>n</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>M</td>
<td>9.83</td>
<td>4.33</td>
</tr>
<tr>
<td>SD</td>
<td>9.00</td>
<td>6.66</td>
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regression analyses by treatment center were carried out. Post-treatment BDI score was not a significant predictor of changes in family relations at either facility. It was a significant negative predictor of changes in work at facility A ($R^2 = .16$, $F[1, 27] = 5.31$, $p < .05$).

**Potential Confounding Variables**

The proportion of patients using other drugs as well as alcohol varied among the three treatment centers. Among those using other drugs, some considered alcohol to be their primary abused substance while others did not. To explore the possibility that either polydrug use or primary abused substance might be responsible for observed relationships between variables of interest, initial PIL scores, initial BDI scores, ADS scores, PRF-Dy scores, PIL change scores and BDI change scores were compared.

The PRF-Dy scores of alcoholics who used other drugs ($M = 6.94$) were significantly lower than the PRF-Dy scores of alcoholics who did not ($M = 8.90$; $F[1, 107] = 7.90$, $p < .01$). Differences between the other five scores were not significant. Means for the two groups on the six scores are presented in Appendix P, along with a summary table of the ANOVA of PRF-Dy scores.

The ADS scores of patients who rated alcohol as their primary abused substance ($M = 22.0$) were significantly higher than the ADS scores of patients who rated another drug as their primary abused substance ($M = 16.0$).
Differences between the other five scores were not significant. Means for the two groups on the six scores are presented in Appendix Q, along with a summary table of the ANOVA of ADS scores.

Summary of Results

Due to the large number of findings in the present study, a summary of the findings will be presented here.

Purpose in Life Test Findings

The mean PIL score of the sample was significantly lower than the general population mean score. The mean PIL scores of the treatment groups increased from low to average during treatment. The waiting list group mean PIL score remained low. Change in PIL score during treatment was not predictable from motivation, ADS score, employment, or legal status. PIL change scores were not associated with participation in aftercare. There were different trends in the prediction of follow-up status at Facilities A and B. At Facility A, people with higher PIL scores at the end of treatment were more likely to be abstinent or improved three months later. At Facility B, people with the highest post-treatment PIL scores were most likely to relapse. Post-treatment PIL scores were predictive of changes in health and changes in relationship with intimate partner at both facilities. Post-treatment PIL scores were predictive of changes in work at Facility A.
Beck Depression Inventory Findings

The mean BDI scores of the treatment groups at Facilities A and B went from the mild-moderate depression range to the nondepressed range. The mean BDI score of the group at Facility C decreased from the moderate-severe range to the nondepressed range. The mean waiting list group BDI score remained in the mild-moderate depression range. The post-treatment BDI score was a negative predictor of changes in health at both Facilities A and B, and a negative predictor of drinking/drug use status and changes in work at Facility A.

Prediction of Program Completion

Facility A had a significantly lower drop-out rate than Facilities B and C. Employment was a significant predictor of treatment completion when the data from the three agencies were pooled. At Facilities B and C, social desirability score, main abused substance, and marital status were predictors of treatment completion.

Follow-up Variables

There was high agreement among the three sources of follow-up data on drinking and drug use. There were no significant correlations between patient and treatment center ratings on the five life change variables. Drinking/drug use status at follow-up was associated with changes in health and family relations.
CHAPTER IV
DISCUSSION

The main goal of the present study was to determine the predictive value of the Purpose in Life Test (PIL) score with respect to short-term outcome of inpatient treatment for alcohol dependence. Also examined were the relationship of post-treatment Beck Depression Inventory (BDI) scores to outcome, and the relationships of demographic and psychological test score variables to treatment completion and aftercare participation. The subject sample included some patients with other drug dependencies in addition to alcohol dependence. The majority of patterns which emerged appear to be the same regardless of the primary substance abused by the patient.

This study extended past research on the sense of purpose in life of alcoholics by exploring its relationship to treatment outcome. Outcome was assessed three months post-treatment. The follow-up variables were admittedly short-term. Because the purpose of the study was to increase our understanding of the treatment process and its relation to outcome, a relatively short follow-up period was chosen to minimize the influence of extra-treatment factors. Watson and Pucel (1985) found that, while post-treatment drinking patterns are inconsistent, predictability of future drinking increases gradually and consistently over the first three months after treatment completion. Three months appeared to be a suitable compromise for tapping the
influence of treatment effects while assessing short-term outcome variables at a time when they have at least a moderate association with longer-term outcome status.

The Discussion chapter is organized as follows: main research questions; additional findings; limitations of the study; overview of patient changes through the treatment process; meaning and significance of the PIL score; recommendations for treatment programs; and future research directions.

**Main Research Questions**

**Do Alcoholics Have A Diminished Sense of Purpose in Life?**

Alcoholics appear to have a lower sense of purpose in life than do nonalcoholics. The PIL scores of the alcohol addicted individuals in the present study were significantly lower than the nonalcoholic mean score reported in the literature, as predicted by Hypothesis 1. This finding is consistent with previous research (Crumbaugh & Carr, 1979; Jacobson, Ritter, & Mueller, 1977) and with theory (Crumbaugh, Wood & Wood, 1980; Frankl, 1959) which proposes lack of purpose in life as a salient dimension for substance abusers. Whether lack of purpose in life precedes, follows, or is reciprocally related to substance abuse problems was not addressed in the current study.

**Does Sense of Purpose in Life Increase Significantly During Treatment?**

Sense of purpose in life appears to increase
significantly during treatment programs for alcohol addiction. Changes in PIL scores were significant for all three treatment groups, and nonsignificant for the waiting list group, as predicted by Hypothesis 2. These findings point to a treatment effect of some kind. Regardless of whether the changes were due to a general treatment effect, specific program components, being removed from one's usual environment, abstaining, etc., the findings indicate that changes did occur during the treatment programs which led to increased sense of life purpose. A finding which suggests that the PIL changes were not due solely to abstinence is the nonsignificant correlation between number of days since last drink before treatment and initial PIL score.

Can Change in Sense of Purpose in Life Be Predicted?

Change in sense of purpose in life was not predictable from pre-treatment demographic characteristics of patients. In the present study, only initial levels of depression were related to PIL change scores, while motivation, alcohol dependence, employment status and legal status were not. Hypothesis 3, then, was not supported.

The lack of support for Hypothesis 3 has interesting implications. The findings that unemployment and problems with the law do not preclude an increase in a sense of life purpose are consistent with Frankl's conception of purpose in life as attainable even by people facing adverse
circumstances. The failure of level of physiological dependence to predict PIL change scores (and treatment completion) suggests that physiological dependence may play a minimal role in the recovery process once a person has undergone detoxification.

The motivation variable (perceived adverse effects of drinking) differentiated very poorly among patients. Although it might differentiate between people who do and people who do not seek treatment, the vast majority of people in treatment rate the adverse effects of their drinking as sizeable. A better measure of motivation in the treatment context might have been predictive of change in PIL or of drop-out from the programs, although initial motivation may be less important than early changes in motivation in predicting response to treatment (Berg & Skutl, 1986).

Depression at intake does not preclude the possibility of an increase in sense of purpose in life; in fact, higher initial depression was associated with a greater increase. Because of the high negative correlation between BDI and PIL scores, this finding is not surprising. It indicates that for people with initially higher BDI scores (lower PIL scores) there is more room, so to speak, for their PIL scores to increase.

Are Changes in Sense of Purpose in Life Predictive of Aftercare Participation?

Hypothesis 4 proposed that an increase in PIL score
during treatment would be positively associated with continuing in aftercare. Hypothesis 4 was not supported in the present study.

