A Logistic Discriminant Analysis of Factors Affecting the Attrition and Retention in an Outpatient Treatment Program for Female Alcoholics

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A LOGISTIC DISCRIMINANT ANALYSIS OF FACTORS AFFECTING THE ATTRITION AND RETENTION IN AN OUTPATIENT TREATMENT PROGRAM FOR FEMALE ALCOHOLICS

by

James Loser

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
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and Counseling Psychology

Western Michigan University
Kalamazoo, Michigan
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A LOGISTIC DISCRIMINANT ANALYSIS OF FACTORS AFFECTING
THE ATTRITION AND RETENTION IN AN OUTPATIENT
TREATMENT PROGRAM FOR FEMALE ALCOHOLICS

James Loser, Ed.D.
Western Michigan University, 1986

The study was conducted in the context of three conditions related to alcoholism which impact Western society: the destructive effects of the disease, the paucity of research concerned with female alcoholics, and the problems of early termination from residential treatment.

The specific purpose of the study was to investigate the feasibility of using demographic and personality variables of female alcoholic outpatients at a residential facility to: (a) predict probable program completion for female residents at the time of admission and (b) predict probable premature terminations at the time of admission.

The Fundamental Interpersonal Relations Orientation Behavior Scale (FIRO-B) and the following nine demographic variables were chosen to test the above objectives: ethnicity, age, marital status, education, employment status, occupational status, arrest history, previous treatment, and prior drug usage.

The subjects under investigation were 232 female alcoholics ranging in age from 18 to 64 years who attended a residential alcohol treatment facility in Grand Rapids, Michigan, within the last 10
years. The FIRO-B was administered to all subjects after detoxification and prior to admission to the program. A program completer was defined as any resident who completed all three levels of the behavioral program. A program dropout was defined as a resident who did not complete the three levels.

The Logistic Discriminant Analysis was chosen for data analysis because of the nature of the data. The analyses yielded a statistically significant difference ($p < .05$) between the completer group and the noncompleter group for age, legal drug use, and no previous treatment. No significant differences were found between the completer group and the noncompleter group on the following variables: education, marital status, economic status, occupational status, arrest history, and ethnicity. The analyses of the FIRO-B group means revealed that the Expressed Inclusion (EI) scale score discriminated at a $p$ of .08. Since this was an exploratory study, the writer chose to include EI in the predictor equation.

An equation was formulated for use by administrators of treatment programs for female alcoholics in an effort to improve prediction of attrition and retention for each referral at the time of admission.
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I have eagerly awaited the time when I could begin to express my gratitude to all those who have helped make my quest of a doctoral degree in Counseling Psychology a reality.

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James Loser
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CHAPTER I

INTRODUCTION

Alcoholism and alcohol abuse are widely recognized as serious public health problems (W. Mayer, 1983). The United States Office of Technology Assessment (1983) reported that between 10 and 15 million Americans have serious alcohol consumption problems and another 35 million people are indirectly affected. The report cites dramatic statistics that further elucidate the impact of alcoholism in America. For example, 15% of the nation's health care costs and an estimated 50 billion dollars per year in related program costs are attributed to alcoholism. The financial costs of alcohol abuse are further substantiated by a report from the National Institute on Alcohol Abuse and Alcoholism (1981) which points out that $584.1 million in federal funds were spent in fiscal year 1980 in alcohol related programs. The economic costs of alcoholism are also a significant problem to business and industry. Quayle (1983) pointed out that employees with a drinking problem are absent 16 times more than the average employee, have an accident rate 4 times greater, use a third more sick leave, and have 5 times more compensation claims while on the job. In addition, 40% of all industrial fatalities can be traced to alcohol abuse. Total costs to business and industry are estimated at well over a billion dollars per year.

Widespread alcohol abuse among our teenage population suggests that the adverse economic and social consequences of drinking will
continue. Numerous sources report flagrant abuse of both alcohol and marijuana by adolescents (Johnston, 1977; Johnston, Bachman, & O'Malley, 1979; National Institute on Alcohol Abuse and Alcoholism, 1978; Peterson, 1980). Abelson, Fishburne, and Gisin (1977) reported that more than 31% of adolescents between the ages of 12 and 17 were current drinkers. None of these survey data indicates that these drinking trends will reverse or abate.

Although the staggering economic costs of alcoholism are mentioned most prominently in the literature, the disease's detrimental effects on the physical health of the chronic abuser are equally as distressing. Organ damage, brain dysfunction, cardiovascular disease, and mental disorders are all correlates of heavy drinking. Quayle (1983) proposed that as the nation's number one killer, alcoholism is gaining on heart disease, cancer, and diabetes. The life expectancy of an alcoholic is 10-12 years shorter than an average American (U.S. Office of Technology Assessment, 1983).

The negative social consequences of drinking have been well documented. The U.S. Office of Technology Assessment (1983) estimated that alcoholism is a factor in as many as 40% of all problems brought to family courts, is known to be a major factor in divorce, and is associated with family disestablishment.

The statistics and observations cited above certainly establish the devastating impact of alcoholism on American society. The financial and social burdens as well as the human pain and suffering attributed to alcoholism affect all aspects of our lives. (Goodwin, 1976; Noble, 1975).
Women and Alcoholism

The incidence of alcoholism among women has been on the rise during much of the twentieth century (Shaw, 1980); and at present, the number of alcohol dependent women in the United States is estimated at 900,000, or 20% of the alcoholic population (Beckman, 1975). Many authors believe that alcoholism among American women is increasing, particularly as the role of women in society changes (Edwards, Chandler, Hensman, & Peto, 1972; Fraser, 1973; Schuckit & Morrissey, 1976). Keil (1978) explained that as changes occur in the roles which women play in our society they will be brought increasingly into situations in which they are expected to drink. Women with the highest rate of alcoholism include those over age 55 who are living alone, young women with small children, women with alcoholic husbands, and employed women, especially those in stressful occupations (Knupfer, 1982). In fact, alcoholism may be a greater problem for females than for males since drinking among women is covert and is indirectly aided or condoned by family silence (Beckman, 1973). This secretiveness leads many authorities to believe that the number of female alcoholics is actually much higher than statistics indicate.

Alcoholism specialists have not only become aware of the increase in the number of female alcoholics but are also more cognizant of the unique problems faced by the female alcohol abuser (Knupfer, 1982). For example, female alcoholics have a significantly greater morbidity and mortality rate when compared to other alcoholic populations (Nathan, 1983). This disproportionate death rate is due to a
higher percentage of successful suicides, accidental deaths, and death from liver cirrhosis. In this context, the mortality rates for women who are alcoholics are 3 times greater than for women in the general population (Schmidt & DeLint, 1969). Women are more likely than men to develop drinking related cancer, cardiovascular disorders, brain damage, and other physical complications of alcoholism even at the same level of alcohol dependency (Knupfer, 1982). Furthermore, female alcoholics have a greater probability of becoming cross-addicted than their male counterparts (Hetherington, 1985). This dual addiction may be partly explained by the attitude of physicians who prescribe psychoactive drugs for women twice as often as for men (Abelson et al., 1977). Physicians are often unaware of the patient's drinking problem or may simply choose not to address it. According to Aldoory (1978), when an alcohol problem is identified in a female patient, physicians often treat the addiction with tranquilizers. This approach often leads to cross-addiction and treatment complications.

The unique problems faced by the female alcoholic are further underscored by the complications that arise in connection with the use of birth control medication. Oral contraceptives tend to abate the metabolism of alcohol. Thus, women taking birth control pills will remain intoxicated longer than women not taking contraceptives (Jones & Jones, 1976). However, in the same article the authors concluded that women using oral contraceptives tend to drink less alcohol than women in general.
There are numerous psychosocial factors that highlight the unique difficulties encountered by the female alcoholic. Beckman (1976), for example, reported that mothers for female alcoholics were generally perceived as the rejecting parent. She also noted that a significantly higher proportion of female alcoholics were raised by foster families or relatives and that problem drinking among their parents was frequently mentioned by the alcoholic women she surveyed. Female alcoholics frequently cite a number of factors in an effort to explain their dependency. Marital conflicts, tensions, physical complaints (including postpartum and menopausal depression), problems with children and in-laws, the death of a loved one, and the poor quality of relationships with their spouses are all mentioned by women as factors underlying their drinking (Beckman, 1976). Beckman believed that alcoholism in women almost always produces greater disruption in family life than alcoholism in men. A child may be shielded from a drinking father, but rarely from a drinking mother (Gomberg, 1976; Schuckit & Morrissey, 1976).

As a result of the realization that their problems and dynamics differ from those of the male alcoholic (Shaw, 1980), female alcoholics recently have become targets of prevention and treatment efforts. Emrick (1975) concluded that formal treatment programs that address the unique dynamics of the female alcoholic do indeed impact the probability that their consumption will be reduced significantly. Most researchers, however, admit that they have confined their studies to men since most of the treatment centers studied have few female clients. This limitation has led to a lack of descriptive
data on female alcoholics compared to that available for males (Corrigan, 1974). In a review of the literature concerning alcoholism treatment outcome, Vannicelli (1984) reported that between 1972 and 1980 females were studied far less frequently than males. Only in the past 10 to 15 years have female alcoholics been studied as a distinct population with any consistency (Moyar, 1981).

