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Client Characteristics Related to Retention in a Drug Abuse Inpatient Program

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CLIENT CHARACTERISTICS RELATED TO
RETENTION IN A DRUG ABUSE INPATIENT PROGRAM

by
Paul Fedirka

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of
Master of Arts

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VITA

The author, Paul Fedirka, is the son of Roman Fedirka, Sr., and Catherine (Makar) Fedirka. He was born on November 10, 1953, in Yonkers, New York.

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The efficacy of drug treatment programs has undergone intensive investigation in the last decade. Research conducted at national and local levels has shown generally positive, although weak, effects for the major treatment modalities of the residential therapeutic community (TC) and methadone maintenance (MM) (Aron & Daily, 1974; Dickinson, Polemis, Bermosk, & Weiner, 1973; Gold & Chatham, 1973; Illinois Economic and Fiscal Commission, 1975; Keil, Dickman, & Rush, 1978; Kneisler & Heller, 1974; Lerner, Linder, & Klompski, 1972; MACRO, 1975; National Institute of Drug Abuse (NIDA), 1978; Penk & Robinowitz, 1978; Savage & Simpson, 1978; Sells, Simpson, Joe, DeMaree, Savage, & Lloyd, 1976; Simpson, Savage, Lloyd, & Sells, 1978; Spiegel & Sells, 1974).

A number of projects have examined the specific treatment factors associated with this success, and many have indicated that length of stay (LOS) in the program appears to be significantly related to outcome. In a review of LOS literature, Bakeland and Lundwall (1976) wrote that drug dependent clients with longer LOS's have fared better than their counterparts on later outcome measures of employment, drug usage and criminal activity. The authors also indicated that these results appeared stable in the TC and MM modalities as well as in outpatient and inpatient detoxification programs. Bakeland and Lundwall also noted, however, that high percentages

of treatment dropouts were found in studies that reported this figure. These percentages varied from a high of 88% in the first 14 weeks of treatment (Chapple, Senay, & Jaffe, 1971) to a low of 20% over two years (Babst, Chambers, & Werner, 1971). Joe and Simpson (1975) examined over 12,000 nationwide admissions to the Drug Abuse Reporting Program (DARP) and reported that about half of all drug patients terminated within the first month of treatment. They concluded that the programs examined were generally unsuccessful in retaining patients the minimum time necessary for therapeutic effects to be realized.

The importance of LOS in treatment from a program evaluation perspective has been emphasized by Sirotnik and Roffe (1977). These authors have stressed the importance of identifying patient subgroups with the shortest LOS's and then experimenting with the program in an attempt to increase LOS.

While most experts have acknowledged the importance of LOS in treatment, information regarding the factors related to LOS has been lacking for many drug treatment modalities. The majority of these studies were conducted in the area of MM and were reviewed by Szapocznik and Ladner (1977). Their summary indicated that a number of demographic and psychosocial factors were consistently related to LOS and needed to be examined along with any other program input factors under investigation. Studies in other treatment modalities

have been far less extensive and generalizable. The literature on LOS in the TC has often focused on the traditional long-term TC, with treatment designed to last from 6 to 24 months (Collier, 1973; Glasser, 1974b; McFarlain, Cohen, Yoder, & Guidry, 1977; Sirotnik & Roffe, 1977; Sugarman, 1975; Weppner, 1973), or has lumped together data from both traditional TCs and short-term medically oriented TCs which have a treatment length of one to six months (Aron & Daily, 1976; Bakeland & Lundwall, 1976; Greene & Ryser, 1978; Joe & Simpson, 1975; Rosenthal, Savoy, Greene, & Spillane, 1979). Studies dealing exclusively with short-term residential treatment have often been limited by: the inclusion of alcoholic patients (Altman, Evenson, & Cho, 1978; Lin, 1975); the exclusion of narcotic abusing clients (Altman et al., 1978; Stephenson, Boudewyns, & Lessing, 1977); and the exploration of inpatient detoxification only (Fortunato, Lavine, Feldman, & Richman, 1966; Sheffet, Quinones, Lavenhar, Doyle, & Prager, 1976). To date, only three articles have specifically examined the factors related to LOS in short-term TCs (Katz, Long, & Churchman, 1975; Linn, Shane, Webb, & Pratt, 1979; Rozyngo & Stein, 1974). Unfortunately, however, these studies related LOS to different variables and produced conflicting results on the factors they had in common.

The current study has been designed to further examine the relationship between LOS in a short-term TC and a variety

of admission variables which included patient demography, psychosocial history, and drug use history. In addition, the relationships between these admission data and favorable and unfavorable forms of termination were also compared. The utility of this work in predicting patient outcome and program assessment was also discussed.

REVIEW OF RELATED LITERATURE

The Current Status of Program Evaluation in Drug Abuse Research

Recent national reports have indicated that a major drug abuse problem continues to exist in this country. The Commission on Mental Health (1977) has estimated that 500,000 Americans are currently heroin dependent and that millions more have experimented with this drug. The Office of Drug Abuse Policy (1978) has supported these figures and has further estimated the social costs of all drug abuse to be in excess of 10.3 billion dollars annually. While this later report found certain groups overrepresented in the drug abusing population, it concluded that the high cost of drug abuse affects all citizens.

The Illinois Economical and Fiscal Commission (1975) has estimated that there are 40,000 heroin addicts in this state and that only 5,000 are in treatment at any given time. This commission reported that very little evaluation of treatment programs had been conducted at that time and that information about treatment effectiveness was needed. The U. S. Department of Health, Education and Welfare has echoed this concern and has published guidelines and suggestions for conducting this research (Guess & Tuchfeld, 1977a; Johnston, Nurco, & Robbins, 1977).

These pressures for accountability have generated a deluge of evaluation studies in the last decade which have investigated the feasibility of various drug abuse treatments. Unfortunately, however, weaknesses in design and methodology have remained pervasive and limit the generalizability of these results. Critics of drug program evaluations have focused on a number of flaws. Among these have been: the lack of emphasis placed on program (treatment) improvement (Brown, 1974; Newman, 1978); the lack of attention paid to locale and time (Newman, 1978; Sells, DeMaree, Simpson, Joe, & Gorsuch, 1977); the inadequate statistical treatment of skewed data (DeMaree, 1974); the lack of connection between research results and drug abuse theory (Reed, 1978); the reactive features of the data (Sells, et al., 1977); and the combining of data obtained from facilities with different orientations (Reed, 1978). More crucial than these, however, have been the criticisms regarding the measurement and description of patient, treatment, and criteria variables.

Dole and Warner (1967) were among the first to criticize early drug program evaluations. In the main, their criticisms focused on the deficits often found in client and program description. They indicated that reports were chaotic and that standardized tabulation of data was badly needed. Las-kowitz and Osmos (1969) reiterated these concerns and suggested that the first step was to divide research subjects on

dimensions that were clinically meaningful. In this way, the data would be scientifically precise and still retain clinical usefulness.

These caveats and suggestions have not always been heeded, however, as these very same criticisms have recently been echoed by McCaslin and Ershoff (1978). These authors attempted to empirically evaluate the drug program evaluation in print but found they were unable to do so because many studies neglected to adequately specify their treatment populations, treatment methods, or success criteria. McCaslin and Ershoff found this inadequacy of description to be widespread in drug abuse research and felt this lack was a major stumbling block toward the integration of our knowledge about drug treatment and rehabilitation. Walizer (1975) has similarly contested that some form of standardized scientific criteria were needed for the accurate description of drug abuse behavior and treatment. The adoption of acceptable standardized measurement would facilitate research comparisons and help to unravel some of the data already reported.