Is Post-treatment Sense of Purpose in Life or Change in Sense of Purpose in Life Predictive of Treatment Outcome?

Hypothesis 5, which proposed that post-treatment PIL score and PIL change scores would be positively associated with outcome variables, was only partly supported. PIL change scores were not predictive of outcome. Post-treatment PIL scores were predictive of some follow-up variables, including drinking/drug use, changes in significant relationship and changes in health at both Facilities A and B, and changes in work at Facility A only.

Although post-treatment PIL score was predictive of drinking/drug use at both Facilities A and B, the patterns of prediction were very different. At Facility A, people who were abstinent or improved at follow-up (versus relapsed and unknown) had higher post-treatment PIL scores. At Facility B, relapsed patients had the highest post-treatment PIL scores.

Facility B emphasizes the expression of feelings, the elimination of denial, and the adoption of a spiritual philosophy which includes a specific vocabulary. This philosophy may lead to a high subjective sense of purpose in life regardless of whether the skills necessary for relapse prevention have been learned. The expression of feelings is a new skill for many of the patients at Facility B; some of
them can use inner and other resources to build on this skill, while others cannot. Furthermore, it is possible that some people have learned the language of Facility B's philosophy without internalizing the belief system. These people could probably score high on the PIL test. It would take further investigation to determine whether (a) the relapsed patients have not truly adopted the philosophy or (b) whether they have adopted it, but it is insufficient to prepare them for life outside the treatment center. The sense of purpose in life developed in the Facility A program was likely a by-product of improved social skills, self-efficacy, assertion, self-knowledge, etc., which patients learn there. Research (Miller & Hester, 1986) supports the efficacy of many of Facility A's programs, specifically relaxation, goal-planning, assertiveness training, and marital therapy. Conversations with patients and staff suggested that Facility B's explanation of the development and maintenance of substance abuse problems assumes more homogeneity among substance abusers than Facility A's implicit conceptualization. Perhaps Facility B is most helpful to a subgroup of people who fit well with the model, while Facility A is able to help a wider variety of people by addressing a wider variety of specific types of problems. The lower drop-out rate and higher percentage of abstinent and improved people at Facility A are consistent with this idea.
Additional Findings

Relationship Between Purpose in Life and Depression

The correlation coefficient between pre-treatment PIL scores and BDI scores yielded some information about the relationship between the constructs of purpose in life and depression. Significant overlap between the two concepts would be expected and was found in our sample of 145 alcohol dependent individuals. Approximately half of the variance ($r = -.70$) was shared by the two variables. Thus, the two variables appear to be related, but not to an extent which would suggest they are essentially the same construct.

For each range of BDI scores (i.e. nondepressed, mild to moderate depression, moderate to severe depression and extremely severe depression), the range of PIL scores was constrained. The BDI cut-off scores for clinical populations are as follows: scores from 0 to 9 are considered within the normal range; 10 to 18 indicate mild-moderate depression; 19 to 29 indicate moderate-severe depression; and 30 to 63 indicate extremely severe depression. Two of the cut-off points, 10 and 29, correspond with changes in the shape of the curve of PIL scores vs. BDI scores (Figure 1). The shape of the curve indicates that within the middle range (mild-moderate and moderate-severe depression) PIL scores were quite predictable from BDI scores, while in the two extreme ranges (nondepressed and extremely depressed) BDI scores
were less predictive of PIL scores. This is not surprising in the nondepressed range, because the PIL score (if the test measures the concept validly) should represent more than just the absence of depression. The findings in the extremely depressed range are harder to interpret; perhaps BDI scores exceeding 29 represent much the same state of mind. The differences in the predictability of PIL score from BDI score among the ranges of depression supports the notion that purpose in life is not just the inverse of depression. In addition, PIL and BDI scores were differentially predictive of follow-up variables, indicating that these tests do, in fact, measure different, albeit overlapping, constructs.

Changes in Depression Levels During Treatment

General treatment effects, abstinence, and/or more specific program components likely contributed to the reduced levels of depression found in treatment completers. Mean BDI scores changed from clinical to normal ranges in all three treatment groups, and remained in the mild-moderate depression range in the waiting list group.

Treatment Completion

Facilities B and C showed similar trends in who completed and who dropped out of treatment. Facility A's pattern was quite different from the other two. Facility A had a higher completion rate. Social desirability scores, main abused substance and marital status were not predictors of drop-out at Facility A, while they were significant
predictors at Facilities B and C.

The differences in completion rate may have been due to population differences between Facility A and the other two treatment centers. A higher proportion of Facility A patients rated alcohol as their main problem substance, and main problem substance was significantly related to program completion at Facilities B and C. In addition, social desirability scores of Facility A patients were significantly higher than those of Facility B and C patients, and social desirability scores were predictive of completion at Facilities B and C. The patients at Facility A may not have had social desirability scores low enough for this dimension to be a salient predictor of drop-out (i.e., people with lower social desirability scores than Facility A's typical population might be more likely to drop out at Facility A also). However, three facts suggest that population differences are not the sole explanation of differences in drop-out rate: (1) the overall drop-out rate at Facility A (including polydrug users) did not differ from the drop-out rate of our selected sample there; (2) the drop-out rate of people at Facilities B and C who indicated alcohol as their main problem substance was substantially higher than the drop-out rate at Facility A; and (3) social desirability scores had no predictive ability with regard to drop-out at Facility A.

Therefore, it is likely that both population and
program differences contributed to the treatment completion differences between Facility A and the other two treatment centers. It may be that Facility A is somehow able to motivate a wider variety of people to complete treatment. For example, while marital status was significantly related to program completion at Facilities B and C, it was not at Facility A. One explanation of the social desirability findings is that social desirability scores indirectly measure a tendency toward compliance and that this tendency is more important for success at Facilities B and C.

Unemployment was significantly related to drop-out when the data from all three treatment centers were pooled. Employment may provide incentive to complete treatment and may also be an index of general stability and psychological adjustment (Siddall & Conway, 1988). Employment is the demographic characteristic which has most consistently been associated with good outcome in the literature (Elal-Lawrence et al., 1986; Emrick & Hansen, 1983; Nathan, 1986).

BDI and PIL scores were not predictive of drop-out for the sample as a whole. This finding may reflect that for some people psychological distress can be motivating, while for others it generates hopelessness which could lead to drop-out. Interestingly, in the subgroup of nondepressed individuals, the PIL score was a positive predictor of treatment completion. Perhaps when there is less mental distress (depression) to motivate a person, the need for a
positive, forward-aiming motivator (e.g., sense of purpose in life) becomes more salient. Pre-treatment PIL and BDI scores, then, do not predict completion, suggesting that either they have no bearing on treatment completion or that they are related to it in such a way that effects cancel each other out, as postulated above.

Perceptions of Improvement

Agreement among the three sources of follow-up data was high for drinking/drug use categories. Patient self-reports were the most conservative of the three, suggesting that patient self-reports can indeed be accurate when patients are guaranteed confidentiality. There has been disagreement over the validity of patient self-reports in the literature (e.g., O'Farrell, Cutter, Bayog, Detch, & Fortgang, 1984; Singer, 1983). The present study clearly supports the utility of patient self-report data in research.

There was no significant correlation between the treatment center and the patient on the five life-change variables — relationship with intimate partner, family relations, friendships, work, and health. It may be that lay and professional criteria for these types of changes are different, or that treatment staff do not have the day-to-day information on the patients’ functioning needed for accurate assessment. Significant correlations were found between the patient and the non-professional corroborator (usually spouse or close family member) on ratings of
changes in health, relationship with intimate partner and relationship with family. Either of the above explanations of the lack of agreement between patient and treatment center is consistent with these findings, because the non-professional corroborators are laypersons and they are also likely to have more day-to-day data on these three life areas than the treatment center staff members.