Female alcoholics are often ignored or lumped together with male alcoholics in both research and treatment efforts; thus, few studies are available focusing solely on female alcoholism (Beckman, 1975). Another factor that may contribute to the lack of research with this population is the greater stigma placed upon female intoxication. This biased perception has contributed to the tendency to ignore the problem altogether (Johnson & Garzon, 1978). Gomberg (1974) pointed out that many professionals view the female alcoholic as much "sicker" than her male counterpart. She suggested that the major problem in treatment of the female alcoholic is neglect rather than a double standard in treatment. Muchowski-Conley (1981) concluded that the increased number of females seeking services for alcohol related problems has heightened the need for research in this area. The existing information on female alcoholics is inconclusive yet raises serious questions as to the efficacy of present rehabilitation methods.

Writers concerned with the special problems encountered in the treatment of female alcoholics have offered several suggestions (Kleeman, 1982; Sandmaier, 1977). Augusta (1982) asserted that in view of recent evidence of marked psychosocial and physiological
differences between male and female alcoholics, more attention should be focused on the special needs of women in treatment. Beckman (1984) identified special services that need to be incorporated in treatment programs for the female alcoholic, e.g., child care, treatment for children, women support groups, and health care. She also believed that social networks must be developed to support and encourage women's efforts to seek help. Sandmaier (1977) described several alcoholic treatment programs run by women for women. She postulated that their underlying philosophy is to develop a sense of unity and pride. She identified self-identity, sexuality, hostile feelings, and family relationships as problems needing attention in treatment programs for women. Lewin (1985) and Kern, Schmelter, and Fanelli (1978) concluded that women alcoholics benefited more from therapeutic treatment than the men did. They also stated that male and female alcoholics have different treatment needs that may be addressed more effectively through gender-specific programs. Lewin (1985) found no evidence to support the belief that female alcoholics have a poorer treatment prognosis than male alcoholics. Beckman (1978) also concluded that women in treatment for alcoholism do not have a poorer prognosis than do men.

Statement of the Problem

Although the literature regarding the treatment of alcoholics substantiates the benefits received from treatment, many alcoholics leave treatment programs against professional advice before their treatment is completed. Research indicates that 52% to 75% of
patients in outpatient alcoholic treatment programs terminate prior to the fourth session (Baekeland & Lundwall, 1975). The problem of early termination is no less severe in the residential treatment of alcoholism where high dropout rates tend to be the rule rather than the exception. Baekeland and Lundwall (1975) reported dropout rates from time-limited residential alcohol treatment programs ranging from 13.7% to 46%, with a mean of greater than 28%. These investigators found that higher dropout rates were reported for psychotherapeutically oriented programs than for the less rigorous rehabilitation programs such as half-way houses or recovery homes. Examples of such higher dropout rates that have been reported are 35% (Gross & Nerviano, 1973), 46% (Tomsovic, 1970), and 36% (Wilkinson, Prado, Williams, & Schnadt, 1971) of patients entering such programs who exit prior to program completion.

Since alcoholism is considered a chronic, rather than a situational problem, alcohol treatment is regarded as a long-term treatment process (Chafetz, 1970; Nathan & Lansky, 1978). Individuals who terminate treatment during the early phase of treatment, including the hospitalization phase, are considered treatment failures in that they do not remain in treatment long enough to benefit substantially (Bowen & Androes, 1968; Nathan & Lansky, 1978; Tomsovic, 1970). Lin (1975) reported that alcoholics had a higher proportion of irregular discharge for "leaving without permission" as well as discharge for "leaving against advice" than did psychiatric and medical population groups.
The positive relationship between length of hospitalization and long-term outcome has been demonstrated in a number of studies (Bowen & Androes, 1968; Ellis & Krupinski, 1964; Kissin, Rosenblatt, & Machover, 1968; Ritson, 1969). Furthermore, it has been demonstrated that early terminators from both inpatient and outpatient alcohol treatment programs have less favorable outcomes than do program completers (Bowen & Androes, 1968; Storm & Cutler, 1968; Tomsovic, 1970). Ogborne (1978) believed that with rare exception the dropouts may be presumed to have returned to drinking. While the bulk of the evidence supports the relationship between outcome and the length of stay, it should also be noted that not all premature terminators are failures in the long term. Dropouts may, and indeed often do, re-enter treatment at a later date. Fitzgerald, Pasewark, and Clark (1971) found that female alcoholics were less likely than were the males to actually complete the program at the time of their first admission at an inpatient setting. However, they were more likely to complete treatment on their second admission.

Dropouts pose a problem to treatment programs since early terminators waste a program's limited financial and personal resources. The early identification of patients as potential completers or terminators is of value in guiding treatment decisions (Daniels, Margolis, & Carson, 1963; Gibbs & Flanagan, 1977; Huber & Danahy, 1975; Kissin, Platz, & Su, 1970; Stuen & Solberg, 1970). Prognostic information can be used to screen out high risk patients likely to leave treatment too early to derive significant benefit. Since the same treatment program yields different outcomes for different
patients, those patients who are high risk in one type of program may be referred for a more suitable treatment alternative. Thus, the identification of high risk types constitutes a first step toward the development of treatment methods or specific modalities aimed at reducing premature termination.

The problem of predicting length of treatment and identifying which patients will leave a treatment program prematurely has concerned many investigators. If the potential terminators could be distinguished from completers early in the program, several benefits would accrue. First, greater effort could be directed toward influencing the dropout group to stay for treatment. Second, as we have noted, therapeutic efforts could be focused on patients most likely to complete a treatment program; and third, admission policies with regard to the selection of patients' care could be modified for greater cost effectiveness.

The prediction problem is especially acute for females since the majority of studies regarding program completion have been conducted on male alcoholics. Further investigation of the characteristics and underlying personality variables for the female alcoholic population would be extremely beneficial in assisting administrators of female alcoholic treatment programs in making programmatic decisions.

Purpose of the Study

The purpose of the study was to investigate the feasibility of using demographic and personality variables of female alcoholic outpatients in a residential treatment facility to: (a) predict, at
time of admission, the probability of program completion for patients
and (b) predict, at time of admission, which patients are likely to
terminate treatment prematurely.

To examine the possibilities stated above, the present study
used scores derived from the Fundamental Interpersonal Relations
Orientation Behavior Scale (FIRO-B). In addition, the demographic
variables of ethnicity, age, marital status, education, employment
status, occupational status, arrest history, previous treatment, and
drug use were analyzed.

Rationale

Most investigations have failed to discriminate treatment com­
pleters from noncompleters on the basis of personality characteris­
tics (Fitzgerald, Pasewark, & Tanner, 1967; Gross & Nerviano, 1973;
Hoy, 1969; Huber & Danahy, 1975; Miller, Pokorney, & Hanson, 1968;
Mozdzierz, Macchitelli, Conway, and Krauss (1973) compared the Minne­sota Multiphasic Personality Inventory (MMPI) results of alcoholics
who completed a 6-week inpatient treatment program with those who
left the program against medical advice. Although there were no
significant differences on the 10 MMPI clinical scales, the direction
of differences between the two groups indicated that alcoholics who
left the treatment program were more defensive about admitting inter­
personal problems and denied dependency needs and conflicts.

Most personality measures have not been useful in predicting
attrition and retention in alcohol treatment programs. Nevertheless,
there is ample justification for using the FIRO-B in the present investigation. First, the FIRO-B has never been used to investigate treatment attrition and retention among alcoholics. Second, the personality characteristics which the FIRO-B measures (need for control, need for affection, and need for inclusion) would appear to be highly relevant. It could be postulated logically that individuals experiencing difficulties with intimate relationships would have a more difficult time completing a residential treatment program than those that find close relationships less stressful. Furthermore, the extent of need for control, affection and inclusion in a group would appear to have relevancy in a treatment situation.

Pragmatically the FIRO-B was chosen because it is inexpensive and easily administered, requiring 10-15 minutes of patient time to answer written questions and a few minutes of clerical time for scoring. Thus, the instrument is ideally suited for use in this type of treatment setting.

While the primary focus of the present investigation was the identification of program attrition and retention correlates of the FIRO-B, a number of demographic variables were also examined. Demographic variables were included in the present study because a body of research has demonstrated greater success in predicting treatment attrition and retention from sociocultural and life history events than from personality characteristics (Armor, Polick, & Stanbul, 1976; Cahalan, 1974; Crawford, 1976; Miller et al., 1968; Schuckit & Winoku, 1972; Thomas, 1971; Wilkinson et al., 1971). If continuation in treatment can be predicted as efficiently using, for example,
"years of education," what then is the justification for using the more complex, expensive, and time consuming procedures that are involved in the administration and scoring of personality measures? Therefore, in the interest of parsimony, demographic variables were included in the present analysis.

Limitations

The following were considered limitations of the study:

1. The alcoholic patients at in this study may not have been representative of other alcoholic patients, nor of alcoholics in general. Therefore, research results from the study may not have high external validity.