The precise description and measurement of treatment, patient, and success criteria has been a most crucial issue in drug program evaluation because of the diversity exhibited by these factors. Guess and Tuchfeld (1977b) have stated that even with rigorous description, the differences

displayed by patients and treatment facilities have continued to make many comparisons difficult. These authors warned that even minor variations in treatment or clientele may have profound effects on outcome research. Further complicating evaluation efforts have been findings which indicated the high degree of interrelatedness of client and treatment types and client demographic and psychosocial variables. The importance of exploring all relevant data and their relationships can best be illustrated by examining one well-conducted study reported by Joe, Person, Sells and Retka (1974). This particular paper focused on the efficacy of methadone maintenance and the therapeutic community (TC) treatments and was one part of a nationwide project which examined almost 12,000 admissions to the DARP between 1969 to 1971 (Sells, 1974). Preliminary summaries had already indicated that Black patients tended to be older at admission than Whites, had different drug abuse histories, used heroin more frequently, and had a greater tendency to enter methadone maintenance. The non-independence of these factors was strongly stressed and tempered all later conclusions. Joe et al.'s findings indicated that illegal opiate use decreased for the first year clients who were in methadone maintenance and that these results were especially prominent for older clients and Mexican-Americans. Blacks, however, showed the greatest variability on this measure. The same pattern of results was found for non-opiate use over the first year in methadone

maintenance and for a composite outcome indicator which included measures of drug usage, employment, and criminal activity. Results for the long-term TC patients were even more promising as these patients had the lowest rates of drug usage and arrests. Unfortunately, however, the TCs also had the lowest rates of retention for the first year in treatment (from 16% to 29%). The authors concluded that both modalities held some promise as a rehabilitative treatment and suggested that each may have a particular clientele that was attracted to it and/or worked well within it. They also concluded that more research was needed in the area of reasons for termination.

Studies as well conceived and conducted as Joe et al.'s have been relatively rare, however, despite the availability of excellent reference works (Guess & Tuchfeld, 1977a; Sells, 1974; Sells et al., 1977). Vaillant (1974) has examined this problem at length and suggested three possible sources are responsible for this inconsistency. These were: 1) superstition on the part of the investigator; 2) poor outcome criteria; and 3) haste in reporting results. While development of weak criteria was a technical criticism, superstition and haste were more directly attributed to characteristics or biases of the investigator.

Vaillant believed that some researchers may have been out to "prove" their own superstition, namely, that their

method of treatment was superior to all others. These researchers then constructed their investigations in a manner that would emphasize data favorable to their position. Vaillant alternatively hypothesized that the exclusion of important variables in a study was more likely to have stemmed from an investigator's eagerness to report results at the expense of thoroughness. Vaillant felt that this sacrifice of thoroughness for speed was the more likely of the two possibilities and that it greatly compromised the quality of the research in print.

Klein (1977) has also discussed the dearth of quality in drug treatment evaluation and suggested that this shortcoming has often been due to the lack of training and interest in research at many treatment facilities. Klein indicated that most clinics were not prepared for the government's emphasis on treatment accountability, did not have evaluation procedures built into the program or budget, and lacked the trained individuals necessary to conduct quality research. In addition to this, most drug facilities have traditionally emphasized clinical treatment and have been suspicious about the utility of research in general. Klein felt that these problems together with the difficulties faced in obtaining reliable data from the often transient and suspicious drug abusing population have been primarily responsible for the lack of quality often found in drug treatment research.

In summary, criticism of drug treatment evaluation has focused on a number of features. The most prominent criticisms, however, have been those associated with the selection and description of client and outcome variables. Siguel and Spillane (1977) have indicated that future researchers must be aware of these problems and suggested that they can be avoided by the inclusion of patient and outcome data from the Client Oriented Data Acquisition Process (CODAP) admission and discharge forms. The advantages of utilizing CODAP data have included the variety of patient information reported, its wide utilization by treatment facilities in this country, and the standardized manner in which data was recorded and reported. Siguel and Spillane also felt that researchers who used CODAP data would be less subject to the biases discussed by Vaillant (1974) and Klein (1977). These arguments have appeared quite salient in light of the present status of drug program evaluation. We can only wait to see if they will be heeded in future research.

The Therapeutic Community (TC)

The first residential treatment center for drug-dependent individuals in the U. S. was established at Lexington, Kentucky in 1934. One year later a second one was opened in Fort Worth, Texas. These federal facilities had highly restrictive environments and, in fact, drew 30% of their

treatment cases from federal prisons during the period between 1935 and 1966 (Ball, Bates, & O'Donnell, 1966). These institutions were the only drug treatment centers in this country until the founding of Synanon by Charles Dederich in the late 1950's (Glasser, 1974). Synanon was the original TC for drug abusers and was based on principles similar to those of Alcoholics Anonymous. The most prominent similarity was that the TC was a self-help group in which members were expected to be responsible for their own behavior and to assist other members to remain drug free. Unlike Alcoholics Anonymous, however, was the premise that overcoming one's addictive lifestyle was a full time endeavor which necessitated communal living with other addicts. The TC itself was organized as an independent society with each resident member assigned duties to assure its maintenance and continuance. Daily activities were highly regimented with numerous rules, and specific times were assigned for chores and therapeutic interventions. The environment was highly restrictive and the noncompliance with any rule or regulation led to swift and harsh punishment or censure.

While all TCs have included the features described above, a number of differences have existed among programs. Two such differences have been the setting of the TC and the accompanying TC staff. Originally, the TC was an independent facility with no institutional affiliations and was staffed

entirely by paraprofessional ex-addicts. Within the last decade, however, TCs have been founded in conjunction with private, state, and federal hospitals and have added psychologists, physicians, social workers and nurses to the treatment team (Zarcone, 1975). A second major variation in the TC model has been designated length of the program. At one extreme, the total TC (such as Synanon) has contended that no community resident should ever be returned to the society at large. Most TCs, however, have prescribed times for discharge from the TC, which may range from one month to two years. Watson, Simpson, and Spiegel (1974) conducted a nationwide examination of all programs and suggested that each can be classified into one of two categories. These were: the traditional or long-term TC which requires a minimum of six months to complete; and the medically oriented or short-term TC whose treatment lasts from two to six months. Watson et al. (1974) found that the modal completion time was about twelve months for the traditional TC and two months for the short-term TC.

Proponents of the TC model have indicated that the TC has been successful in the rehabilitation of drug abusers because it interrupts their destructive lifestyle and provides prosocial models of behavior. Ray (1961) has stated that anyone could withdraw from illicit drugs but that for permanent abstention, addicts needed to align themselves with

society, develop more socialized roles, and alter their self-image. Hendler and Stephens (1977) have similarly written that the progression from drug experimentation to drug addiction involved an increased commitment to a drug subculture and reference group. Addicts that make this commitment increased the physical, psychological, and social reinforcements available to them in the subcultures and were unlikely to give up these reinforcements spontaneously. Research has strongly supported these beliefs and indicated that drug abusers as a group have displayed high incidences of asocial behavior, such as criminal activity (DeFleur, Ball, & Snarr, 1969; Mott, 1975; Nurco & DuPont, 1977; Robins & Murphy, 1967; Voss & Stephens, 1973), and lack of legal employment (Ball, O'Donnell, & Cottrell, 1970; Bates, 1968; DeFleur, et al., 1969; Wang, Hieb, & Wildt, 1976). The TC has attempted to alter these patterns by placing a number of social constraints on the resident and forcing the addict to behave in a responsible manner within and outside of the community. These pressures to conform are regulated by the rules of the TC and enforced by other residents through confrontation techniques and peer pressure. In one sense, the entire community has served as a behavior modification program which immediately reinforces prosocial behavior and extinguishes or suppresses negative behavior. In addition to these behavioral measures, psychotherapeutic procedures are utilized to assist self-insight and to teach the resident effective coping behaviors.