If patients and treatment staff have different criteria for rating changes, elucidating these criteria could have important theoretical and clinical implications. One is confronted with the issue of how best to define improvement in the outcome areas other than drinking and drug use behaviours. Perhaps more specific behavioural ratings would yield useful information for researchers, in addition to the more global ratings of perceptions of change assessed in this study. In the clinical realm, aftercare treatment staff should examine with their patients the criteria on which evaluations of relationships, work, etc. are based. In some cases it would be useful to involve people who are close to the patient in the aftercare phase. It is important for clinicians to ask thorough questions in order to understand their patients’ assumptions and processing styles better, and also to avoid forming premature conclusions based on limited information.

Aspects of Recovery

The follow-up PIL score was significantly correlated with all five life-change variables. Sense of purpose in
life is a by-product of satisfying engagement with other people and work. It may also inspire one to devote more energy to these areas of one's life. All five patient-rated life-change variables were also significantly correlated with each other, while only changes in family relations and health were significantly associated with drinking/drug use category. This suggests that some aspects of short-term recovery are relatively independent of each other, while others are closely associated. Thus, it is possible for some patients to benefit from treatment without much improvement in their substance abuse, while other patients may achieve abstinence but still have significant difficulties in other areas of their lives.

Work and friendships were perceived to be the least affected by substance abuse before treatment and were also not associated with drinking/drug use at follow-up. Not surprisingly, health improvement was correlated with reduction in substance abuse. Changes in family relations were similarly associated with reduction in substance abuse. Family members are usually very happy and relieved when a substance abuser decreases or ceases using his/her substance. They usually reinforce the person for this change, quarrel less, and generally have smoother relations.

Changes in relations with an intimate partner are more complex. Although the relationship with spouse/intimate partner was perceived by patients to be greatly negatively
affected by substance abuse before treatment, improvement in this area appeared to be a separate dimension of recovery. In an intimate relationship, relational roles and dynamics which have been solidified through daily interaction over years do not automatically change because substance abuse stops. As well, marital problems may have been present before the development of the drinking problem and may have contributed to it (McCrady, 1986). Marital therapy is one of the few treatment components which has consistently been found to increase treatment success (Miller & Hester, 1986), possibly because the relationship with the intimate partner is one of the most difficult arenas for change.

The above highlights how important it is for aftercare treatment staff to carefully monitor all major life areas, rather than to assume that improvement in one will necessarily lead to improvement in the others.

**Different Aspects of Outcome Predicted by PIL and BDI Scores**

At both Facilities A and B, post-treatment PIL score was a positive predictor of changes in relationship with intimate partner at follow-up, while post-treatment BDI score was not. A sense of purpose in life may be associated with a type of growth orientation which can nurture difficult types of interpersonal change. Another possible explanation of the positive correlation between post-treatment PIL score and change in intimate relationship is that the higher PIL scores resulted from relationships having already started to improve during treatment.
At Facility A, post-treatment BDI score was a better predictor of drinking/drug use than post-treatment PIL score. Post-treatment depression at Facility A may stem from low self-efficacy based on inadequate learning of the skills taught there, or it may be a primary depression which preceded the substance abuse problem. Depression can inhibit or interfere with the coping skills necessary for relapse prevention and this may explain the salience of post-treatment BDI scores at Facility A. Why were BDI scores not predictive of drinking/drug use at Facility B? The construct measured by the PIL test may be more salient at Facility B because a type of "overconfidence" appears to render Facility B patients susceptible to relapse. Level of depression and purpose in life predicted outcome differently in the two treatment groups because the treatment contexts which produced and interacted with these psychological states differed greatly.

**Limitations of the Study**

The generalizability of the present study's findings is limited because only three treatment centers (two in some analyses) were included in the study and because the majority of the participants were white and male. Outcome measures were short-term; long-term patterns of PIL scores and follow-up variables could not be assessed. The interpretations and conclusions presented in this chapter assume that the short-term measures are related to longer-
term outcome. This may or may not be the case. Another implicit assumption is that treatment drop-outs probably did not fare well. Again, because data could not be obtained on the substance abuse, sense of purpose in life, and general functioning of these individuals after they dropped out, this is only an assumption. The conclusions and implications presented in this chapter should be read with these limitations in mind.

Overview of Patient Changes through the Treatment Process

Most substance abusers enter treatment perceiving a number of major life areas to be negatively affected by substance abuse. Most are depressed and have a low sense of purpose in life. Some people complete treatment, while others drop out. An interaction of person and program characteristics influences who will complete treatment. For example, the program's emphasis on compliance and the patient's need for approval will interact to determine the appropriateness of the patient-treatment center match; characteristics of the patient, such as marital status and legality of abused substance, may interact with program characteristics (perhaps emphasis on the family and middle-class values).

The majority of treatment completers experience a decrease in depression to normal levels and an increase in sense of purpose in life to average levels. Levels of depression and purpose in life at the end of treatment are
predictive of some follow-up variables three months later. The patterns of prediction vary according to the orientation of the treatment program, as discussed above.

**Meaning and Significance of the PIL Score**

The question of what the post-treatment PIL score, or any PIL score for that matter, represents will now be addressed. The PIL test should measure a subjective sense which is a by-product of engagement. According to Frankl (1969), there are three ways of deriving meaning — creative, experiential, and attitudinal. Creative endeavors include one's work, artistic productions, and other instances where one gives something to the world. Frankl used the term "experiential" to refer primarily to relationships with other people. Attitudinal meaning comes into play when one is faced with a fate which cannot be changed; one can still determine the attitude which he or she will take toward this fate. A sense of purpose in life, then, can be a by-product of any of these three types of engagement.

It is not possible to conclude definitively from the present study whether the PIL score does, in fact, represent what it was meant to. It may well measure a more superficial version of the concept that Frankl studied. However, its inverse relationship with the BDI score and its predictive ability with regard to some outcome measures add support to previous research which suggests that the test
has satisfactory validity. Examining the findings on prediction of outcome in the context of Frankl's ideas on the development of a sense of meaning generates some intriguing possible explanations of these findings.

It is likely that at both Facilities A and B, a major factor contributing to psychological change was the experience of relating to people in new ways. Through their relationships with fellow patients and treatment personnel, patients learned to see themselves differently; Prochaska and DiClemente (1986) refer to this process as "self-reevaluation" in their comprehensive model of change. The relationships themselves were also therapeutic because they were "helping relationships" (Prochaska & DiClemente, 1986), which are particularly important during this stressful period in the patients' lives. The treatment centers differ in their emphasis on teaching skills and on addressing spiritual concerns directly, with Facility A focusing more on the former and Facility B more on the latter. Frankl (1969) stresses again and again that meaning must be found but cannot be given. Therapists can help people in areas where meaning can be derived, but they cannot supply meaning for the patient. Perhaps patients at Facility A are taught skills which make them more likely to engage with their work and other people in ways that produce (unique) meaning for them. Facility B's explicit emphasis on spirituality may be somewhat counterproductive because
some people will direct their energy towards incorporating the treatment center's philosophy of life when they would be better off learning basic skills which they lack. Because meaning cannot simply be given by one person to another, the adoption of Facility B's language and belief system may lead to a false sense of meaning in some cases. By this I am not suggesting that the experience of meaning is less intense -- only that it is not internally derived, so it is not grounded in the person's life context. The PIL test cannot differentiate between an internally and externally derived sense of meaning. The present study suggests that either type may lead to some positive short-term outcomes, e.g., improved marital relations and health. However, the inverse relationship of post-treatment PIL score and drinking status at Facility B suggests that a sense of purpose or meaning which is not an internally derived by-product may lead to negative consequences. Facility B's recognition of spirituality as an important aspect in the development of and recovery from substance abuse problems is laudable. However, it appears that it is premature to address the spiritual level in treatment until the patient has learned the coping and relational skills necessary to prevent relapse.
Recommendations for Treatment Programs

The following recommendations, based as they are on a limited sample of treatment centers and patients, are offered with caution. Facility A appeared to be of help to a wider variety of patients than Facility B (and perhaps Facility C). Because Facilities A and B differed in many ways, it was not possible to pinpoint the reasons for the differences in efficacy. Some major ways in which the two centers differed are as follows: at Facility A the treatment center was smaller and the program shorter; the implicit model of substance abuse assumed more heterogeneity of etiology and recovery; the staff included a wider variety of professionals; the program was more skill-focused; there was less confrontation; and patients were encouraged from the start to make their own life decisions. Any or all of these factors may have contributed to Facility A’s high completion and success rates.