2. The study was not designed to account for the effects of program elements on attrition or retention.

3. An assumption was made in this study that the test information obtained from the patients was valid.

4. The study did not account for changes in patients' contemporary history.

Synopsis of Dissertation

The remainder of this dissertation will review the literature concerned with demographic variables investigated in the study, as well as the FIRO-B; describe the methodology and statistical treatment of the data; interpret and present the results of the study; and provide concluding remarks concerning the findings and future research.
CHAPTER II

REVIEW OF THE LITERATURE

The review of the literature focuses on three general areas of research: (a) demographic variables as potential predictors of attrition and retention in residential alcoholism treatment programs, (b) the use of psychological tests to predict patient outcome in alcoholism treatment programs, and (c) research concerned with the FIRO-B.

Demographic Variables

This study investigated a number of demographic variables as potential predictors of attrition and retention in a residential alcoholism treatment program. Two criteria were used in the selection of these variables: their relevancy according to research findings and their accessibility from the treatment records of residents. The following demographic variables were included in the study:

**Ethnicity:** Most studies related to continuation in treatment have been restricted to Caucasian males. However, there is evidence, particularly in sociological research, that supports the influence of ethnic and cultural factors in the etiology and incidence of alcoholism (Cahalan, 1974). In related research, black females were found to have poorer treatment outcomes than did white female alcoholics (Idleburg, 1982).
**Age:** Mixed results have been reported from research studies which have used age of client as a discriminator between alcohol treatment program completions and dropouts. Some researchers found that the demographic variable of age was not useful in predicting alcoholism treatment program completion or attrition (Krasnoff, 1976; Sinnett, 1961; Wilkinson et al., 1971). However, there is another body of research indicating that age is an important variable to include when attempting to predict program completions and dropouts in an alcoholism treatment program, particularly for female alcoholics (Bander, Stilwell, Fein, & Bishop, 1983; Bateman & Petersen, 1972; Leigh, Ogborne, & Cleland, 1984; Tavarone, 1983). The younger the female alcoholic the better the prognosis for treatment completion (Cramer & Blacker, 1963; Encel & Kotowicz, 1970; Schuckit & Winoku, 1972; U.S. Department of Health, Education, & Welfare, 1971).

**Marital status:** Marital status has frequently been shown to be associated with favorable prognosis, and specifically with continuation within alcoholic treatment (Altman, Angle, Brown, & Sletten, 1972). Marital status has been used alone (Armor et al., 1976) or in conjunction with other variables (Cahalan & Room, 1974) as a measure of social stability. Being married suggests some capacity for success in establishing and maintaining an interdependent relationship with another person. Additionally, a spouse may serve as a source of social pressure or incentive for remaining in treatment (Armor et al., 1976). Marital status has been correlated positively with successful program completion among male alcoholics (Crawford, 1976; Fedor, 1981). Widow status is included in the currently married
group rather than in the divorced or separated category because epidemiological research has demonstrated that the many types of mental disorders for widows are more similar to married than to divorced or separated individuals (Cahalan, 1974).

**Education:** More years of education reflect an achievement oriented attitude and is further associated with intelligence. Education treated as an independent variable or used in composite indices of social position or social economic status has often been found to be related to continuation in treatment (Blane & Meyers, 1964; Kissin et al., 1970; Pisani & Motansky, 1970). However, there is some evidence indicating that education has not been found to significantly differentiate remainers and nonremainers in alcohol treatment (Krasnoff, 1976; Sinnett, 1961; Wilkinson et al., 1971). Low educational achievement has been found to be related to a poor prognosis in treatment programs for female alcoholics (Bateman & Petersen, 1971, 1972; Viesselman, Spalt, & Tuason, 1975).

**Employment status:** Employment status has been used as a single index of employment stability (Armor et al., 1976) or as a component measure of social stability (Cahalan & Room, 1974). As such, it has frequently been associated with continuation of treatment. Current employment may be considered as characteristic of a relatively responsible individual with some frustration tolerance and the ability to work toward achieving goals. Employment status also may suggest a less decompensated individual who is able to exert some control over her drinking or whose severity of drinking does not inhibit current employment. Having steady employment was a significant factor for
both male and female alcoholics in achieving completion of treatment (Bateman & Petersen, 1972).

**Occupational status:** The income level of an individual or of his/her family has long been associated with social class standing. The completion of treatment correlates significantly with upper social economic status (Bergin & Garfield, 1971; Crawford, 1976). Many outpatient studies in both general psychiatric (Bergin & Garfield, 1971) and alcoholic populations (Baekeland & Lundwall, 1975) have demonstrated a positive relationship between the various indices of socioeconomic status and continuation in treatment. However, results in inpatient alcoholic populations have more often demonstrated a negative relationship among these variables (Altman, Angle, Brown, & Sletten, 1972; Blane & Meyers, 1964; Kissin et al., 1968). As suggested above, socioeconomic status may relate to motivation in that psychologically and socially deteriorated individuals remain in residential treatment longer (Kissin et al., 1970). High social status has been found to be a very important variable for treatment success and for predicting regular attendance in alcoholic treatment programs (Bander et al., 1983; Bateman & Petersen, 1972; J. Mayer & Myerson, 1971). However, the more responsibilities a female alcoholic assumed in her occupation the greater the tendency to have a poorer prognosis (Edwards, Kyle, & Nicholle, 1974; Encel, Kotowicz, & Resler, 1972; Turkington, 1985).

**Arrest history:** Arrest history has been used as an index of psychopathy. Psychopathy has repeatedly been associated with short stay in treatment (Altman, Angle, Brown, & Sletten, 1972). A history
of antisocial acting out behavior is a strong predictor of future acting out behavior (Miller et al., 1968). Prior alcohol-related arrests were found to be one of the best predictors of dropouts among female alcoholics (Leigh et al., 1984). However, a good prognosis was more likely when female alcoholics had fewer negative social consequences resulting from the alcohol related problems (Schuckit & Winoku, 1972).

**Previous treatment:** Previous treatment has been shown to be associated with longer stay in treatment (Miller et al., 1968). Some authors have viewed previous treatment as an index of motivation inferring that the patient recognizes her problems and has previously taken steps to correct the problem (Wilkinson et al., 1971). If extreme, previous treatment may reflect an institutionalized lifestyle where treatment represents an end rather than a means.

**Use of other drugs:** Thomas (1971) suggested that the use of drugs other than alcohol is negatively related to completing a treatment program. The use of illicit drugs has been found to be one of the best predictors of dropout among female alcoholics (Leigh et al., 1984).

**Psychological Testing to Predict Treatment Outcome**

Most investigators who have studied the difference between alcoholics who leave treatment prematurely and those who complete treatment have found either few differences in psychological test scores or none at all (Fitzgerald et al., 1967; Gross & Nerviano, 1973; Hoy, 1969; Huber & Danahy, 1975; Miller et al., 1968; Mozdzierz et al.,
Huber and Danahy (1975) used the MMPI in a 90-day alcoholism treatment program for veterans to determine if any of the scales could differentiate between patients who would complete the program from those who would leave early. Completers were found to differ significantly from noncompleters only on the Pd scale and the variance among Pd scores of both groups did not permit the use of this scale as a predictor of treatment completion.

Krasnoff (1977) failed to replicate some early reports which had claimed the MMPI could be used to differentiate completers from dropouts. His subjects were 61 male alcoholics. Similarly, McWilliams and Brown (1977) reported that MMPI scores failed to predict treatment completion among 120 men in an alcoholism rehabilitation program at a large state hospital. Miller et al. (1968) also reported that the MMPI did not predict treatment dropouts. Heinemann, Moore, & Gurel, (1976) used four factors: self-concept as measured by the Tennessee Self-Concept Scale, social support systems as measured by Jourard's Self-Disclosure Scale, socioeconomic status as computed on the basis of Hollingshead's Two-Factor Index of Social Position, and physical well-being as judged and indexed by a panel of physicians, in an effort to predict which clients would complete their treatment program for alcoholism. The latter two factors discriminated at a statistically significant level.

Using three well known personality measures, the Sixteen Personality Factor Questionnaire (16PF), the Personality Research Form, and
the Edwards Personal Preference Schedule (EPI), Gross and Nerviano (1973) were unable to distinguish between completers and dropouts from an inpatient alcoholism treatment program.

Ogborne (1978) reviewed more than 60 articles in an attempt to relate characteristics of alcoholic patients to treatment outcome. In a summary of those characteristics measured by psychological tests that are related to favorable outcome, he listed the following: higher F, D, Sc, Pt, and Hy scale scores on the MMPI; lower Pd scale scores on the MMPI; higher H on the 16PF; more extroverted on the EPI; Shipley-Hartford index of 81 or higher; Rorschach measures of adjustment; good self-image as indicated on the Leary Interpersonal Check-List; and higher scores on the Bender Gestalt. Unfavorable outcomes were related to the following: higher Pd on the MMPI, more neurotic on the EPI, higher N on the 16PF, and higher A on the 16PF. However, Ogborne concluded that none of these identified relationships was of sufficient magnitude to be useful in predicting treatment outcomes.