Previous Criticisms and Evaluations of the TC Approach

A few authors have contended that it may be impossible to force a change in an addict's lifestyle but that addicts themselves may stop abusing drugs by their late 30's or 40's. The foremost proponent of this theory was Winick (1962, 1964) who found that one-fourth of all addicts cease drug use by age 26 and three-fourths have become abstainers by age 36. Winick termed this phenomenon "maturing out" of drug addiction and proposed that drug abuse was a way of dealing with unresolved dependency needs which were eventually mastered by age 40. Support for this position was generated by Snow (1973) who reported that at a four-year follow-up, drug abusers over 38 years old were significantly more likely to be abstainers than addicts who were under 28 years old. One contamination found in the study, however, was the fact that the death rates for individuals in this sample was highest for addicts between the ages of 28 to 37. It may very well be, then, that for addicts to reach the age of 40, they must abstain from drugs and the drug lifestyle. Further complicating this issue were the findings of Ogborne and Stimson (1975) who followed a sample of British addicts for three-and-one-half years. These authors indicated that, unlike their U. S. counterparts, the oldest subjects were significantly more likely to still be using drugs than their younger cohorts. These results clearly contradicted the reports of

Winick and Snow and suggested that abstaining from drugs may entail more than just reaching the age of 40.

Even if the concept of "maturing out" was appropriate, it is unlikely that society and clinicians would be content to solve the drug problem by waiting for addicts to age. Intervention has therefore been seen as desirable, but the form that intervention should take has often been debated. Coglin and Zimmerman (1975) reviewed the research conducted up to 1972 at TC and MM clinics and concluded that neither treatment modality has been demonstrated to be effective. These authors had rather stringent success criteria and limited treatment successes to those individuals who permanently abstained from all illegal substances. More recent research, however, has measured outcome on a number of dimensions which have included indices of criminality, employment, socialization, psychopathology, and drug usage (Sells, et al., 1976). This later strategy has developed as more experts in the area have come to understand that helping an addict to achieve a drug-free status is a lengthy process and that intermediate measures of success are therefore important and valuable to measure (Lieberman and Brill, 1972; McLellan and Druley, 1977).

A great deal of controversy about the effectiveness of the TC continues to exist. Bejerot (1978) has recently written that the TC may not be an effective treatment for

sociopaths, while Hart (1972) has argued that a TC which does not return residents to society's mainstream has not rehabilitated anyone and merely serves as an extension of the drug subculture. Other authors have ambivalent reactions toward the TC and have reserved judgment about it and the techniques used until further research is conducted (Coulson, Went, Ouellette, Russel, and Kozinski, 1975). One approach toward evaluation of the TC that has been utilized was a cost-benefit analysis. Lerner et al. (1972) utilized this perspective in assessing a TC located in the Haight Ashbury community, San Francisco. Their results indicated that only 6% of the treated heroin addicts remained drug-free after treatment and that another 16% used heroin occasionally without addiction. Lerner et al. further pointed out that the treatment provided was quite costly, but concluded that it was worth the expense since the resultant reduction in crime saved the Haight Ashbury community over \$39 million a year. Other authors have been more conservative about the cost benefits of the TC but were still optimistic (Dickinson, et al., 1973; Iverson & Wenger, 1978; Zimmerman, 1974). Even among this group, however, Iverson and Wenger (1978) and Zimmerman (1974) have pointed out that the higher number of dropouts greatly reduced the effectiveness of the program and suggested that a continued search for more efficient programs was needed.

Another conservative but positive appraisal of the TC

has been given by Sugarman (1974), who reviewed TC outcome studies. In his conclusions, Sugarman stated that, despite the lack of controls in many articles, the TC modality did appear to produce positive changes in individuals both during and after treatment. In more controlled studies, where TC clients were compared to individuals who received prison or general hospital treatment, the TC clients showed greater changes toward positive self-concept and decreased pathology. Sugarman added that these positive changes appeared most pronounced in clients who had the longest TC stays. Recent publications have supported Sugarman's analysis and indicated that the TC was superior to methadone maintenance, outpatient treatment, prison and halfway houses in reducing post treatment drug usage (Keil, et al., 1978; Savage, & Simpson, 1978). Still other projects have found that long lengths of stay in a TC significantly reduced psychopathology (Zuckerman, Sola, Masterson, & Angelone, 1975), post discharge arrests (Systems Science Inc., 1973) and convictions (Aron & Daily, 1974). While the results of such research have been far from conclusive, they have provided some optimism that the process of addiction could be interrupted by treatment in a TC and that long lasting rehabilitation was possible for some addicts.

One Measure of Treatment Success: Length of Stay in Treatment

A number of factors have been associated with the

success rates of the TC but none has appeared in the literature more often than length of stay (LOS). In a comprehensive study of addicts nationwide, Simpson et al. (1978) conducted first-year follow-ups on former TC patients. They found that LOS was the best of all predictors they utilized and was significantly correlated with eight of 10 outcome measures. Results indicated that the number of days a person spent in treatment was positively correlated to later employment and a composite outcome score, and was negatively correlated to opiod and nonopiod drug usage, measures of criminality, and time spent in jail post treatment. Simpson et al. concluded that LOS in the TC may have positive rehabilitative effects on the addict and should be measured in outcome research.

Numerous other sources have supported and extended the results obtained by Simpson et al. Research in the area of vocation adjustment has indicated that increased LOS has led to a higher number of successful job placements (Alksne & Robinson, 1976); higher rates of full- and part-time employment (Collier & Hijazi, 1974; Cutter, Samaraneera, Price, Haskell, & Schaffer, 1977; Gold & Chatham, 1973; Joe, 1974; McClellan & Druley, 1977; Pin, Martin, & Walsh, 1976; Raymond, Forrest, & Kleber, 1975); longer periods of employment (Katz et al., 1975); and greater likelihood of school enrollment and attendance (Collier & Hijazi, 1974; Zarcone, 1975).

Studies which examined post treatment drug usage have indicated that lengthier treatment stays resulted in higher rates of drug abstinence (Gold & Chatham, 1973; Zahn & Ball, 1972) and significant decreases in opiod and non-opiod drug usage (Collier & Hijazi, 1974; Cutter et al., 1977; Illinois Economic and Fiscal Commission, 1975; Joe, 1974; Katz et al., 1975; NIDA, 1978; Pin et al., 1976; Raymond et al., 1975; Wilson, 1978; Zarcone, 1975). The majority of these studies merely correlated LOS to a particular outcome, but a few which did categorize LOS indicated that these positive outcomes were associated with LOS of at least three months (Zahn & Ball, 1972) to one year (Pin et al., 1976).

Quite surprisingly, few studies have investigated the relationship between the type of discharge a patient receives and later outcome measures. Two studies found that patients who left against medical advice tended to have poorer post treatment adjustments (NIDA, 1978; Sells et al., 1976). Other reports, however, have indicated that type of discharge had no apparent relationship to later outcomes but that LOS was a powerful predictor of successful outcome (Aron & Daily, 1974; Collier, 1974; DeLeon et al., 1972). Because of these conflicting results, it has been clear that the relationship of discharge type to later outcome needs further clarification.