Treatment programs should assess themselves with regard to the following questions: What types of people complete/drop out of our program? Can we make changes to address a wider range of people, or should we restrict our population to those who will likely complete the program? What types of people succeed best here? What does this tell us about our program? Do we take into account individual differences in specific deficits? If we have a unique philosophy or language, do they have different meanings for different patients?
Treatment programs should in some way assess their patients' levels of depression and sense of purpose in life before they leave the inpatient phase of treatment. Specifically, the following questions could be addressed: Does the patient have any symptoms of depression remaining? If so, is treatment for the depression indicated? Does the patient appear to have sufficient skills to cope once he leaves the center? Does the patient appear to be overly confident?

Future Research Directions

A similar study with a variety of treatment centers of differing orientations should yield worthwhile information about the effects of program components and philosophy on outcome and on PIL scores. A variety of patient groups (e.g., minorities, women) should be included in such a study, and the patients should be followed up for a much longer period of time.

A specific question raised by the present study was: What criteria do patients and treatment staff use to assess changes in patient functioning after completion of the inpatient phase of treatment? This question could be investigated empirically by means of questionnaires or interviews. More general research directions include elucidation of the meaning of the PIL test score for people of varying ages and life histories, and exploration of the test's usefulness for patients receiving mental health
services for problems other than addictions.

Sense of purpose in life appears to be a salient dimension for substance abusers. The present study indicates that its role must be understood within a particular treatment context. Furthermore, the salience of the concept does not imply that the spiritual dimension should be addressed explicitly in treatment programs. The research seems to support skill-based treatment for substance abuse problems. A sense of purpose in life tends to emerge from this type of treatment as a by-product of increased engagement with activity and with other people.
Alcohol Dependence Scale

These questions refer to the past 12 months

1. How much did you drink the last time you drank?
   a. Enough to get high or less
   b. Enough to get drunk
   c. Enough to pass out

2. Do you often have hangovers on Sunday or Monday mornings?
   a. No
   b. Yes

3. Have you had the "shakes" when sobering up (hands tremble, shake inside)?
   a. No
   b. Sometimes
   c. Almost every time I drink

4. Do you get physically sick (e.g., vomit, stomach cramps) as a result of drinking?
   a. No
   b. Sometimes
   c. Almost every time I drink

5. Have you had the "DTs" (delirium tremens)—that is, seen, felt or heard things not really there; felt very anxious, restless, and over-excited?
   a. No
   b. Once
   c. Several times

6. When you drink, do you stumble about, stagger, and weave?
   a. No
   b. Sometimes
   c. Often

7. As a result of drinking, have you felt overly hot and sweaty (feverish)?
   a. No
   b. Once
   c. Several times

8. As a result of drinking, have you seen things that were not really there?
   a. No
   b. Once
   c. Several times

9. Do you panic because you fear you may not have a drink when you need it?
   a. No
   b. Yes

10. Have you had blackouts ("loss of memory" without passing out) as a result of drinking?
    a. No, never
    b. Sometimes
    c. Often
    d. Almost every time I drink
11. Do you carry a bottle with you or keep one close at hand?
   a. No
   b. Some of the time
   c. Most of the time

12. After a period of abstinence (not drinking), do you end up drinking heavily again?
   a. No
   b. Sometimes
   c. Almost every time

13. In the past 12 months, have you passed out as a result of drinking?
   a. No
   b. Once
   c. More than once

14. Have you had a convulsion (fit) following a period of drinking?
   a. No
   b. Once
   c. Several times

15. Do you drink throughout the day?
   a. No
   b. Yes

16. After drinking heavily, has your thinking been fuzzy or unclear?
   a. No
   b. Yes, but only for a few hours
   c. Yes, for one or two days
   d. Yes, for many days

17. As a result of drinking, have you felt your heart beating rapidly?
   a. No
   b. Once
   c. Several times

18. Do you almost constantly think about drinking and alcohol?
   a. No
   b. Yes

19. As a result of drinking, have you heard "things" that were not really there?
   a. No
   b. Once
   c. Several times

20. Have you had weird and frightening sensations when drinking?
   a. No
   b. Once or twice
   c. Often

21. As a result of drinking, have you "felt things" crawling on you that were not really there (e.g., bugs, spiders)?
   a. No
   b. Once
   c. Several times
22. With respect to blackouts (loss of memory):
   a. Have never had a blackout
   b. Have had blackouts that last less than an hour
   c. Have had blackouts that last for several hours
   d. Have had blackouts that last for a day or more

23. Have you tried to cut down on your drinking and failed?
   a. No
   b. Once
   c. Several times

24. Do you gulp drinks (drink quickly)?
   a. No
   b. Yes

25. After taking one or two drinks, can you usually stop?
   a. Yes
   b. No
FRF Desirability Scale Items -- Form E

22. I am quite able to make correct decisions on difficult questions. T
44. I am never able to do things as well as I should. F
66. My life is full of interesting activities. T
88. I believe people tell lies any time it is to their advantage. F
110. If someone gave me too much change I would tell him. T
132. I would be willing to do something a little unfair to get something that was important to me. F
154. I get along with people at parties quite well. T
176. I did many very bad things as a child. F
198. I am glad I grew up the way I did. T
220. I often question whether life is worthwhile. F
242. I am always prepared to do what is expected of me. T
264. My daily life includes many activities I dislike. F
286. I am one of the lucky people who could talk with my parents about my problems. T
308. Many things make me feel uneasy. F
330. I am careful to plan for my distant goals. T
353. I find it very difficult to concentrate. F
APPENDIX B

PRE-TREATMENT/FIRST WAITING LIST QUESTIONNAIRE
Today's date: ____________________________

Your age _____ Sex: Male ____ Female ____

Please place a checkmark after the answers which apply to you.

(A) Marital Status: married/cohabiting ____
   single, never married ____
   separated or divorced ____
   widowed ____

(B) Employment Status: unemployed ____
   employed ____
   student ____
   homemaker ____
   retired ____

(C) Current Legal Status:
   Waiting for a court appearance?
   No ____ Yes ____
   If Yes, what type of charge? ____________________________

   On probation or on parole?
   No ____ Yes ____
   If Yes, what type of charge? ____________________________

   I have no legal problems. True ____ False ____

(D) Highest Education Level Completed
   elementary school ____
   high school ____
   college or university ____
   graduate/professional school ____

(E) Income: What was your annual take-home pay in the past year?
   ____________________________

(F) What was the date of your last drink? ___________________

(G) Do you have problems with any drugs in addition to alcohol? Yes ____ No ____
   If Yes, which drug(s)? ____________________________
(H) Reasons for coming to treatment centre:
I feel that I have an alcohol and/or drug problem. No ____ Yes ____

Others are concerned with my use of alcohol and/or drugs. No ____ Yes ____

Who referred you to get treatment? For example, you yourself, a family member or friend, doctor, psychotherapist, priest, court, etc.