Gellens, Gottheil, and Alterman (1976) failed to find significant correlation of treatment outcome with the extroversion or neuroticism scales of the EPI, either alone or in combination, with Rohan's classification system (from the MMPI), with a 32-item Drinking Behavior Inventory, or with the MMPI-derived MacAndrew Alcoholism Scale.

In general, the literature search revealed no study which concludes that individual treatment outcome can be predicted by psychological testing with sufficient certainty to be useful.
Fundamental Interpersonal Relations
Orientation Behavior Scale

Researchers in the field of alcoholism have expended considerable effort in the identification of prognostic variables and their effects on outcomes of treatment. Knowledge of these variables may be beneficial in programming treatment for an individual client. Recent studies in the area of treatment outcome have implicated the potential influence of self-concept, interpersonal style, sex-role adjustment, and severity of dependency on outcomes of alcoholism treatment (Cooper, 1981).

In an extensive review of the literature, no previous research was found that examined the use of the FIRO-B in predicting attrition and retention for alcoholics in treatment programs. However, the literature review of the FIRO-B did identify studies that indirectly relate to the present study.

Among these is a study conducted by Keane (1983), who used the FIRO-B as one of the instruments to examine the relationships of three specific variables to psychological adjustment: the perception of family environment, locus of control, and quality of interpersonal relationships. The subjects in the study were 40 children ranging in age from 14 to 18, who had either one or two parents and whose parents were defined as alcoholics. The perception of family environment and locus of control were found to be significant predictors of adjustment, together explaining 48% of the variance in personal adjustment. The findings of the study suggest that there are variables which may serve as mediators between environmental stress and
adjustment level within the children sampled.

The FIRO-B also has a prominent role in a study by May (1981), who attempted to demonstrate that alcohol use is related to the expressed and wanted interpersonal behavior. The instrument was mailed to a random sample of 560 college juniors and seniors and a 64% return rate was achieved. In general, May concluded that alcohol use was significantly related to the inclusion dimension of interpersonal behavior but not to the control or affection dimensions. It was found that individuals with high levels of interpersonal need reported significantly higher levels of alcohol consumption than did individuals with low levels of interpersonal need. The author concluded by stating that the relationship between alcohol use and interpersonal variables is a complex and fruitful area for further investigation.

In a similar context, Burdick (1980) conducted a study regarding the interpersonal factors influencing drinking patterns among abusive drinkers, nonabusive drinkers, and nondrinkers of alcohol. The FIRO-B scale was employed to measure the wanted and expressed interpersonal dimensions of 114 male subjects. The FIRO-B data indicated that the abusive drinkers had lower scores in all areas. Combining the expressed and wanted dimensions, similar patterns emerged among the three drinking conditions. Affection, Inclusion, and Control scale means were in descending order with the Control scale mean being significantly smaller than the other two. The expressed dimension reveals similar patterns for the abusive and nonabusive drinking groups with little variation between affection and inclusion but the
control score was significantly lower. The nondrinking group had higher scores in the area of control and identical mean scores for inclusion and affection. The wanted dimension indicated lower total mean scores in control for all drinking groups with inclusion and affection following in ascending order. The score for wanted affection was significantly greater than for the other scores. The nonabusive drinking group had the greatest variability among the three scores; the abusive drinking group had the least variability. The nonabusive drinkers had the highest total mean scores in both the expressed and the wanted dimensions, whereas the abusive drinkers had the lowest total mean scores. Between the two dimensions and among the three areas assessed, the scores are lower in wanted inclusion and control and higher in wanted affection. In summary, the control factor is significantly lower on the FIRO-B among all three groups. The interaction of the other factors on the FIRO-B indicate that the need for inclusion and affection varies within the groups. This information suggests that the consumption of alcohol is influenced in accordance with the degree of social needs, as measured by the FIRO-B.

Wolf (1982) used the FIRO-B in a study of two models for the prediction of outcome in family treatment for chemical dependency. The outcome measures that were employed to determine whether the family successfully completed the treatment program were: abstinence, whole family attendance and program completion, staff perception of family change, and completion of the first Alcoholics Anonymous step. The power of a purely statistical prediction was compared
with that of the theoretical prediction. The theoretical predictions range from 66% to 64%, whereas the MMPI and FIRO-B scores used in a stepwise discriminant analysis had a prediction rate of over 90% for both types of families. Post treatment FIRO-B scores were available for 59 families. Gain scores for inclusion, control, and affection compatibility did not discriminate among families at three differing program levels.

The FIRO-B was used by Underwood (1982) to study the control tendency of the wives of recovering alcoholics. The author found that the wives' control tendencies varied and did not display either domineering or dependent tendencies. Wives reported that the most positive help during the first 18 months of their husbands' sobriety came from participation in the Alanon program.

Two recent studies, Mider (1984) and Annis and Chan (1983), used the FIRO-B to study personality characteristics. Mider (1984) used the FIRO-B to investigate the personal attributes of addicts in a drug-free therapeutic community versus a methadone maintenance treatment program. The results of the study showed that the methadone maintenance treatment subjects showed greater social dependency in terms of the more enduring personality trait, while the therapeutic community subjects were more interpersonally oriented based on the situational context. Mider concluded that social versus self-orientedness is a construct particularly well-suited to investigating the interaction of personality with treatment environment for addicts.
In the Annis and Chan (1983) study the FIRO-B was used to classify one hundred 18 through 64-year-old male offenders with alcohol and drug problems as persons having either a positive or negative self-image. The FIRO-B along with the Rosenberg Self-Esteem Inventory were used in a clustering procedure to identify the positive or negative self-images in the 100 male offenders. The results of the study indicated that the subjects with a positive self-image showed greater improvement in the group therapy program, while the subjects who were low in self-image did poorly in group therapy and benefited from institutional care.

The versatility of the FIRO-B as a research tool has been demonstrated by the three studies discussed below which address such wide-ranging problems as marital conflict, clinicians' perceptions, and control orientation.

Chiles, Strauss, and Benjamin (1980) used the FIRO-B along with other measures to study the marital conflict and sexual dysfunction of alcoholic and non-alcoholic couples. The conclusion reached in the study was that alcoholic husbands feel submissive but are not being forced by their wives to be so. This observation suggests a therapeutic approach different from the one that would be taken if the wives were actually dominating.

O'Leary, Donovan, Chaney, and Spetz (1979) used the FIRO-B along with other personality and demographic measures to study the correlates of clinicians' perceptions of patients in alcoholic treatment. The results of the study suggest that the subjects were more likely to be perceived favorably if they were young and exhibited behaviors
that corresponded to clinicians' treatment expectations. The measured personality characteristics of the subjects accounted for only small proportions of the variance in clinicians' perceptions of subjects' attractiveness.

Greenberg, Obitz, and Kaye (1978) used the FIRO-B along with other measures to study the relationships among control orientation, the FIRO-B, and the Ward Atmosphere Scale in hospitalized men alcoholics. The FIRO-B distinguished internally and externally controlled alcoholics along a need dimension. Generally, the internally controlled alcoholics expressed a greater need for inclusion and affection than did the externally controlled alcoholics.

As the review of the literature regarding the FIRO-B has pointed out, the relationship between alcohol abuse and interpersonal variables is a complex but fruitful area for further investigation. This conclusion and the lack of evidence to support the use of other psychological tests in predicting completion and attrition in alcoholic treatment programs suggest the usefulness of the FIRO-B as a predictor of treatment outcome.
In Chapter III, the methods and procedures used in conducting the study are described. The problem investigated was the prediction of program completion in a residential treatment facility for female alcoholics using selected demographic and personality variables. The organization of this chapter is as follows: purpose of the study; descriptions of the subjects and the program; the research instrument; the procedures used; and finally, the treatment of the data.

Description of the Subjects and the Program

Subjects were 232 women diagnosed as alcohol dependent with a mean age of 33.12 years ranging from 18 to 65 who were admitted into the residential treatment program at Our Hope, a private, nonprofit agency, licensed by the Michigan Office of Substance Abuse and the Michigan Department of Social Services, in Grand Rapids, Michigan, from 1976 through 1985. Table 1 displays the pertinent demographic data for the women in the study.