A flaw found in many studies which have related LOS to

subsequent outcome has been their lack of control for the confounding effects of motivation. Critics of these projects may state that individuals who stayed in treatment longest were probably the most motivated to begin with and that we should therefore expect these clients to remain in treatment longer and to continue to do well after discharge. Research, however, has indicated that long-term exposure to a TC has itself occasionally produced profound personality and motivational changes. Copeman and Shaw (1976) reported that a positive relationship existed between LOS and clinical outcome as reflected by staff ratings. Similarly, DeLeon, Rosenthal and Brodney (1971) found that staff ratings of hyperemotionality were lowest for residents who remained in treatment over 10 months. While these results could have been generated by halo effects in the ratings, other investigators have examined the relationship between LOS and objective scores on personality tests. Steinfeld, Rice, and Malbi (1974) presented TC members with an attitude questionnaire at admission and every subsequent third month in treatment. They found that after nine months in treatment, addicts reported improved self-images and displayed more psychological insight into themselves. Since these changes did not appear on the testing results conducted three or six months after admission, the authors concluded that these changes appeared genuine and were not attempts to manipulate or impress the researchers. Although this interpretation was rather impressionistic, other

studies have reported similar patterns of personality test changes after six to twelve months in treatment. Wilson and Kennard (1978) found that initially high test ratings of introversion began to decrease for TC residents who remained in treatment for at least six months. Zuckerman et al. (1975) reported that most MMPI scales dropped out of the deviant range for TC subjects who did not leave treatment against medical advice and DeLeon, Skodal, and Rosenthal (1978) indicated seven tests of psychopathology were significantly lower for patients who remained in treatment for seven-and-a-half months. Perhaps the most thorough study of this nature was conducted by Sacks and Levy (1979) who examined MMPI profiles as well as staff and other client ratings of psychopathology. They found that all three measures were highly reliable, correlated well with each other, and showed decreasing pathology when each was correlated to LOS. Taken as a group, these studies have suggested that continued treatment in a TC may generate positive personality changes in an individual addict. While this has not ruled out the hypothesis that an addict who was motivated to do well after treatment was also motivated to remain in treatment longer, it did suggest that positive motivational changes did occur for some addicts who received treatment in a TC.

Retention in Treatment: Practical Concerns and the Factors Associated With LOS

In addition to its apparent relationship with during and post treatment success, LOS has been an important issue for all TC since large percentages of admittees drop out before completing treatment (Bakeland & Lundwall, 1976). Data from 1969 to 1971 DARP indicated that there was a 5% treatment completion rate for traditional TCs and a 42% completion rate for short-term TCs (Spiegel & Sells, 1974). Subsequent DARP data from 1971 and 1972 found similar percentages and indicated that the overall retention rates for TCs were the poorest of all treatment modalities (Sells, 1975). In an analysis of this data, Joe and Simpson (1975) reported that over one-half of all TC clients leave within the first month of treatment and 75% leave before completing treatment. Joe and Simpson concluded that these programs could generally be considered ineffective because they failed to retain patients the minimum time necessary for therapeutic effects to be realized. Another negative effect of shortened LOS was reported by Simpson and McRae (1974) who found that the highest re-admission rates were found among patients with the briefest tenures of treatment. Lieberman and Brill (1972) have extensively discussed the clinical aspects of patient retention and believed that keeping in contact with the drug abuser after discharge was itself a goal of treatment. These

authors have stated that helping an individual adopt a drug-free life style was an extensive process which might require years to help addicts alter their attitudes. Lieberman and Brill avered that this necessitated continued contact with the patient and advocated the use of coercive pressure, such as probation, parole, family and work contacts to keep the drug abuser engaged in treatment and follow-up.

Sirotnik and Roffe (1977) have indicated that study of drop-out patterns has special importance for individual programs because it can provide information about the types of clients that a clinic has been most successful with. These authors have suggested that the correlation of pre-treatment demography to LOS may provide just such information. The results of this data could then be used to evaluate the TC's overall effectiveness and may also provide suggestions for improving program format to maximize patient tenures. Bakeland and Lundwall (1976) have supported this view and indicated in their extensive review of drop-out studies that patient retention was often the product of the client's background and the treatment received. Even more recent support for this viewpoint has come from the Commission on Mental Health (1977). In one of their recent reports to the President, this group stated: "Fuller understanding of the influence of social and situational stress on drug use in various age groups and in special populations will make it

possible to plan more effective treatments" (Commission on Mental Health, 1977, p. 20).

Many researchers have examined the correlates of LOS in a TC, but few consistent results have been obtained. While investigators have attempted to correlate a variety of patient demographic features to LOS and type of discharge, individual studies have often examined only a few client features and excluded many others. Despite this and other methodological problems, a review of these findings has been presented below. The results of these studies have been divided according to the patient demographic features most often investigated.

Age. The relationship between client age and LOS has been a confusing one as five studies have reported age to be positively correlated to LOS (Altman et al., 1978; Bakeland & Lundwall, 1976; Joe & Simpson, 1975; Katz et al., 1975; Rosenthal et al., 1979); six reported that younger clients remained in treatment longer (Aron & Daily, 1976; Collier, 1973; Joe & Simpson, 1975; Rozyngo & Stein, 1974; Sheffet et al., 1976; Weppner, 1973); while four projects reported no relationship between client age and LOS (DeLeon et al., 1972; Harris & Linn, 1978; McFarlain et al., 1977; Stephenson et al., 1977). The relationship between client age and type of discharge appeared equally nebulous as three papers indicated that older clients were less likely to drop out or leave against medical advice (Bakeland & Lundwall, 1976; Joe & Simpson, 1975;

Rosenthal et al., 1979); three indicated that younger clients were less likely to drop out (Collier, 1973; Sheffett et al., 1976; Weppner, 1973) and two reported no correlation between the age of the patient and type of discharge (DeLeon et al., 1972; Fortunato et al., 1966).

Race. On this dimension, three papers reported that minorities stayed longer in TCs (Aron & Daily, 1976; Sirotnik & Roffe, 1977; Wexler & DeLeon, 1977); five indicated that White clients had the greatest LOS's (Collier, 1973; DeLeon et al., 1972; Rosenthal et al., 1979; Rozyngo & Stein, 1974; Sheffett et al., 1976); and three reported no racial differences in LOS (Harris & Linn, 1978; Joe & Simpson, 1975; Ruiz, Langrod, Lowinson, & Marcus, 1977). One additional study reported that no overall correlation between LOS and race was found but that Black patients had a higher likelihood of leaving within the first month of treatment, but once past this point were the group most likely to be in treatment after one year (Linn et al., 1979).

The pattern between race and discharge type was also found to be inconsistent, as four projects reported that minority clients were less likely to prematurely terminate (Fortunato et al., 1966; Sheffett et al., 1976; Sirotnik & Roffe, 1976; Wexler & DeLeon, 1977). Three studies indicated that White clients were less likely to drop out (Collier, 1973; DeLeon et al., 1972; Weppner, 1973) and two reported that no

relationship was found between race and type of discharge (Katz et al., 1975; Linn et al., 1979).

Education. One demographic characteristic which has appeared to have a fairly consistent relationship to LOS has been years of formal education. Four articles have indicated that patients with more advanced education have remained in treatment longer (Bakeland & Lundwall, 1976; Rosenthal et al., 1979; Sheffet et al., 1976; Wexler & DeLeon, 1977); one found no relationship between education and LOS (Stephenson et al., 1977) and only Katz et al. (1975) found years of education negatively correlated to LOS in a TC.