Is your attendance at this treatment centre required by the court or your employer?

Court No ____ Yes ____

Employer No ____ Yes ____

(I) Could you please rate the effect of your alcohol use on each of the following five areas of your life.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>made it much better</td>
<td>made it better</td>
<td>no effect</td>
<td>made it worse</td>
<td>made it much worse</td>
</tr>
<tr>
<td>(a) Relationship with spouse or girlfriend/boyfriend</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(b) Relationship with other family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(c) Friendships</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(d) Work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(e) Health</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
(J) Drinking Pattern in the past year

(a) How many days on average were you drinking each month?

(b) How many days in each month were you drunk?

(c) How much did you drink on your average drinking day?
(A drink = one bottle of beer, one 5 oz. glass of wine, or a drink made with 1.5 oz. of hard liquor.)

1 or 2 drinks
3 to 5 drinks
6 to 9 drinks
10 or more drinks
APPENDIX C

POST-TREATMENT QUESTIONNAIRE
What are your plans for aftercare once you leave the treatment centre?

No plans

Yes ____  No ____

Meetings at your treatment centre

Yes ____  No ____

A.A.

Yes ____  No ____

Other

Yes ____  No ____

If Yes, explain.________________________________________

________________________________________
APPENDIX D

FOLLOW-UP QUESTIONNAIRES
Follow-up Questionnaire for Patients

(1) Drinking Status

(a) Have you had anything to drink in the past three months since you left the treatment centre?

Yes ____  No ____

If No, go to question (2).

(b) If Yes, how many days in the past three months were you drinking? ________

(c) How many days in the past three months were you drunk? ________ days

(d) On the days you were drinking in the past three months, how much did you drink on average?

(One drink = one bottle of beer, one 5 oz. glass of wine, or a drink made with 1.5 oz. of hard liquor.)

1 or 2 drinks ________
3 to 5 drinks ________
6 to 9 drinks ________
10 or more drinks ________

(2) (a) Have you used any drugs in the past three months since leaving the treatment centre?

Yes ____  No ____

If No, go to question (3).
(b) If Yes, what type(s) of drugs?

________________________________________________________

(c) If Yes, how much and how often?

________________________________________________________

(3) Would you describe your drinking/drug use pattern now as being pretty much the same as before treatment, improved or worse?

improved _____
the same _____
worse _____

(4) Could you please rate the changes that have occurred in the following five areas of your life in the past three months (since you left Facility A/B/C).

<table>
<thead>
<tr>
<th></th>
<th>1 much worse</th>
<th>2 worse</th>
<th>3 no change</th>
<th>4 better</th>
<th>5 much better</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Relationship</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>with spouse or</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>girlfriend/boyfriend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B) Relationship</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>with other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>family members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(C) Friendships</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(D) Work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(E) Health</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
(5) Please indicate which (if any) aftercare activities you have participated in since leaving the treatment centre.

(A) treatment center    Yes _____  No _____

If Yes, how many times per week? _____
If Yes, how many weeks out of the past 12? _____

(B) A.A.    Yes _____  No _____

If Yes, how many times per week? _____
If Yes, how many weeks out of the past 12? _____

(C) Other    Yes _____  No _____

If Yes, describe. ____________________________

(6) In the past three months have you noticed any increase in one or more of the following behaviours which you or someone else considers to be unhealthy or too much?

(a) eating    Yes _____  No _____
(b) smoking    Yes _____  No _____
(c) sex    Yes _____  No _____
(d) gambling    Yes _____  No _____

Would you like the results of my study to be mailed to you (probably in early 1990)?

Yes _____
No _____

If you would, could you please write your name and the address to which I should send the results.

______________________________

______________________________
Follow-up Questionnaire for Corroborators

John Doe, who was treated at ______________ for an alcohol problem, has given me permission to contact you as part of a research project. Could you please answer the following questions regarding Mr. Doe to the best of your ability.

Your relationship (for example, wife, therapist, sister, etc.) to Mr. Doe: ________________________________

(1) Drinking Status
   As far as you know, has ____________ had anything to drink in the past three months since leaving the treatment centre?

   Yes _____ No _____
   If No, go to question (2).

   (b) If Yes, how many days in the past three months was he/she drinking, to the best of your knowledge?

   ______

   (c) How many days in the past three months was he/she drunk, as far as you know?

   _____ days

(2) (a) To the best of your knowledge, has ______________ used any drugs in the past three months since leaving the treatment centre?

   Yes _____ No _____
   If No, go to question (3).

   (b) If Yes, what type(s) of drugs?

   ________________________________________________
(c) If Yes, how much and how often?


(3) Would you describe ________________'s drinking pattern now as being pretty much the same as before treatment, improved or worse?

improved ____
the same ____
worse _____

(4) Could you please rate the changes that you think have occurred in the following five areas of Mr. Doe's life in the past three months (since he/she left ________________).

<table>
<thead>
<tr>
<th></th>
<th>1 much worse</th>
<th>2 worse</th>
<th>3 no change</th>
<th>4 better</th>
<th>5 much better</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Relationship with spouse or girlfriend/boyfriend</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(B) Relationship with other family members</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(C) Friendships</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(D) Work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>(E) Health</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
(5) To the best of your knowledge indicate which (if any)
    aftercare activities __________________ has participated in
    since leaving the treatment centre.

    (A) treatment center Yes _____ No _____

    If Yes, how many times per week? _____
    If Yes, how many weeks out of the past 12? _____

    (B) A.A. Yes _____ No _____

    If Yes, how many times per week? _____
    If Yes, how many weeks out of the past 12? _____

    (C) Other Yes _____ No _____

    If Yes, describe. ________________________
APPENDIX E

SECOND WAITING LIST QUESTIONNAIRE
Have you had a drink in the past 3 weeks (since you filled out the first questionnaires)?

Yes _____  No _____

Have you used any drugs in the past 3 weeks?

Yes _____  No _____

Are you still on the waiting list or has your treatment program started?

Still on waiting list _____
I have started treatment _____

Which treatment program are you in or will you be in?

Inpatient program _____
Outpatient program _____
Evening program _____

If you would like the results of my study sent to you, please write your name and address below:

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________
APPENDIX F

SCORING KEY FOR VARIABLES
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>QUESTIONNAIRE</th>
<th>RANGE OF VALUES TO BE USED IN ANALYSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEMOGRAPHICS</td>
<td>Pre-treatment/ First Waiting List Questionnaire</td>
<td>continuous male or female unemployed or other married(cohabiting) or other legal problems or no legal problems</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
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<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOTIVATION</td>
<td>Pre-treatment/ First Waiting List Questionnaire, Question 1</td>
<td>Score: Add ratings. Range: 5 to 25.</td>
</tr>
<tr>
<td>AFTERCARE</td>
<td>Post-treatment Questionnaire and Follow-up Questionnaire</td>
<td>Yes or No</td>
</tr>
<tr>
<td>ABSTINENCE (waiting list group)</td>
<td>Second Waiting List Questionnaire</td>
<td>Yes or No</td>
</tr>
<tr>
<td>VARIABLE</td>
<td>QUESTIONNAIRE</td>
<td>RANGE OF VALUES</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>FOLLOW-UP</td>
<td>Follow-up</td>
<td>Abstaining</td>
</tr>
<tr>
<td>DRINKING STATUS</td>
<td>Questionnaires</td>
<td>Improved</td>
</tr>
<tr>
<td></td>
<td>(Patient and Corroborators)</td>
<td>Relapsed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unknown</td>
</tr>
</tbody>
</table>

Abstaining: If answers to #1a and #2a are No, or if answer to #1a or #2a is Yes and answer to #1b or #2c is one or two days.