Table 1 indicates that with respect to criteria that presage favorable outcome from an alcohol treatment program this group was at a disadvantage. The subjects exhibited a low percentage of women who were married, a relatively low level of education, and a high rate of unemployment. With respect to racial composition, the group was predominantly Caucasian.
### Table 1
Demographic Data for 232 Residents

<table>
<thead>
<tr>
<th>Grade</th>
<th>Frequency</th>
<th>Percentage of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>7th</td>
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<td>0.9</td>
</tr>
<tr>
<td>8th</td>
<td>18</td>
<td>7.8</td>
</tr>
<tr>
<td>9th</td>
<td>20</td>
<td>8.6</td>
</tr>
<tr>
<td>10th</td>
<td>28</td>
<td>12.1</td>
</tr>
<tr>
<td>11th</td>
<td>15</td>
<td>6.5</td>
</tr>
<tr>
<td>12th</td>
<td>104</td>
<td>44.8</td>
</tr>
<tr>
<td>13th</td>
<td>16</td>
<td>6.9</td>
</tr>
<tr>
<td>14th</td>
<td>17</td>
<td>7.3</td>
</tr>
<tr>
<td>15th</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>16th</td>
<td>5</td>
<td>2.2</td>
</tr>
<tr>
<td>18th</td>
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<td>0.9</td>
</tr>
<tr>
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<td>2</td>
<td>0.9</td>
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<tr>
<th>Marital status</th>
<th>Frequency</th>
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</thead>
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<tr>
<td>Divorced</td>
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<td>35.8</td>
</tr>
<tr>
<td>Widow</td>
<td>9</td>
<td>3.9</td>
</tr>
<tr>
<td>Separated</td>
<td>56</td>
<td>24.1</td>
</tr>
<tr>
<td>Married</td>
<td>17</td>
<td>7.3</td>
</tr>
<tr>
<td>Single</td>
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<td>26.3</td>
</tr>
<tr>
<td>No data</td>
<td>6</td>
<td>2.6</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Frequency</td>
<td>Percentage of population</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>White</td>
<td>190</td>
<td>81.9</td>
</tr>
<tr>
<td>Black</td>
<td>16</td>
<td>6.9</td>
</tr>
<tr>
<td>Indian</td>
<td>18</td>
<td>7.8</td>
</tr>
<tr>
<td>Latino</td>
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</tr>
<tr>
<td>No data</td>
<td>7</td>
<td>3.0</td>
</tr>
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<table>
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<tr>
<th>Occupational status</th>
<th>Frequency</th>
<th>Percentage of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
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<tr>
<td>Part-time</td>
<td>17</td>
<td>7.3</td>
</tr>
<tr>
<td>Unemployed—looking</td>
<td>75</td>
<td>32.3</td>
</tr>
<tr>
<td>Unemployed—not looking</td>
<td>128</td>
<td>55.2</td>
</tr>
<tr>
<td>No data</td>
<td>2</td>
<td>0.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arrest history</th>
<th>Frequency</th>
<th>Percentage of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous arrests</td>
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<td>47.8</td>
</tr>
<tr>
<td>No arrests</td>
<td>120</td>
<td>51.7</td>
</tr>
<tr>
<td>No data</td>
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<td>0.9</td>
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Table 1—Continued

<table>
<thead>
<tr>
<th>Treatment history</th>
<th>Frequency</th>
<th>Percentage of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous treatment</td>
<td>174</td>
<td>75.0</td>
</tr>
<tr>
<td>No treatment</td>
<td>54</td>
<td>23.3</td>
</tr>
<tr>
<td>No data</td>
<td>4</td>
<td>1.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legal drug use</th>
<th>Frequency</th>
<th>Percentage of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>118</td>
<td>50.9</td>
</tr>
<tr>
<td>No</td>
<td>113</td>
<td>48.7</td>
</tr>
<tr>
<td>No data</td>
<td>1</td>
<td>0.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Illegal drug use</th>
<th>Frequency</th>
<th>Percentage of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>65</td>
<td>28.0</td>
</tr>
<tr>
<td>No</td>
<td>166</td>
<td>71.6</td>
</tr>
<tr>
<td>No data</td>
<td>1</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Our Hope is a private, nonprofit agency, licensed by the Michigan Office of Substance Abuse and the Michigan Department of Social Services. Alcohol dependent women are accepted into the program following detoxification. Referrals are made from other agencies or by personal interview with the director. Admission to Our Hope is voluntary and usually the result of long-term alcohol dependency and a need for a structured environment in which to change lifestyle and
behavior patterns. Our Hope has a three-level treatment program and an informal, homelike atmosphere with a medication and alcohol free environment. Group counseling and family involvement in the recovery process are important components of the overall program.

The three-level treatment program is designed to provide the necessary assistance so that the residents will successfully resume responsibilities in the home and the community. In general, a supervised mutual help, group-oriented, milieu approach to treatment is utilized with individual treatment plans and goals established to meet the needs of each resident. During Level 1, which usually occurs the first month of treatment, emphasis is on basic physical and emotional restoration of the recovering alcoholic. Residents are given information about the effects of alcohol. Individual, group, and family counseling begins and the resident is instructed in the skills of physical fitness, relaxation, homemaking. Finally, the residents are also given information on nutrition, crafts, Alcoholics Anonymous, and community education.

Usually during the second month, residents begin Level 2 of the treatment program. Intensive one-to-one counseling, assertiveness training, and self-awareness groups help the residents assume responsibility for their own recovery. Increased emphasis is given to community recreational, educational, and creative and social activities. Residents are encouraged to become more actively involved in the community.

Level 3 generally begins during the third month of the treatment program and is the final phase in making a successful transition into
the community. Emphasis is on functioning responsibly in a job, vocational training, or school. Residents prepare to return to family or independent living. Vocational training is made available, where appropriate. New Hope, a rental unit near the main treatment facility, provides space for two or three Level 3 residents to prepare for independent living.

The average stay at Our Hope is 3 months; however, this time period varies according to the individual treatment plans and goals established for each resident. The completion of each level is determined by a point system and achieving the objectives defined for each level and for each resident. The program uses a behavioral approach to accurately determine progress throughout the program.

Description of the FIRO-B

The FIRO-B, or the Fundamental Interpersonal Relationship Orientation Behavior Scale, is a measure of a person's characteristic behavior toward other people in the areas of inclusion, control, and affection. The test is based on the three-dimensional theory of interpersonal behavior (Schultz, 1958). It is designed not only to measure individual characteristics but also to assist in determining the degree two people may be compatible. The instrument is relatively short and can be completed in a few minutes by most individuals. The items in the scale are nonthreatening and do not stimulate feelings of privacy-invasion. The scale is self-administering and the scoring is a simple, rapid clerical operation. The scores produced by the various scales are relatively easy to interpret because
they are based on the same number of items.

The FIRO-B measures the three psychological attributes of need for inclusion, need for control, and need for affection either expressed or wanted from others. This produces six scores which are summed in rows and columns. The scale score differences are then obtained and the sum of the differences computed. The interpretation of these scores is obtained from a table and manual accompanying the scale.

The FIRO-B was constructed by using the Guttman (1950) technique for cumulative analysis. The items in the FIRO-B are arranged in order of decreasing popularity. If a series of items can be predicted correctly at a 90% response rate from the knowledge of how many items each person accepted, then the items are read to be reproducible. Therefore, all items are homogeneous and measure the same dimensions. The FIRO-B scales were developed on about 1,000 subjects. The reproducibility scores computed from the statistics of the 1,000 subjects are the coefficients of internal consistency for the FIRO-B. These coefficients range from .93 to .94. The coefficient of stability is another statistical measure that was employed in the construction of the FIRO-B to determine its test-retest reliability. In a study performed on Harvard students the mean coefficient was .76. The probability of an individual's score ranging from high to low is very slight, about 10%.

The content validity for the FIRO-B can be assumed because the Guttman (1950) technique was used in construction of the instrument. Construct and concurrent validities have been indirectly
demonstrated by a variety of research projects in which the FIRO-B was successfully applied since 1958 (Ullman, Krasner, & Troffer, 1964).

Description of the Procedures

The 232 female alcoholic subjects that comprised the cohort under study were treated at Our Hope over a period of approximately 10 years. During that period of time, the FIRO-B was administered to each subject within 10 days after detoxification and prior to admission to the residential treatment program. Demographic data were obtained from the resident at the initial admission interview and filed in each subject's case record. The study was a retrospective analysis of these data.

In order to collect the data in the most systematic way possible, a data collection form was prepared containing space for information on the nine demographic variables and the FIRO-B scores. These data were then analyzed by using the logistic discriminant analysis. The DEC System 10 computer at Western Michigan University was used to complete all statistical analysis.

Treatment of Data

The data were compiled and organized for entry into the computer to determine if the various predictor variables were related to the two groups of the qualitative criterion variables. The statistical procedure used to identify relationships was the logistic discriminant analysis (Fienberg, 1981). This procedure was selected on the
basis that continuous and categorical variables were used in the study. The mathematical objective of discriminant analysis is to weight and linearly combine the discriminating variables in some fashion so that the groups (program completers and dropouts) are forced to be as statistically distinct as possible. In other words, to be able to discriminate between the groups in the sense of being able to tell them apart. From this procedure it can be determined which variables are related to the criterion variable. The analysis also predicts values on the criterion variable when given values on the predictor variables.

The analytic aspect of this procedure provides statistical tests for measuring the success with which the discriminating variables actually discriminate when combined into a linear combination called a "discriminant function." More importantly, weighting coefficients are calculated which can be used and interpreted in a manner that is similar to procedures used with multiple regression analysis models. The coefficients serve to identify the variables which contribute most to differentiating groups on the criterion variable.

The stepwise selection process was used to order the discriminating variables in accordance with their power to discriminate. The process begins by choosing the single variable which has the highest values on the selection criterion. This initial variable is then paired with each of the other available variables, one at a time, and the selection criterion is computed. In conjunction with the initial variable, a new variable which produces the best criterion value is selected as the second variable to enter the equation. This
procedure of locating the next variable that would yield the best criterion score continues until all variables are selected or no additional variable provides a minimal level of improvement. By selecting the "next best" discriminator at each step, a reduced set of variables is found which is almost as powerful as, and sometimes more powerful than, the full set with respect to discrimination.