Similar results have been obtained for type of discharge, as two studies reported that patients with the highest educational achievement were less likely to prematurely terminate treatment (Bakeland & Lundwall, 1976; Wexler & DeLeon, 1977), while one report found the opposite trend (Katz et al., 1975).

Employment. To date, no study has reported that unemployed individuals stay longer in treatment. Instead, four papers indicated that employed clients tended to remain in treatment longer (Altman et al., 1978; Bakeland & Lundwall, 1976; Rosenthal et al., 1979; Sheffet et al., 1976) and one reported no significant relationship between employment and LOS (Stephenson et al., 1977).

Studies concerned with discharge status have also indicated that clients with more formal education were less likely to leave the TC against medical advice (Altman et al., 1978; Bakeland & Lundwall, 1976; Rosenthal et al., 1979). Only one project which investigated education and type of discharge found no relationship between these variables (Lin, 1975).

Prior treatment. The relationship between the number of prior drug treatment admissions and current LOS in treatment has been less intensively examined than other factors previously discussed. The three studies that did indicated that clients with more prior treatment attempts tended to have greater LOS's and were less likely "to split" (leave) treatment (Bakeland & Lundwall, 1976; Rosenthal et al., 1979; Wexler & DeLeon, 1977).

Criminality. Only one study has been conducted which found a positive correlation between measures of criminal behavior and LOS. This research was conducted by Katz et al. (1975) who found that the more pre-admission arrests a client had, the more likely it was that a client would remain in treatment. Other projects, however, have found LOS inversely related to a patient's number of previous arrests (Bakeland & Lundwall, 1976; Rozytko & Stein, 1974; Weppner, 1973) and number of current legal problems (Stephenson et al., 1977).

Similar results have also appeared for a patient's type of discharge. Premature terminations have most often been associated with residents who have been arrested more often (Weppner, 1973), been convicted of more crimes (Pin et al., 1976), and served more jail sentences (Aron & Daily, 1976; Sirotnik & Roffe, 1976; Weppner, 1973). Again, only one conflicting report existed which indicated that clients with longer arrest records were more likely to complete a TC program (Katz et al., 1975).

Marital status. Five studies have reported on the relationship between marital status and LOS. Three found that single clients tended to remain in treatment longer (Charuvastra & Charbenaux, 1977; Rozyngo & Stein, 1974; Weppner, 1973); one reported that married clients remained longer (Bakeland & Lundwall, 1976); and another study indicated that there was no apparent relationship between marital status and LOS (Katz et al., 1975). On the relationship between marital status and type of discharge, Weppner (1973) indicated that single clients were more likely to leave before completing treatment, while Bakeland and Lundwall (1976) found married clients more likely to elope. Two articles reported that no significant relationship was found between discharge type and marital status (Katz et al., 1975; Lin, 1975).

Living arrangements. In a relatively straightforward design, Altman et al. (1978) found that clients who lived

alone prior to admission were more likely to drop out of treatment. Lin et al. (1979) examined this relationship in greater depth, however, and found that Black clients who lived with their parents or spouse were more likely to complete treatment than other Blacks who lived with siblings and/or non-relatives. White patients displayed the exact opposite pattern, since those who lived with their parents or spouse were least likely to complete treatment. No significant difference was found between living alone or living with others for either Black or White groups.

Length of drug use. Research in this area has indicated that individuals with a shorter drug usage history remained in treatment longer than those with lengthier drug histories. Four studies have supported this view (Aron & Daily, 1976; Collier, 1973; Stephenson et al., 1977; Weppner, 1973), and only one article found no relationship between length of drug use and LOS (Harris & Linn, 1978). Similarly, three projects have reported that patients with lengthy drug histories were more likely to end treatment prematurely (Aron & Daily, 1976; Collier, 1973; Weppner, 1973). No contradictory or nonsignificant studies of length of drug use and discharge type have appeared in the literature.

Frequency of drug usage. Three articles have examined the relationship between frequency of drug usage at admission and subsequent LOS (Pin et al., 1976; Rosenthal et al., 1979;

Rozyanko & Stein, 1974). All three found that patients with less frequent drug usage tended to stay longer in treatment. Pin et al. (1976) also found that less than daily abusers of drugs were less likely to leave treatment against medical advice.

Type of drug used. Studies in this area have frequently divided substance abuse into hard (narcotics) and soft (all other drugs) categories. Four works have reported that drug abusers with a disposition toward soft drugs have stayed in treatment longer (Joe & Simpson, 1975; Rosenthal et al., 1979; Rozyanko & Stein, 1974; Weppner, 1973) and were less likely to leave before completing treatment (Collins, 1973; Joe & Simpson, 1975; Weppner, 1973). At present, no literature has been published that contradicted these findings.

Evaluation of Patient Retention Studies and Implications for the Short-Term TC

The preceding presentation has indicated that some demographic and drug history characteristics of clients appeared to be related to successful retention in the TC. A composite description of these successful clients has indicated that they had prior treatment attempts, they had a higher formal education, were more frequently employed, and engaged in less criminal behavior prior to admission than

did unsuccessful clients. Those who remain in treatment also appeared to have a shorter drug history, used drugs less frequently (less than daily), and were more likely to abuse non-narcotic substances. On the other hand, age, race, marital status and living arrangements were not found to consistently distinguish between TC completers and "splitees" (noncompleters).

A problem faced in reviewing results in this manner has been that each study dealt with specific populations which may not be comparable. This was readily apparent when it was considered that the only study which seriously contradicted the composite description above (Katz et al., 1975) was conducted at a treatment center which appeared rather unique. Katz's treatment site was a half-way house in which the treatment staff lived together with the patients. The majority of the other studies were conducted in hospital-based TCs, however, and in no other instance did the clinical staff reside in the treatment center.

A close examination of treatment facilities has revealed that they were quite diverse, and that the short-term TC may be underrepresented in the literature. The greatest number of the studies cited above obtained their data at long-term TCs (Collier, 1973; DeLeon et al., 1972; Glasser, 1974b; Harris & Linn, 1978; Joe, 1974; McFarlain et al., 1977; Pin et al., 1976; Sirotnik & Roffe, 1977; Sugarman, 1975; Weppner,

1973). Others, however, have lumped together data from both long- and short-term TCs without regard for the confounds that may have existed (Aron & Daily, 1976; Bakeland & Lundwall, 1976; Greene & Ryser, 1978; Joe & Simpson, 1975; Rosenthal et al., 1979). Studies which specifically examined short-term residential treatment have also been limited by: the inclusion of alcoholic clients' data (Altman et al., 1978; Lin, 1975); the exclusion of narcotic-abusing individuals (Altman et al., 1978; Stephenson et al., 1977); or limiting the study to detoxification services only (Fortunato et al., 1966; Sheffert et al., 1976). Only three of the studies cited exclusively utilized data obtained at short-term TCs (Katz et al., 1975; Linn et al., 1979; Rozytko & Stein, 1974).