Improved: If answer to #1a (or #2a) is Yes, if answer to #1b (or #2c) is three days or more (but less than two-thirds of pre-treatment frequency), and if answer to #3 is "improved".

Relapsed: If answer to #3 is "the same" or "worse", or if answer to #3 is "improved" but frequency of consumption is two-thirds or more of pre-treatment frequency.

Unknown: If data are unavailable.

<table>
<thead>
<tr>
<th>FOLLOW-UP</th>
<th>LIFE AREA</th>
<th>CHANGE</th>
<th>Questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relationship with mate</td>
<td>Ratings ranging from 1 to 5 on each.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family relations</td>
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<td></td>
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<tr>
<td></td>
<td>Friendships</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Consent Form for Treatment Group

Your name __________________________

I am carrying out a research project as part of my Ph.D. program. This research should add to our understanding of recovery from alcoholism. I would greatly appreciate your participation in my study, but the decision of whether or not you wish to participate is completely voluntary. Refusing to participate will not affect your treatment in any way.

Your participation will involve filling out some questionnaires at the beginning and end of your inpatient program and three months after you finish the program.

The information you provide at the beginning and end of your treatment program will be treated with the same degree of confidentiality and respect as any other information you have provided to the treatment centre. Only clinical staff and myself will have access to the information.* Three months after you leave the treatment centre I will send you a brief questionnaire in the mail to see how you are doing. The information you give me on this questionnaire will be completely confidential. Only I will see it.

The results of the study will be analyzed and presented in group form only. Individual participants will not be referred to or identified in any way. The information you will provide me with will be very valuable to me and will not affect your treatment. Could you please indicate with a ___ whether you will participate in my study.

(A) I am willing to fill out the questionnaires at the beginning and end of the treatment program.

Yes _____ No _____

(B) I am willing to fill out the follow-up questionnaire which Ms. Waisberg will mail to me three months after I finish the treatment program.

Yes _____ No _____

If Yes, my name and the address where it should be mailed are:

________________________________________

________________________________________

________________________________________

* (For Facility C patients all information provided was completely confidential, i.e., none of it was accessible to staff.)
A phone number where I can be reached for a reminder call is

_________  _________
Area code     Number

(C) If it is acceptable to you, I would also like to contact a person who knows you in three months to get his/her view of how you are doing. This person could be someone on staff at the treatment centre or someone important in your life (e.g., wife, husband, close friend). Please indicate your consent or refusal with a ___.

(i) I give Ms. Waisberg permission to contact Facility A (B, C) in three months to obtain information on how I am doing.

Yes _____ No _____

(ii) I give Ms. Waisberg permission to contact a person who is close to me in three months to obtain information on how I am doing.

Yes _____ No _____

If Yes, the name, address and phone number of this person are:

________________________________________

________________________________________

________________________________________

________________________________________

________________________________________

This person is my ___________
(Fill in this person's relationship to you, e.g., wife, friend, etc.)

Date ____________________ Signature ____________________

Thank you very much for your cooperation. If you would like to know the results of the study I will provide copies of it to your treatment centre when it is completed (Fall, 1989). You may also write to me directly for a summary of the findings at that time.

Jodie Waisberg, M.A.
Consent Form for Waiting List Group

Your name ____________________________

I am carrying out a research project as part of my Ph.D. program. This research should add to our understanding of recovery from alcoholism. I would greatly appreciate your participation in my study, but the decision of whether or not you wish to participate is completely voluntary. Refusing to participate will have no effect on your treatment program at Facility A. It will not influence which program you are assigned to and it will not affect when your program will begin.

Your participation will involve your filling out some brief questionnaires here today and at home in three weeks. I will mail the second questionnaires to you in three weeks. Please indicate with a ___ whether you are willing to participate in my study.

I am willing to fill out questionnaires today and to fill out two questionnaires which will be sent to me in three weeks.

Yes _____ No _____

If Yes, please give your name and the address where the second questionnaires should be mailed.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

A phone number where you can be reached for a reminder call is

(_____)________________________
area code number

Date __________________________ Signature __________________________

Thank you for your assistance.

Yours truly,

Jodie Waisberg, M.A.
APPENDIX H

COVERING LETTERS
Covering Letter for Waiting List Group

Dear ______________________,

Three weeks ago you filled out some questionnaires at Facility A for my research study. At that time, you gave me permission to send you the enclosed questionnaires for you to fill out and mail back to me in the self-addressed stamped envelope. Could you please do this as quickly as possible (if possible, before you start your treatment program).

Thank you for your help with my research.

Jodie Waisberg, M.A.

P.S. If you would like the results of the study sent to you (probably in early 1990), please indicate your name and address on the bottom of the enclosed questionnaire.
Covering Letter for Patient Groups

Dear ______________________,

When you were at Facility A (B, C) you filled out some questionnaires for my research study. You also gave me permission to send you the enclosed questionnaires for you to fill out and mail back to me in the self-addressed stamped envelopes. Could you please do this as quickly as possible.

Thank you again for your help with my research.

Jodie Waisberg, M.A.

P.S. If you would like the results of the study sent to you (probably in early 1990), please indicate your name and address on page 4 of the enclosed questionnaire.
Covering Letter for Corroborators

Dear ____________________,

Mr./Ms. __________________ gave me permission to contact you for some information for a research study I am carrying out on recovery from alcoholism.

Could you please fill out the enclosed questionnaire as accurately as possible and mail it back to me in the self-addressed stamped envelope.

Thank you for your assistance.

Yours truly,

Jodie Waisberg, M.A.
APPENDIX I

ANOVAS BY GROUP ON DEMOGRAPHIC CHARACTERISTICS
Table I.1

Summary of Analysis of Variance of Age as a Function of Treatment Center (Facilities A, B, and C)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Center</td>
<td>2573.08</td>
<td>2</td>
<td>1286.54</td>
<td>10.22***</td>
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<tr>
<td>Error</td>
<td>13593.69</td>
<td>108</td>
<td>125.87</td>
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</table>

**** p < .0001
Table I.2

Summary of Analysis of Variance of Income for Facility A Groups (Treatment Group vs. Waiting List Group)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
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<td>1</td>
<td>4660383632.39</td>
<td>6.00*</td>
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<td>Error</td>
<td>62113481192.00</td>
<td>89</td>
<td>776418514.90</td>
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</table>

* p < .05
APPENDIX J

ANOVAS BY GROUP ON PSYCHOLOGICAL TEST SCORES
Table J.1

Summary of Analysis of Variance of ADS as a Function of Treatment Center (Facilities A, B, and C)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Center</td>
<td>690.12</td>
<td>2</td>
<td>345.06</td>
<td>3.72*</td>
</tr>
<tr>
<td>Error</td>
<td>9937.24</td>
<td>107</td>
<td>92.87</td>
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* p < .05
Table J.2

Summary of Analysis of Variance of PRF-DY as a Function of Treatment Center (Facilities A, B, and C)

<table>
<thead>
<tr>
<th>Source of Variation</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Center</td>
<td>146.96</td>
<td>2</td>
<td>73.48</td>
<td>5.71**</td>
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<tr>
<td>Error</td>
<td>1363.04</td>
<td>106</td>
<td>12.86</td>
<td></td>
</tr>
</tbody>
</table>

** $p < .01$
Table J.3

Summary of Analysis of Variance of ADS for Facility A

Groups (Treatment Group vs. Waiting List Group)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>682.09</td>
<td>1</td>
<td>682.09</td>
<td>8.39**</td>
</tr>
<tr>
<td>Error</td>
<td>7234.33</td>
<td>89</td>
<td>81.28</td>
<td></td>
</tr>
</tbody>
</table>

** p < .01
APPENDIX K

AGREEMENT AMONG FOLLOW-UP SOURCES ON DRINKING/DRUG USE
Of the 27 cases where information was obtained both from the patient and the treatment center, the category was the same in 22 cases. Of the five cases where there was disagreement, four of these were instances of the patient’s data placing him in the improved category and the treatment center’s data placing him in the abstinent category. That is, the patients’ data were more conservative. In only one case did the patient rate himself less conservatively than the treatment center; the patient rated himself as abstinent, while the treatment center rated him as relapsed. The treatment facility staff member who provided follow-up data on this patient reported that the patient had a strong tendency to lie.