The use of the logistic discriminant analysis as a classification procedure comes after initial computation. Once a set of variables is found which provides adequate discrimination for cases with known group memberships, a set of classification functions can be derived which will permit the classification of new cases with unknown memberships. Thus, characteristics are found which do well in predicting which group the subjects will belong to, these can be used to predict the likely outcome for each subject prior to their completing the program.
CHAPTER IV

RESULTS

The purpose of the study was to analyze nine demographic variables and test scores obtained from the Fundamental Interpersonal Relations Orientation Behavior Scale (FIRO-B) for female alcoholics in a residential treatment facility in order to determine if these factors would discriminate between attrition and retention.

Analysis of the data in Table 2 indicates a statistically significant contribution ($p < .05$) to the predictive equation for age, legal drug use, and no previous treatment. However, education, marital status, economic status, occupational status, arrest history, and ethnicity failed to display significant discriminating power with respect to program attrition and retention.

Analysis of the data in Table 2 reveals that none of the scores on the FIRO-B was significant at the $p < .05$ level. However, the score on the FIRO-B measuring expressed inclusion ($p = .080$), while not statistically significant, was regarded by the writer as of sufficient magnitude to be included in the predictor equation. In an exploratory study a Type II error is to be avoided.

The $F$ tests listed in Table 2 are an artifact of the computer program for the Logistic Discriminant Analysis. The $F$ tests are designed to yield the significance of the contribution of each variable to the predictor equation.
Table 2

<table>
<thead>
<tr>
<th>p Values for All Variables and Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>F value</strong></td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Legal drug use</td>
</tr>
<tr>
<td>No previous treatment</td>
</tr>
<tr>
<td>Expressed inclusion (FIRO-B)</td>
</tr>
<tr>
<td>Illegal drug use</td>
</tr>
<tr>
<td>Wanted inclusion (FIRO-B)</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>Employment Status</td>
</tr>
<tr>
<td>Expressed affection (FIRO-B)</td>
</tr>
<tr>
<td>Arrest history</td>
</tr>
<tr>
<td>Ethnicity</td>
</tr>
<tr>
<td>Expressed control (FIRO-B)</td>
</tr>
<tr>
<td>Wanted control (FIRO-B)</td>
</tr>
<tr>
<td>Wanted affection (FIRO-B)</td>
</tr>
<tr>
<td>Marital status</td>
</tr>
</tbody>
</table>

Predictor Equation

The present study was designed to construct a predictor equation. This equation can assist program administrators make decisions regarding applicants and admissions to their programs.
Table 3 lists the coefficients and the constant that were computed from the data using the Logistic Discriminant Analysis.

Table 3
Regression Coefficients for Four Discriminant Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.040</td>
</tr>
<tr>
<td>No previous treatment</td>
<td>-0.448</td>
</tr>
<tr>
<td>Legal drug use</td>
<td>0.400</td>
</tr>
<tr>
<td>Expressed inclusion</td>
<td>0.108</td>
</tr>
<tr>
<td>Constant</td>
<td>0.652</td>
</tr>
</tbody>
</table>

The logistic discriminant analysis yielded a discriminant equation in which $y$ equals the natural log of the odds ratio $p/(1 - p)$ (Neter & Wasserman, 1974). In the odds ratio, $p$ equals the probability of not completing the program and $1 - p$ equals the probability of completing the program. The predictor equation would appear as follows:

$$y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4$$

The $B$s in the equation are the coefficients listed in Table 3. The $X$s in the equation represent the various variables or scale scores. The value of these scores are described below.

$X_1$ equals the age of the applicant. $X_2$ equals either 1 or 2 depending upon the individual's previous treatment history. If the
applicant has had previous treatment a 2 is used; if there is no previous treatment then a 1 is used. $X_3$ equals either 1 or 2 depending upon the applicant's use of legal drugs. If the applicant has used legal drugs a 1 is inserted; if no legal drugs were used a 2 is inserted. $X_4$ equals the score the applicant obtained on the FIRO-B measure for expressed inclusion.

Calculating probabilities of retention for a specific value of $Y$ is relatively straightforward. An example is provided below.

If $Y$ equals 1.2 then that would represent the natural log of the odds ratio. In order to determine the value of 1.2, one should refer to a natural log table or use a calculator. The natural log of 1.2 would be 3.32. This represents the natural log of the odds ratio of not completing the program for a particular individual. In order to find the actual probability for completion or noncompletion, the following algebraic equation is used:

$$3.32 (1 - P) = P$$

$$3.32 - 3.32P = P$$

$$3.32 = P + 3.32P$$

$$3.32 = 4.32P$$

$$\frac{3.32}{4.32} = P$$

$P = 76\%$ probability of not completing the program.

Therefore, the probability of completing the program would be 100\% minus 76\%, or 24\%.
Efficiency of the Equation

The probability of predicting attrition for a typical person who would not complete the program would be 55% (see histogram in Appendix). This represents a 5% improvement over that expected from chance. The probability of predicting attrition for a typical person who would complete the program would be 40%. This represents a 10% improvement over chance. Since the equation discriminates between completers and dropouts only slightly better than one would expect from chance, the cutoff points in Table 4 will be needed to increase the usefulness of the equation in assisting administrators to make programmatic decisions.

Table 4
Cutoff Points

<table>
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<tr>
<th>Cutoff points (P)</th>
<th>Percent correct noncompleters</th>
<th>Percent correct completers</th>
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<td>.208</td>
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<tr>
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<tr>
<td>.242</td>
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<tr>
<td>.258</td>
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Table 4—Continued

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## Table 4--Continued

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</tr>
<tr>
<td>.825</td>
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</table>

According to the cutoff points listed in Table 4, it can be seen that extreme scores render more accurate predictions, as is characteristic of making predictions from any test scores. With respect to the data set listed in Table 4, accuracy will range from 52% to 100%.

To use Table 4, it must be remembered that the cutoff points are the probabilities of an individual terminating the program. For example, if a program administrator wished to include 95% of all potential completers then the cutoff point .692 would be used. If however, the program administrator wished to be more accurate
regarding the prediction of terminators, the cutoff point of choice would be .242. At the .242 cutoff, the probability of completing the program would be approximately 76%. Needless to say, employing this high cutoff would delay admittance to a considerable proportion of individuals who would successfully complete the program.

Limitations of the Study

The results of this study are limited by the following reasons:

1. The Logistic Discriminant Analysis is less rigorous than the experimental approach because it exercises less control over the independent variables.

2. The Logistic Discriminant Analysis has a tendency to identify spurious relational patterns or elements which have little or no reliability or validity. These relational patterns can often be arbitrary and ambiguous.

3. The generalizability of the results of this study to other residential treatment programs for female alcoholics cannot be estimated. External validity needs to be established through cross validation.
CHAPTER V
SUMMARY, IMPLICATIONS, AND CONCLUSIONS

Summary of the Study

The study was conducted in the context of three conditions which impact Western society related to alcoholism: the destructive affects of the disease, the paucity of research concerned with female alcoholics, and the problems of early termination of residential treatment.

Devastating Impact of Alcoholism

Statistics and other data have been reported that establish the untoward effects of alcoholism on American society. The financial and social costs as well as the human pain and suffering caused by alcoholism are widespread and affect all aspects of our lives (Goodwin, 1976; Noble, 1975).

Paucity of Research on Female Alcoholics

Although the alcohol dependent woman has a unique set of problems that merit a greater amount of investigation, little relevant research has been conducted on women. The paucity of studies with female subjects may be due to the fact that female alcoholics are often ignored or lumped together with male alcoholics in both re­search and treatment efforts (Beckman, 1975). Another factor that
may explain the lack of research with this population is the greater social stigma placed upon female intoxication. This value judgment has contributed to the tendency to ignore the problem altogether (Johnson & Garzon, 1978). However, since an increased number of women are seeking services for alcoholism treatment, there is a heightened need for research on the topic.

**Problems of Early Terminations**

Several research studies have indicated that the average percentage of dropouts from residential alcoholism treatment programs is approximately 40% (Gross & Nerviano, 1973; Tomsovic, 1970; Wilkinson et al., 1971). Individuals who terminate during the early phase of treatment are considered treatment failures. This assumption has been confirmed by numerous studies that indicate there is a positive relationship between length of stay and long-term outcome (Bowen & Androes, 1968; Chafetz, 1970; Lin, 1975; Nathan & Lansky, 1978; Tomsovic, 1970). Individuals who terminate treatment prematurely not only jeopardize their own treatment benefits but also create problems for the treatment program itself. Because of the high cost of intake procedures, early terminators drain a program's limited financial and personnel resources. If potential terminators could be distinguished from completers during the initial phase of the program, several benefits would accrue. First, greater effort could be directed toward influencing the dropout group to remain in treatment. Second, therapeutic efforts could be focused on those most likely to complete a treatment program; and third, admission policies with regard to the
selection of patients could be modified for greater cost effectiveness.