While the variety of data sources may be used to explain the inconsistencies found in the data, other plausible explanations have also existed. A few of the projects reviewed used nationwide data samples (Bakeland & Lundwall, 1976; Joe & Simpson, 1975; Rosenthal et al., 1979) while the remainder obtained data from one or two clinics. Reed (1978) has indicated that the massive size of such nationwide projects may obscure regional or individual program patterns. Thus nationwide programs have the appearance of being all-inclusive but in fact have failed to account for the interactions of specific clients with specific treatment facilities. One piece of research which indirectly supported this

perspective was a study by Joe (1974) which was not included among the previous citations. Joe utilized a sample of 8000 from the DARP data of 1969 to 1971 and analyzed the correlations between 27 client demographic factors and LOS. There were a handful of statistically significant correlations but all were deemed too small to be of any practical use. In further analyses, Joe combined these 27 client features into a multiple correlation to improve their prediction of LOS. The resulting multiple correlation, however, failed to achieve statistical significance. Since many smaller studies have found a number of client features to be predictive of LOS, it was reasonable to assume that the heterogeneity of Joe's sample may have obscured LOS patterns which may have occurred in individual programs.

A final criticism which may be leveled at many of these LOS studies was the selective nature of the client characteristics they chose to investigate. While most articles reported the relationship of age and race to LOS, many other psychosocial and demographic features were excluded in most studies. This lack of thoroughness has severely limited the comparisons that can be made between these publications since one cannot be sure if the excluded patient characteristics were controlled for or merely overlooked. The inter-relational nature of drug client features has been discussed above and the importance of measuring all such variables has

clearly been indicated since the drug abuse population has been so heterogeneous (McKenna, 1979; McRae, 1974; Retka & Chatham, 1974). One solution to this dilemma was proposed by Reed (1978), who suggested that researchers intensively examine a few individual rehabilitation centers in longitudinal studies. He felt that such reports could then form the foundation of our understanding about the specific interactions of clientele and treatment and clarify a number of issues.

Retention in the Short-term TC

The need for intensively focused research has clearly been indicated for the study of retention in the short-term TC since only three articles have explored these issues (Katz et al., 1975; Linn et al., 1979; Rozyrko & Stein, 1974). While each article reported on the relationship between client cultural background and retention in treatment, they measured many different demographic variables and produced conflicting results on the variables they examined in common. Lin et al. (1979) focused their research exclusively on the relationship between race and patient retention. They found that there were no overall racial differences in retention but that Blacks were most likely to leave in the first month of treatment but thereafter were more likely to remain in treatment. Linn further found that there was no significant

relationship between living arrangement and LOS but that Black clients who lived with their parents or spouse were more likely to complete treatment than other Blacks who lived with siblings or non-relatives. White patients, however, displayed the exact opposite pattern, since those who lived with their parents or spouse were most likely to terminate treatment early. Rozyngo and Stein (1974) included a few more client features in their study and reported that younger, White, polydrug, non-daily abusers remained in the TC longer. In direct contrast to this, Katz et al. (1975) reported that older clients with more extensive criminal histories and less education tended to complete treatment and that race, religion, and marital status had no significant relationship to LOS. Clearly, these studies differed in both the extent and nature of the client characteristics investigated, and some major variables such as employment status, prior treatment record, and length of drug abuse were not included in any of the three. It was even more disheartening to note that the length of time required to classify a patient as successful also differed in each study. The retention period used by Katz et al. was "about six months;" it was three weeks for Rozyngo and Stein, and one week for Lin et al. All were quite different from the national modal length of two months (Watson et al., 1974) and were yet a further indication that additional research of the short-term TC was needed.

Completion of Detoxification

Information about the types of clients likely to complete a drug detoxification has been quite limited. There have been only two studies to date and, like the studies of the short-term TC, they were rather sketchy. Fortunato et al. (1966) found that older Blacks and younger Whites were more likely to complete a detoxification regime. Religion and source of referral had no effect on termination. In a more recent work, Sheffet et al. (1976) found that students, Blacks, and individuals over the age of 20 were the most likely to complete drug detoxification. Sheffer also indicated that a patient's level of education, employment status, and sex had no effect on treatment retention.

Studies such as those above have clearly been in need of replication since the completion of a detoxification has generally been required for entrance into a TC. It is disheartening to note that while many researchers have investigated the client features related to retention in a TC, none have examined the prerequisite step of detoxification as part of their report. This type of investigation was included in the present study. It was hoped that the inclusion of this perspective would provide information about the detoxification process and later retention in a short-term TC.

Hypotheses

It has been shown that LOS in a TC has consistently been associated with outcome variables during and post treatment. It has also been suggested that an addict's cultural background may influence how long that client remains in treatment. While a number of studies have examined the relationship between demographic variables and retention in treatment, few consistent patterns have emerged. These inconsistencies have probably been due to individual program differences and weaknesses in the planning and methodology of many studies. The present paper attempted to avoid these shortcomings by following Reed's (1978) directive to focus intensively on a single TC program. A short-term TC was chosen for study since prior investigations were few and produced conflicting results. Because of this, the current study was exploratory in nature. On the basis of results from long-term TC studies, it was expected that successful retention would be positively related to having prior treatments, years of formal education, and being employed at admission. It was also hypothesized that patient retention was negatively correlated with years of drug usage, frequency of drug usage, number of arrests in the last 24 months, and the usage of opiates. Many other patient background indices were included, and their relationships to a client's LOS and type of discharge were examined. Because this was an

exploratory investigation, all significant correlations among client characteristics and retention variables were cross-validated with a second sample of patients from the same treatment facility. In addition to this, multiple linear regressions were performed using LOS and type of discharge as the dependent variables. It was expected that these statistical procedures would provide increased information about the types of clients most likely to be successfully retained in a short-term TC.

In addition to the above analyses, LOS was also investigated for all clients, i.e., detoxification and TC patients. While no prior studies have investigated LOS in this manner, it was expected that the client features listed above would relate in the same manner to this overall measure of LOS. A multiple regression was conducted and cross-validated with LOS as the dependent measure.

One additional analysis was conducted on the data obtained from the detoxification patients. It was expected that White and older individuals would be most likely to leave before completing detoxification. Once again a multiple regression approach was employed with the completion of detoxification as the dependent variable.

METHOD

Patients

Data were collected from the records of patients admitted to a short-term TC between the years 1975 through 1978. This sample consisted of 1188 subjects, all of whom were male veterans. The patients ranged in age from 19 to 62, but the majority were in their twenties ($\bar{X} = 29.76$; median = 27.72). Forty-nine percent of the subjects were Black, 46.8% were White, and 4.2% were Hispanic. While heroin was listed as the primary drug of abuse by 78.9% of the sample, 84.3% reported abusing at least two substances and 27.4% reported the abuse of four or more drugs on a regular basis.

Seventy-nine records were excluded from the final analysis since their official discharge status was "transferred", which could not be assessed as either a positive or negative outcome. Of the remaining 1079 patients, 244 actually entered the TC. Of these, 157 (64.3%) received favorable discharges, while 87 were ejected or left treatment (35.7%). Among the remaining 835 "detox only" patients, 397 (47.5%) attained favorable discharges and 438 (52.5%) received unfavorable discharges.

Treatment Facility

Research was conducted at a short-term TC which was an independent service at a large V.A. medical center. The hospital was located in a suburb outside of Chicago and drew the bulk of its treatment population from that city and its suburbs.

The facility itself was a 20-bed, inpatient unit which accepted voluntary patients with a primary diagnosis of drug dependency. Patients with acute medical complications or a solitary diagnosis of alcohol dependency were referred to the general medical hospital or alcoholism treatment unit within the same medical facility. Treatment staff changed slightly over the four-year period but was headed by a psychologist and included a physician, a social worker, rehabilitation technicians who were ex-addicts, nursing staff, and occasional trainees from various disciplines.