Information was obtained from both the patient and another person in his or her life in 32 cases. This other person was usually a spouse, relative or friend. Ratings in 29 cases were identical. In the other three cases the patients’ ratings were more conservative. In two cases the patients’ ratings classified them as relapsed while the corroborators’ ratings classified them as improved, and in the third case the patient’s ratings classified him as improved while the corroborator’s ratings classified him as abstinent.

In the 18 cases where follow-up information was obtained from the treatment center and another corroborator, there were two instances of disagreement. In both cases the treatment center staff member rated the patient as abstinent and the other rater rated the patient as improved.
APENDIX L

MEAN PATIENT-RATED LIFE CHANGE SCORES

-146-
Table L

Mean Patient-Rated Life Change Follow-up Scores

<table>
<thead>
<tr>
<th>Life Change Variable</th>
<th>Facility A</th>
<th>Facility B</th>
<th>Facility C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant Relationship</td>
<td>n = 31</td>
<td>n = 11</td>
<td>n = 5</td>
</tr>
<tr>
<td></td>
<td>M = 3.81</td>
<td>M = 4.36</td>
<td>M = 4.00</td>
</tr>
<tr>
<td></td>
<td>SD = 1.11</td>
<td>SD = 0.67</td>
<td>SD = 1.41</td>
</tr>
<tr>
<td>Family Relations</td>
<td>n = 34</td>
<td>n = 12</td>
<td>n = 5</td>
</tr>
<tr>
<td></td>
<td>M = 4.15</td>
<td>M = 4.50</td>
<td>M = 4.20</td>
</tr>
<tr>
<td></td>
<td>SD = 0.86</td>
<td>SD = 0.52</td>
<td>SD = 0.84</td>
</tr>
<tr>
<td>Friendships</td>
<td>n = 34</td>
<td>n = 12</td>
<td>n = 5</td>
</tr>
<tr>
<td></td>
<td>M = 3.82</td>
<td>M = 3.83</td>
<td>M = 4.40</td>
</tr>
<tr>
<td></td>
<td>SD = 0.97</td>
<td>SD = 0.94</td>
<td>SD = 0.89</td>
</tr>
<tr>
<td>Work</td>
<td>n = 29</td>
<td>n = 12</td>
<td>n = 5</td>
</tr>
<tr>
<td></td>
<td>M = 3.83</td>
<td>M = 4.17</td>
<td>M = 3.80</td>
</tr>
<tr>
<td></td>
<td>SD = 1.04</td>
<td>SD = 0.94</td>
<td>SD = 1.10</td>
</tr>
<tr>
<td>Health</td>
<td>n = 34</td>
<td>n = 12</td>
<td>n = 5</td>
</tr>
<tr>
<td></td>
<td>M = 4.26</td>
<td>M = 4.00</td>
<td>M = 3.80</td>
</tr>
<tr>
<td></td>
<td>SD = 0.96</td>
<td>SD = 1.04</td>
<td>SD = 1.30</td>
</tr>
</tbody>
</table>

Note. These mean scores are based on ratings provided by patients. The patients who returned their follow-up questionnaires tended to be those who were abstinent or improved. Therefore, these means are not representative of all of the treatment completers.
APPENDIX M

CORRELATIONS BETWEEN FOLLOW-UP PIL SCORE
AND LIFE CHANGE VARIABLES
Table M

Correlations Between Follow-up PIL Score and Patient-Rated Life Change Variables

<table>
<thead>
<tr>
<th>Life Change Variable</th>
<th>n</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner</td>
<td>47</td>
<td>.67 ***</td>
</tr>
<tr>
<td>Family</td>
<td>51</td>
<td>.48 ***</td>
</tr>
<tr>
<td>Friends</td>
<td>51</td>
<td>.30 *</td>
</tr>
<tr>
<td>Work</td>
<td>46</td>
<td>.35 *</td>
</tr>
<tr>
<td>Health</td>
<td>51</td>
<td>.50 ***</td>
</tr>
</tbody>
</table>

* p < .05; *** p < .001.
APPENDIX N

REGRESSION ANALYSES WITH POST-TREATMENT PIL SCORE AS A PREDICTOR VARIABLE AND LIFE CHANGE SCORES AS CRITERION VARIABLES
Table N.1

Summary of Regression Analysis: Prediction of Change in Relationship with Intimate Partner (with Post-treatment PIL Score as a Predictor Variable)

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>( R^2 )</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>10.39</td>
<td>3</td>
<td>3.46</td>
<td>.24</td>
<td>3.93*</td>
</tr>
<tr>
<td>Treatment Center</td>
<td>.23</td>
<td>1</td>
<td>.23</td>
<td></td>
<td>.26</td>
</tr>
<tr>
<td>Post-treatment PIL</td>
<td>6.62</td>
<td>1</td>
<td>6.62</td>
<td></td>
<td>7.51**</td>
</tr>
<tr>
<td>Treatment Center X</td>
<td>.05</td>
<td>1</td>
<td>.05</td>
<td></td>
<td>.06</td>
</tr>
<tr>
<td>PIL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>33.51</td>
<td>38</td>
<td>.88</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* \( p < .05; \) ** \( p < .01 \)
Table N.2

Summary of Regression Analysis: Prediction of Change in Health
(with Post-treatment PIL Score as a Predictor Variable)

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>9.79</td>
<td>3</td>
<td>3.26</td>
<td>.23</td>
<td>4.10**</td>
</tr>
<tr>
<td>Treatment Center</td>
<td>.03</td>
<td>1</td>
<td>.03</td>
<td></td>
<td>.03</td>
</tr>
<tr>
<td>Post-treatment PIL</td>
<td>7.17</td>
<td>1</td>
<td>7.17</td>
<td></td>
<td>9.00**</td>
</tr>
<tr>
<td>Treatment Center X PIL</td>
<td>.10</td>
<td>1</td>
<td>.10</td>
<td></td>
<td>.13</td>
</tr>
<tr>
<td>Error</td>
<td>33.45</td>
<td>42</td>
<td>.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** p < .01
Table N.3

Summary of Regression Analysis: Prediction of Change in Work
(with Post-treatment PIL Score as a Predictor Variable)

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>8.82</td>
<td>3</td>
<td>2.94</td>
<td>.22</td>
<td>3.40*</td>
</tr>
<tr>
<td>Treatment Center</td>
<td>5.38</td>
<td>1</td>
<td>5.38</td>
<td></td>
<td>6.23**</td>
</tr>
<tr>
<td>Post-treatment PIL</td>
<td>1.30</td>
<td>1</td>
<td>1.30</td>
<td></td>
<td>1.51</td>
</tr>
<tr>
<td>Treatment Center X PIL</td>
<td>4.86</td>
<td>1</td>
<td>4.86</td>
<td></td>
<td>5.62*</td>
</tr>
<tr>
<td>Error</td>
<td>31.96</td>
<td>37</td>
<td>.86</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01
Table N.4

Summary of Regression Analysis: Prediction of Change in Work by Post-treatment PIL at Facility A