**Purpose**

The purpose of the study was to investigate the feasibility of using demographic and personality variables of female alcoholic outpatients at a residential facility to: (a) predict probable program completion for patients at the time of admission and (b) predict the probable premature terminations at the time of admission.

In the present study, the Fundamental Interpersonal Relations Orientation Behavior Scale (FIRO-B) and a number of demographic variables were chosen to test the above stated objectives. The demographic variables included ethnicity, age, marital status, education, employment status, occupational status, arrest history, previous treatment, and prior use of drugs.

**Rationale for Use of FIRO-B**

Most personality measures have not been useful in predicting attrition and retention in alcohol treatment programs. Nevertheless, there is justification for using the FIRO-B in the present investigation. First, the FIRO-B has never been used to investigate treatment attrition and retention. Second, the personality characteristics which the FIRO-B measures (need for inclusion, control, and affection) would appear to be highly relevant. It could be postulated logically that individuals experiencing difficulties with intimate relationships would have a more difficult time completing a
residential treatment program than those that find close relationships less stressful. Furthermore, the extent of need for control and inclusion in a group would appear to have relevancy in an outpatient treatment situation. Pragmatically, the FIRO-B was chosen because it is inexpensive and easily administered.

The review of the literature regarding the FIRO-B revealed that the instrument had been used to study family treatment for chemical dependency, marital conflicts in alcohol dependent couples, and the prediction of adjustment in children of alcoholic families. The literature review regarding the FIRO-B pointed out that the relationship between alcohol abuse and interpersonal variables is a complex but fruitful area for further investigation (see Chapter II).

Rationale for Demographic Variables

Demographic variables were included in the present study because research has demonstrated greater success in predicting treatment attrition and retention from sociocultural and life history events than from personality characteristics (Altman, Angle, Brown, & Sletten, 1972; Armor et al., 1976; Blane & Meyers, 1964; Cahalan, 1974; Crawford, 1976; Miller et al., 1968; Schuckit & Winoku, 1972; Thomas, 1971; Wilkinson et al., 1971). If continuation in treatment could be as successfully predicted from demographic variables, considerable savings in time, effort, and money would be realized.

A review of the literature identified eight demographic variables that were found to be useful in predicting program attrition and retention. However, the research was found to be inconsistent
and ambiguous. Some studies found that demographic variables are useful in predicting program completers and dropouts but other studies were not able to confirm these findings.

Subjects and Procedures

The subjects under investigation were all female alcoholics ranging in age from 18 to 65 years. They were all admitted into the residential treatment program at Our Hope in Grand Rapids, Michigan, during the last 10 years. The total number of cases reviewed were 232. The FIRO-B was administered to all subjects following detoxification and prior to admission to the program. All demographic data were obtained at the initial admission interview. The subjects were judged to be program completers if they had completed the three levels of the behavioral program. A program dropout was defined as any individual who did not complete all three levels of the treatment program for whatever reason.

Summary and Discussion of Demographic Variable Findings

The analyses of data collected relative to the principal objectives of the study yielded a statistically significant contribution ($p < .05$) to the predictor equation for age, legal drug use, and no previous treatment. No significant contributions were made by the following variables: education, marital status, economic status, occupational status, arrest history, and ethnicity.
Age

Older residents were found to be more likely to complete the program. These results are consistent with Miller's et al. (1968) findings that treatment remainers were significantly older than non-remainers and with Kissin's et al. (1968) findings that treatment nonremainers were significantly younger than remainers. However, this study disputes the findings of other investigators who discovered that the younger the female alcoholic the better prognosis for treatment completion (Cramer & Blacker, 1963; Encel & Kotowicz, 1970; Schuckit & Winoku, 1972).

Use of Legal Drugs

The present results indicate that individuals who had used legal drugs have a better chance of completing the treatment program. This finding is in disagreement with Thomas's (1971) finding that the use of drugs other than alcohol was negatively related to completing a treatment program. No other research was found that related to the use of legal drugs and attrition or retention in a female alcoholic treatment program.

Previous Treatment

The data from the present study indicate that those individuals who had no previous treatment history had a greater probability of completing the treatment program. These results are in direct contradiction to the results of other studies that found previous
treatment to be associated with longer stay in treatment programs (Miller et al., 1968; Wilkinson et al., 1971).

**Ethnicity**

The ethnicity variable was not found to be related to program attrition or retention with the female alcoholic population studied. These results dispute Beckman's (1975) and Idleburg's (1982) findings that black females were less likely to complete treatment. However, the reason for this difference may be due to the small number of black subjects (16) available for comparison in this study.

**Marital Status**

The finding that marital status did not distinguish between those that completed treatment and those that did not is inconsistent with the results of other researchers (Altman, Angle, Brown, & Sletten, 1972; Armor et al., 1976; Cahalan & Room, 1974; Crawford, 1976; Fedor, 1981). This finding may suggest that it is not just the condition of being married that assists individuals in completing the treatment program but the type and quality of the marital relationship.

**Education**

The present study found that the level of education attained by each resident did not successfully discriminate between completers and dropouts. These results agree with the findings of Krasnoff (1976), Sinnett (1961), and Wilkinson et al. (1971). However, other
researchers found that the higher the education level of the individual the greater the chances of program completion (Blane & Meyers, 1964; Kissin et al., 1970; Pisani & Motansky, 1970). These inconsistent results may be attributed to the method used to measure the variables or to other reasons that will be discussed later in this chapter.

**Employment Status**

The finding of this study that employment status was not a significant predictor of program completion or noncompletion is in direct disagreement with the findings of Armor et al. (1976), Bateman and Petersen (1972), and Cahalan and Room (1974). These authors reported that having steady employment was a significant factor for both male and female alcoholics in achieving completion of treatment. This disagreement may be explained by the fact that 80% of the female alcoholics in the treatment program studied were unemployed. Since the majority of the residents in both groups were unemployed, it would have been impossible to find a significant difference between completers and noncompleters on this factor.

**Occupational Status**

Occupational status was not fully analyzed due to the paucity and quality of data available on each resident. The analysis of the limited data on this variable did indicate that this program dealt with a majority of individuals who were in the poverty range.
**Arrest History**

The arrest history variable did not discriminate between program completers or noncompleters in this study. These results fail to support the findings of Altman, Angle, Brown, and Sletten (1972); Leigh et al. (1984); Miller et al. (1968); and Schuckit and Winoku (1972). This inconsistent finding may be due to a difference in what and how the arrest history was measured in each study and differences in the treatment of female and male offenders. Thus, the predictive utility of this factor may have been depressed by the type of social consequence that resulted from the arrest.

**Summary of FIRO-B Findings**

The analyses of the FIRO-B data which were conducted to evaluate their utility in predicting program completion or noncompletion indicated that there were no significant differences at the .05 level. This finding is consistent with other investigations that concluded that psychological tests do not discriminate significantly between completers and dropouts (Fitzgerald et al., 1971; Gross & Nerviano, 1973; Hoy, 1969; Huber & Danahy, 1975; Miller et al., 1968; Mozdzierz et al., 1973; Pryer & Distefano, 1970; Sinnett, 1961; Wilkinson et al., 1971). However, the Logistic Discriminant Analysis ascertained that the Expressed Inclusion scale score had a $p$ of .080. Since the present study is exploratory, it was decided to include the item in the predictor equation.
Predictor Equation

An outcome of this study was the development of an equation that would be helpful to program administrators of treatment programs for female alcoholics in predicting the attrition and retention rate of each referral at the time of admission. By using the Logistic Discriminant Analysis the following equation was developed for use in predicting program completers and dropouts at the time of admission:

\[ Y = 0.652 + 0.040X_1 - 0.448X_2 + 0.400X_3 + 0.108X_4^* \]

\[ Y = \ln(p/(1 - p))^{**} \]

Since most investigations have found that demographic and personality variables are not consistent predictors across all programs, this type of statistical analysis could be conducted by each treatment program based on their own data collection.

The Logistic Discriminant Analysis is a flexible technique that allows for the analysis of both continuous and categorical data. At their discretion, program administrators can continue to develop measurements of various characteristics, expectations, and interlife events of both therapists and residents for use with the discriminant function. In this manner, an expanded predictor equation may be developed that would explain a larger amount of the variance between the program completer group and the program dropout group. This

*\( X \) represents the actual numerical value of each variable.

**\( p \) = probability of terminating.
information would be useful in conducting program evaluation and in planning for future program modifications.

Discussion of Results

This study and other research have confirmed that psychological tests do not discriminate between program completers and dropouts from alcoholism treatment programs. Furthermore, the data of the demographic variables display the same type of inconsistent results that other studies investigating program completers and dropouts from alcoholism treatment programs have shown. Reviewing the literature regarding the use of demographic variables as predictors of treatment retention or attrition in alcoholism treatment programs, there is no consistent set of variables that have been found to remain valid predictors throughout each treatment program studied.

It is not at all clear why results have not been consistent with other samples studied. On the one hand, results seem to demonstrate the nonequivalency of different measures intended or assumed to tap particular dimensions. For example, being married is often discussed as a factor associated with treatment continuation, but the type of marriage and the quality of the relationship is usually not defined or measured. Thus, inconsistent results may, in part, be an outcome from differences in the way variables are measured. Furthermore, these results may support the need to use multiple rather than single measures of important dimensions and highlight the need for consistency across studies. The lack of consistent results may also underscore the fact that there may be other variables that account for
individuals completing or dropping out of alcoholism treatment programs and underscore differences in results that are attributable to the gender of subjects.