The program consisted of two successive phases. Phase one was a detoxification stage which lasted from two to three weeks depending upon the severity of the patient's addiction or abuse. The majority of individuals who entered treatment were admitted to this phase (87.1%). Individuals who were completely drug-free were allowed to apply for lengthier rehabilitation in phase two. This occurred upon completion of phase one or soon after admission if the person applying was

currently drug-abstinent. Patients accepted into phase two agreed to remain for a minimum of one month up to a maximum of three months (further extensions could be granted in exceptional cases). Treatment was deemed completed if the resident had stayed the 30-day minimum and was in good standing with the community. Virtually all applicants were accepted into phase two except those who had a court appearance scheduled within the first 30 days of treatment. These applicants were encouraged to fulfill this legal obligation and then reapply for admission.

The entire unit was run as a traditional TC except for the length of treatment described above. Residents participated in group therapy five times a week and engaged in a rigorous schedule that included other experiential groups, individual therapy, community projects, work chores, recreational events, and a number of ancillary therapies such as learning groups, educational therapy, corrective therapy, and occupational therapy. Each resident had a primary counselor who was a member of the drug treatment staff. In addition, patients were also free to make appointments with other staff personnel when appropriate (e.g., physician, social worker, psychologist). All rules and regulations of the TC were discussed with new community members, and a booklet containing this information was provided for each. Each resident was in turn expected to fulfill his responsibilities to the community and attend all scheduled activities.

Measures

The measures used in this study were the CODAP Admission Report (CODAP AR Oct. 1974; revised Oct. 1976, Jan. 1977, and Jan. 1978) and the CODAP Discharge Report (CODAP DR Oct. 1974; revised Oct. 1976, Jan. 1977, and Jan. 1978). The following patients' background indices were obtained from the CODAP AR: age, race, employment status, years of formal education; if the client was currently in an educational or skill development program; number of prior treatment experiences, number of prior treatments in a V.A. facility, number of months since last discharge from any drug treatment program, current type of admission, modality admitted to, medication prescribed, primary drug of abuse, and the usage of four or more different drugs in the month prior to admission. Additional characteristics were obtained for 380 of the subjects who were admitted after March 1977, since all the revised CODAP ARs included more information. These additional indices were: marital status, living arrangements, route of drug administration, and number of arrests in the previous 24 months. Measures relating to patient retention were taken from the CODAP DR. These were: type of discharge and LOS in weeks. These variables were readily available on all forms for all subjects.

Procedure

All data were collected from carbon copies of the original CODAP forms which were retained by the drug treatment program. The CODAP forms were chosen as the measures for this study since they were widely utilized by treatment programs during this time period and are currently required for every individual who enters a drug treatment facility in this country (Siguel & Spillane, 1977). Thus the data reported were identical to information gathered at other clinics. The comparability of the data was further enhanced by a number of features. The first was that the CODAP system periodically trained individuals from all clinics in the proper usage of CODAP forms and provided an instruction manual and handbook to all participating clinics (NIDA, 1978). In addition, all patients entering treatment were assigned an identification number. The National Institute of Drug Abuse (NIDA) monitors all reports it receives and checks the new data on a monthly basis for accuracy. When contradictory data are found for a patient, the NIDA sends errors reports to the clinic reporting the new admission. These errors were then corrected on all forms and resubmitted to NIDA. Thus, users of the CODAP system were assured that the data gathered at all facilities were obtained in a common fashion and that errors in data and administration were minimal. As a result of these checks, only a handful of discrepancies were found in the current data.

These were resolved by comparing the item in question with the patient's medical file and other hospital records.

All CODAP revisions have contained the identical information found on prior issues. Some additional items were, however, included on the October 1976 revision and had been maintained on subsequent revisions. These additional client descriptives were included in the analyses of the present study.

A complete description of the variables under investigation are listed in Table 1. Items one through 20 were client features obtained from the CODAP AR, while items 21 and 22 were measures of retention taken from the CODAP DR. Because of the highly skewed distribution, the patients' ages were divided into decile groups. All other continuous data did not require transformations, but non-continuous data were dichotomized into meaningful categories. All these recordings are illustrated in Table 1, while the original CODAP forms and codings can be seen in Appendix A.

It must be mentioned that all client characteristics gathered from the CODAP AR were obtained through direct interview with the individual patient. Klein (1977), among others, has suggested that such information may be subject to distortion by the addict and unreliable for research. Contrary to this popular belief, however, a great deal of

Table 1
Definitions and Coding of Client
Characteristics and Retention Variables

Variable Number	Description
1	"Age" coded in deciles
2	"Race" coded: 1 = White; 2 = Minority
3	"Employment status" coded: 1 = unemployed; 2 = part- or full-time employed
4	"Education" coded by highest grade completed
5	"Currently in educational or skill development program" coded: 1 = yes; 2 = no
6	"Number of prior treatments" coded by number
7	"Number of prior V.A. treatments" coded by number
8	"Time elapsed since last discharge" coded in months
9	"Current admission type" coded: 1 = first admission; 2 = transfer or readmission
10	"Modality admitted to" coded: 1 = detoxification; 2 = drug free
11	"Medication prescribed" coded: 1 = none or non- methadone; 2 = methadone
12	"Primary drug of abuse" coded: 1 = any opiate; 2 = all others
13	"Frequency of primary drug of abuse" coded: 0 = no usage; 1 = monthly; 2 = weekly; 3 = two/three times weekly; 4 = more than three times per week; 5 = daily
14	"Number of years using primary drug of abuse" coded in years
15	"Number of years using primary drug of abuse once per week or more often" coded in years
16	"Usage of four or more drugs in the past month" (polydrug) coded: 1 = yes; 2 = no
17	"Marital status" coded: 1 = married; 2 = not presently married
18	"Living arrangement" coded: 1 = living with parents, spouse, or alone; 2 = living with others
19	"Route of drug administration" coded: 1 = any except injected; 2 = injected
20	"Number of arrests in last 24 months" coded by number
21	"Length of stay" coded in weeks
22	"Type of discharge" coded: 1 = favorable (completed treatment, transferred to outpatient); 2 = unfavor- able (noncompliance with rules, left before completing treatment)

research has indicated that an addict's self-report was highly reliable and consistently reflected data obtained from hospital records, legal records, and acquaintances of the drug abuser (Amsel, Mandell, Matthias, Mason & Hocherman, 1976; Ball, 1967; Bonito, Nurco, & Shaffer, 1976; Maddux & Desmond, 1975; Stephens, 1972). The most comprehensive study of this nature was conducted by Maddux and Desmond (1975), who examined patient reliability and validity on 12 life history variables. These authors found that there was exact or approximate agreement on 9 of the 12 variables including age, language spoken, military service, age of first drug use, intactness of family to age 11 years, education, and age at first marriage. Only the number of months employed, number of prior treatments, and number of prior arrests appeared to be inaccurate (underreported) by these patients. These authors concluded, however, that even such information was fairly reliable for research purposes. Amsel et al, (1976) and Bonito et al. (1976) similarly discovered some discrepancies on questions related to criminal history. With further research, however, both studies found that the police files themselves tended to be as unreliable and incomplete as the patient responses.

Only one study to date has concluded that an addict's reports were unreliable. This research was conducted by Newman, Cates, Tytun, and Werbell (1976) and limited its

investigation to the reported age of first opiate use. They found that 31% of their subjects had discrepancies of 3 or more years. A few confounds existed in this study, however, as further data analysis revealed that the most unreliable patients were the oldest addicts who also had the greatest elapsed time between first drug use and research interview. Another problem was that all patients were opiate addicts who needed a two-year history of addiction to be placed or continued on methadone maintenance. Addicts who were aware of this contingency may then have altered these dates to obtain treatment. Since the present report was performed at a drug-free institution (no methadone maintenance) which accepted individuals regardless of their criminal history, it was assumed that these biases were minimal.