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-treatment PIL</td>
<td>7.39</td>
<td>1</td>
<td>7.39</td>
<td>.25</td>
<td>8.77**</td>
</tr>
<tr>
<td>Error</td>
<td>22.75</td>
<td>27</td>
<td>.84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** p < .01
APPENDIX O

REGRESSION ANALYSES WITH POST-TREATMENT BDI SCORE
AS A PREDICTOR VARIABLE AND LIFE CHANGE
SCORES AS CRITERION VARIABLES
Table 0.1

**Summary of Regression Analysis: Prediction of Change in Health**

*(with Post-treatment BDI Score as a Predictor Variable)*

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>8.66</td>
<td>3</td>
<td>2.89</td>
<td>.20</td>
<td>3.50*</td>
</tr>
<tr>
<td>Treatment Center</td>
<td>.42</td>
<td>1</td>
<td>.42</td>
<td></td>
<td>.51</td>
</tr>
<tr>
<td>Post-treatment BDI</td>
<td>7.87</td>
<td>1</td>
<td>7.87</td>
<td></td>
<td>9.56**</td>
</tr>
<tr>
<td>Treatment Center X</td>
<td>.79</td>
<td>1</td>
<td>.79</td>
<td></td>
<td>.96</td>
</tr>
<tr>
<td>BDI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>34.58</td>
<td>42</td>
<td>.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* * p < .05; ** p < .01
Table 0.2

Summary of Regression Analysis: Prediction of Change in Family Relations (with Post-treatment BDI Score as a Predictor Variable)

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>3.79</td>
<td>3</td>
<td>1.26</td>
<td>.13</td>
<td>2.16</td>
</tr>
<tr>
<td>Treatment Center</td>
<td>.12</td>
<td>1</td>
<td>.12</td>
<td></td>
<td>.21</td>
</tr>
<tr>
<td>Post-treatment BDI</td>
<td>.41</td>
<td>1</td>
<td>.41</td>
<td></td>
<td>.70</td>
</tr>
<tr>
<td>Treatment Center X</td>
<td>2.55</td>
<td>1</td>
<td>2.55</td>
<td></td>
<td>4.36*</td>
</tr>
<tr>
<td>BDI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>24.58</td>
<td>42</td>
<td>.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05
Table 0.3

Summary of Regression Analysis: Prediction of Change in Work
(with Post-treatment BDI Score as a Predictor Variable)

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>$R^2$</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>5.97</td>
<td>3</td>
<td>1.99</td>
<td>0.15</td>
<td>2.12</td>
</tr>
<tr>
<td>Treatment Center</td>
<td>0.28</td>
<td>1</td>
<td>0.28</td>
<td></td>
<td>0.30</td>
</tr>
<tr>
<td>Post-treatment BDI</td>
<td>3.01</td>
<td>1</td>
<td>3.01</td>
<td></td>
<td>3.20</td>
</tr>
<tr>
<td>Treatment Center X BDI</td>
<td>3.84</td>
<td>1</td>
<td>3.84</td>
<td></td>
<td>4.08*</td>
</tr>
<tr>
<td>Error</td>
<td>34.81</td>
<td>37</td>
<td>0.94</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p < .05$
Table 0.4
Summary of Regression Analysis: Prediction of Change in Work by Post-treatment BDI at Facility A

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>$R^2$</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-treatment BDI</td>
<td>4.96</td>
<td>1</td>
<td>4.96</td>
<td>.16</td>
<td>5.31*</td>
</tr>
<tr>
<td>Error</td>
<td>25.18</td>
<td>27</td>
<td>.93</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p < .05$
APPENDIX P

MEANS AND ANOVA SUMMARY FOR PSYCHOLOGICAL
TEST SCORES OF ALCOHOL ONLY VS. POLYDRUG ABUSERS
Table P.1

Mean Psychological Test Scores and Change Scores of Patients Abusing Only Alcohol and Polydrug Abusing Patients

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Alcohol Only</th>
<th>Polydrug</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Initial PIL</td>
<td>89.08</td>
<td>21.35</td>
</tr>
<tr>
<td>Initial BDI</td>
<td>15.78</td>
<td>9.19</td>
</tr>
<tr>
<td>PRF-Dy</td>
<td>8.90</td>
<td>3.59</td>
</tr>
<tr>
<td>ADS</td>
<td>20.85</td>
<td>9.04</td>
</tr>
<tr>
<td>PIL Change Score</td>
<td>17.60</td>
<td>16.79</td>
</tr>
<tr>
<td>BDI Change Score</td>
<td>-11.42</td>
<td>8.61</td>
</tr>
</tbody>
</table>
Table P.2

Summary of Analysis of Variance of PRF-Dy as a Function of Polydrug Use (only alcohol vs. alcohol plus other drugs)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polydrug Use</td>
<td>103.79</td>
<td>1</td>
<td>103.79</td>
<td>7.90**</td>
</tr>
<tr>
<td>Error</td>
<td>1406.21</td>
<td>107</td>
<td>13.14</td>
<td></td>
</tr>
</tbody>
</table>

** p < .01
APPENDIX Q

MEANS AND ANOVA SUMMARY FOR PSYCHOLOGICAL
TEST SCORES OF PATIENTS WITH ALCOHOL VS. OTHER DRUGS
AS PRIMARY ABUSED SUBSTANCE
Table Q.1

**Mean Psychological Test Scores and Change Scores of Patients Whose Primary Abused Substance is Alcohol and Patients Whose Primary Abused Substance is Another Drug**

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Alcohol M</th>
<th>SD</th>
<th>n</th>
<th>Other M</th>
<th>SD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial PIL</td>
<td>86.11</td>
<td>20.81</td>
<td>87</td>
<td>85.61</td>
<td>17.09</td>
<td>23</td>
</tr>
<tr>
<td>Initial BDI</td>
<td>17.09</td>
<td>9.65</td>
<td>87</td>
<td>17.77</td>
<td>10.61</td>
<td>22</td>
</tr>
<tr>
<td>PRF-Dy</td>
<td>8.14</td>
<td>3.75</td>
<td>86</td>
<td>7.48</td>
<td>3.73</td>
<td>23</td>
</tr>
<tr>
<td>ADS</td>
<td>21.98</td>
<td>9.03</td>
<td>87</td>
<td>16.04</td>
<td>11.62</td>
<td>23</td>
</tr>
<tr>
<td>PIL Change Score</td>
<td>19.54</td>
<td>16.71</td>
<td>63</td>
<td>10.90</td>
<td>11.47</td>
<td>10</td>
</tr>
<tr>
<td>BDI Change Score</td>
<td>-12.32</td>
<td>8.90</td>
<td>63</td>
<td>-10.60</td>
<td>7.31</td>
<td>10</td>
</tr>
</tbody>
</table>
Table Q.2

Summary of Analysis of Variance of ADS as a Function of Primary Abused Substance (alcohol vs. other drugs)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance</td>
<td>640.44</td>
<td>1</td>
<td>640.44</td>
<td>6.93**</td>
</tr>
<tr>
<td>Error</td>
<td>9986.91</td>
<td>108</td>
<td>92.47</td>
<td></td>
</tr>
</tbody>
</table>

** p < .01
REFERENCES


*Journal of Individual Psychology, 27*, 76-79.


*American Psychologist, 41*, 783-793.
VITA AUCTORIS

Jodie Waisberg was born on September 6, 1958 in Sudbury, Ontario to Carl and Edna Waisberg. She received her B.Sc. in Zoology from the University of Toronto in 1981, her M.A. in Clinical Psychology from the University of Windsor in 1984, and her Ph.D. in Clinical Psychology from the University of Windsor in 1990.