There is much speculation concerning the reasons for early termination from treatment. However, there is no well-developed theory and very limited discussion in the literature with respect to the relationship of general psychiatric or specific alcohol treatments to attrition. Exceptions to this generalization are described below.

A number of authors have described patient characteristics considered to be necessary conditions for the establishment of a therapeutic relationship (Bergin & Garfield, 1971; Yalom, 1966). These characteristics include a certain degree of felt discomfort or anxiety from which the individual seeks to gain relief. Additionally, in most traditional forms of therapy, the role of the patient requires a willingness and ability to adopt a dependent attitude with the therapist. This posture is predicated on a basic attitude of trust of the therapist. Furthermore, to maintain the therapeutic relationship, the patient must be able to tolerate frustration and bind anxiety emerging in the course of treatment. The patient must have a minimal level of intelligence and psychological mindedness, such that he or she has the ability for self-reflection.

Beyond these necessary conditions which apply to any form of verbal insight psychotherapy are some conditions which exist within a residential, group therapy treatment program which require certain personality attributes. These characteristics include the ability to
tolerate a high degree of social involvement in the therapy group as well as within the milieu. Furthermore, in most residential alcohol treatment programs the individual must have the ability as well as the willingness to comply with considerable structure and externally imposed controls.

In terms of more theoretical positions regarding premature termination, Cancro (1968) offered a psychoanalytic explanation and provided some anecdotal support for a view of premature termination as a defense against a taboo wish. According to Cancro, early termination is an acting out process for the patient in order to gain psychological distance from an overprotective or overzealous stance by the therapist. Blane and Meyers (1963) suggested that dropping out of treatment was related to overt counterdependent behavior resulting from development dependency conflict. They presented empirical support that patients rated as overtly dependent remained in treatment longer than those rated as overtly counterdependent. The intolerance of dependency explanation has also been discussed by Lewis et al. (1955) and by Kohl (1959). Altman, Angle, Brown, and Sletten (1972) suggested that dropping out of treatment is a function of impulsivity, disregard or inability to follow rules and regulations, and a tendency to act out under stress.

Motivational factors have been suggested as exerting a major influence on a patient's decision to remain or exit treatment prematurely. The assumption is that the motivated patient will persist in treatment and will tolerate frustration associated with inconvenient rules and regulations because of a strong commitment.
toward recovery. A common obstacle, however, with the motivational approach is that patients who exit prematurely are often labeled unmotivated ex post facto, on the basis of their premature exit (Pittman & Sterne, 1965).

The lack of integration of viewpoints on this issue is reflected in the diverse ways in which motivation has been measured. These methods have ranged from global, clinical impression (Robson, Paulus, & Clarke, 1965), to a variety of variables thought to be related to motivation. In this latter group are found: institutional versus self-referral (Goldfried, 1969; Zax, Marsey, & Biggs, 1961); congruence of client and therapist role expectations (Mindlin, 1969); denial of problems (Altman, Angle, Brown, & Sletten, 1972); defensiveness, or the converse, admission of symptoms (Krasnoff, 1977; Mozdzierz et al., 1973; Nelson & Hoffman, 1972); open expression of negative attitudes toward treatment or the therapist (Blane & Meyers, 1964); occupational stability (Zax et al., 1961); and previous treatment or AA attendance (Baekeland et al., 1976; Miller et al., 1968).

Drinking variables which have been related to motivation include: one year or more of abstinence some time prior to admission (Kissin et al., 1968); favorableness of attitude toward drinking (Krasnoff, 1976); taking disulfiram under supervision (Gerrein, Rosenberg, & Manohar, 1973); and duration of excessive drinking (Zax et al., 1961). This range of variables demonstrates little agreement, while offering considerable latitude to the researcher as to how to measure motivation. Finally, Pittman (1965) complicated the issue of motivation further by rejecting the notion that motivation is a
characteristic which resides in the individual. He reinterpreted motivation to mean arousal of interest, and he thrust responsibility for the patient's motivation onto treatment providers. This approach would seem to suggest that motivation be measured as a characteristic of treatment rather than of the client, or as an interaction of the two.

Paige and Miya (1978) suggested a social influence explanation in which they hypothesized three types of patients who exited prematurely from a residential alcohol treatment program. They suggested the "pushout" is excluded by her peers because of her deviant behavior and is then pressured to leave the program. A second group of "kickouts" are excluded, or discharged from the program on the basis of their unwillingness or inability to tolerate the structure of the program and a controlled therapeutic milieu. Paige and Miya suggested that this group might be better able to tolerate a less rigorous rehabilitation rather than a psychotherapeutically oriented program. Paige and Miya's third group are the "dropouts" who voluntarily exit the program because it does not provide what they want. Paige and Miya suggested that, in some cases, dropping out may well be a healthy, positive decision, and not an indication of failure.

The above discussion constitutes a post hoc explanation of premature termination and is not a statement of theory leading to testable hypotheses. What these studies do provide, however, is documentation of the diverse possibilities that could be explored for each resident in their particular treatment setting.
Conclusion and Recommendations

The analysis of the data listed in Tables 2 and 3 in Chapter IV reveals that an applicant would have a greater probability of completing residential treatment program for female alcoholics if she were at least 35 years of age, used legal drugs, had no previous treatment history, and had obtained a score of less than 3.5 on the FIRO-B Expressed Need for Inclusion factor. Conversely, an applicant who is younger than 35 years of age, did not use legal drugs, had a history of previous treatment for alcoholism, and obtained a score greater than 3.5 on the FIRO-B inclusion factor would have a high probability of not completing the residential treatment program.

The following theoretical suppositions regarding completers and terminators may be gleaned from the above statements:

1. The older applicant will have a greater probability of completing treatment. Her success may be attributed to a higher level of maturity, an increase in social responsibilities, a less severe drinking problem, and a shorter history of alcoholism.

2. An applicant with no prior history of treatment for alcoholism will have a greater probability of completing treatment. One may speculate that this higher potential results from a lack of bias regarding treatment, an increased level of motivation, and a tolerance for residential treatment.

3. It may be hypothesized that an applicant who uses legal drugs will have a greater probability of completing the program due to the displayed willingness to follow a prescribed course of
treatment, an ability to admit the need for help and to actively seek it, and a tendency to follow societal norms.

4. While highly tenuous, the proposition is advanced that low scores on the FIRO-B, Expressed Need for Inclusion scale, is predictive of program completion. Support for this conclusion is found in the research conducted by May (1981) and reviewed on page 23. One possible explanation for this finding is that interpersonal independence may allow a resident to remain aloof from group conflict.

The results of this study would appear to support the conclusions of some researchers in this area (Gibbs & Flanagan, 1977; Gross & Nerviano, 1973; Hague, Donovan, & O'Leary, 1976; Smart, 1978): (a) that there are few reliable predictors based on client characteristics, and (b) that it is necessary to consider nonclient characteristics to explain continuation in treatment.

The present research was a further attempt to discriminate the course of treatment based on client demographic variables and psychological test scores, and by design took no account of any influences following admission. The limited findings of this study indicate the need to consider the influence of what Baekeland and Lundwall (1975) referred to as "intercurrent life events." This phrase refers to situational influences or events which occur during the life of the program. These events or influences may be related to (a) treatment, such as the therapy group, therapist, or other treatment personnel; (b) significant events during the course of the program; or (c) influences external to the program. For example, Hague et al. (1976) have implicated such extra program influences as family
attitudes as factors in patients' treatment decisions. Other factors disposing patients toward early termination from treatment include interference by family members who feel guilty or responsible for the patient's illness, or who are overdependent on the patient, or who fear the patient's rehabilitation. Such findings support the need to build and test conceptual models of the alcoholism treatment process that consider (a) client characteristics; (b) program and therapist characteristics; (c) interaction of client, program, and therapist characteristics; and (d) multiple outcome measures. Furthermore, program noncompleters should be surveyed to ascertain their unmet needs and reasons for leaving. In a similar vein, completers may be interviewed in an effort to reveal why they remained in treatment and what benefits they derived from the treatment program. These results may enhance the development of an efficient predictor equation that can be applied to individual treatment programs.

Finally, it will be noted that many of the findings of this study contradicted those of research conducted on male alcoholics. Therefore, one is led to conclude that alcohol dependent women represent a population that is relatively unique. The implications of this statement are apparent. A new body of research is needed that is addressed specifically to the problems of the alcohol dependent woman.
APPENDIX

Histogram of Predicted Probabilities of No for Group No

Note. "M" marks the median; "Q" marks the quartiles.

Histogram of Predicted Probabilities of No for Group Yes

Note. "M" marks the median; "Q" marks the quartiles.

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Sholty, M. J. (1979). Female sexual experience and satisfaction as related to alcohol consumption. Paper presented to Human Volunteers Committee, University of Maryland Hospital, College Park.