Method of Analysis

Data were randomly divided into two sample groups A and B. Subjects who had entered the TC (phase two) were identified and a stepwise multiple linear regression was performed on the first data set (Group A) with type of discharge serving as the dependent variable. The regression equation from Group A was then used with the data from Group B. In this way, the actual type of discharge for Group B was correlated to the type of discharge predicted by the findings obtained from the first group's data. This procedure would

provide a cross-validation check for the original multiple regression and would provide an estimate of the shrinkage of the multiple correlation coefficient. This entire analysis was repeated for the same TC groups after substituting LOS as the dependent variable.

The correlation matrix from each of the analyses listed above was also inspected for significant bivariate correlations between client features and retention variables. A cross-validation of the significant correlations was then attempted using the second data sample.

In addition to the TC analyses, the LOS for both TC and "detox only" patients was used as the dependent variable in another multiple regression. Once again data from Group A were used for the original analysis while data from Group B were used to cross-validate the initial results.

The final analysis of this report was a comparison of those who completed and failed to complete a detoxification. A multiple regression approach was performed on the data from Group A, and results were cross-validated with Group B data.

RESULTS

Type of Discharge from the TC

Table 2 presents the simple bivariate correlations between client features and the type of discharge received for TC Groups A and B. These correlations along with the inter-correlations of all predictor variables (presented in Appendix B) were inspected. Generally, the correlations were low, especially those with the criteria. The relationships in these data suggested that the multiple R for Group A would not be very large (i.e. would not be in the range of .7 to .9). Nevertheless, it was hoped that the data would combine in such a way as to make better than chance predictions which could be replicated upon cross-validation.

While no predictor variable was significantly related to type of discharge for both Groups A and B, it can be seen that those predictors with the greatest overall magnitude in Group A (variables 2, 8, 17, 18, and 20) were in the same predictive direction of similar relative magnitude for Group B. A strength of association measure was therefore created to measure this observation by correlating the r values of each predictor. The result was a Pearson r of .3638 which had a probability level of .057. This tended to support the observation that while the relationship between each predictor

Table 2

Bivariate Correlations (r) of the 20 Predictor Variables
With Type of Discharge for TC Patients, Groups A and B

Predictor Variable ^a	Group A		Group B	
	<u>n</u>	<u>r</u>	<u>n</u>	<u>r</u>
1	124	-.073	120	-.169
2	124	-.128	120	-.033
3	124	.021	120	.031
4	124	-.026	120	-.073
5	124	.048	120	-.105
6	124	.036	120	.034
7	124	.077	120	.142
8	124	-.158	120	-.006
9	124	-.004	120	.112
10	124	.046	120	-.070
11	124	-.112	120	.160
12	124	.049	120	-.168
13	124	-.035	120	.069
14	124	-.006	120	-.198*
15	124	-.027	120	-.140
16	124	.001	120	-.036
17	55	.126	53	.025
18	55	.181	53	.289*
19	55	-.106	53	-.070
20	55	.114	53	.116

^a Variable numbers are identified in Table 1.

* p .05, two-tailed

and the discharge criterion was weak, the overall trend was moderately reliable.

Table 3 summarizes the results of the stepwise multiple regression conducted on the Group A data. With three predictors in the equation, a multiple \underline{R} of .342 was obtained, accounting for 12% of the variance in the criterion variable. Thus, while the relationship between the best predictors and the criterion was significant at the .05 level (\underline{F} = 2.85; \underline{df} = 3 and 51), it was not in magnitude very impressive.

The three \underline{B} weights obtained in this procedure were then placed into a regression equation and the raw data from Group B were entered. A value of .3065 was thus obtained. This later figure is a Pearson \underline{r} , which represents the relationship between the real and predicted type of discharge values as predicted by Group A results. While this Pearson \underline{r} of .3065 reflected some shrinkage from the original multiple \underline{R} of .342, it nonetheless indicated that these three predictor variables were consistently related in the same manner to type of discharge from a TC. These results strongly indicated that the patients most likely to receive a favorable discharge were those who lived with their parents, spouse, or alone, had recently been in another treatment, and had been arrested in the 24 months prior to admission.

Table 3

Summary of Stepwise Multiple Regression Analysis
 for Group A (TC members)
 With Type of Discharge as Dependent Variable

Step	Predictor Variable Entered ^a	<u>R</u>	<u>R</u> ²	Final B Weights
1	18	.181	.032	.384
2	8	.295	.087	-.008
3	20	.342	.117	.049
Constant				.977

^aVariable members are identified in Table 1.

LOS in the TC

Table 4 is a summary of the bivariate correlations between each predictor variable and LOS in the TC program. It can be seen that these individual variables do not have a high degree of relationship to LOS as only one correlation achieved significance at the .05 level. Once again, however, inspection would indicate that while these r values were low, they generally were in the same direction and of the same relative magnitude for each variable. A strength of association measure was calculated and found to be .4646. This figure was significant beyond the .02 level of probability and tended to indicate that while their magnitude was small, these correlations were moderately reliable.

The results of the multiple regression analysis conducted on Group A data are presented in Table 5. With 13 predictors in the equation, a multiple R of .636 was found which accounted for over 40% of the variance in the LOS criterion variable. The F -ratio at step 13 was 2.045 which, with 13 and 41 degrees of freedom, was significant at the .05 level of probability. The B weights and constant from this multiple regression were then applied to the raw data from Group B and a cross-validation r of .1271 was obtained. This suggested that the original multiple of .636 was quite unreliable and that it may have been due to sampling error.

Table 4

Bivariate Correlations (\underline{r}) of the 20 Predictor Variables With LOS for TC Patients, Groups A and B

Predictor Variable	Group A		Group B	
	<u>n</u>	<u>r</u>	<u>n</u>	<u>r</u>
1	124	.052	120	.073
2	124	.120	120	.016
3	124	-.029	120	-.147
4	124	.107	120	-.045
5	124	.164	120	.124
6	124	.031	120	.121
7	124	.004	120	.058
8	124	.141	120	.215*
9	124	.019	120	-.030
10	124	.023	120	.083
11	124	-.069	120	-.040
12	124	-.137	120	-.023
13	124	-.020	120	.094
14	124	.061	120	.032
15	124	.061	120	.053
16	124	-.082	120	-.029
17	55	-.215	53	-.108
18	55	-.263	53	.021
19	55	-.010	53	.202
20	55	-.004	53	.019

^a Variable numbers are identified in Table 1.

* \underline{p} .05, two-tailed

Table 5

Summary of Stepwise Multiple Regression Analysis for
Group A (TC Members) With LOS as Dependent Variable

Step	Predictor Variable Entered ^a	<u>R</u>	<u>R</u> ²	Final B Weights
1	18	.263	.069	-5.671
2	17	.348	.212	-3.166
3	5	.417	.174	8.813
4	1	.473	.224	.283
5	19	.497	.247	-6.441
6	11	.553	.306	-5.750
7	2	.583	.340	2.595
8	6	.599	.368	.349
9	16	.607	.368	-1.550
10	11	.615	.379	-3.524
11	10	.626	.392	-1.199
12	8	.631	.399	.054
13	15	.636	.405	.091
Constant				22.035

^aVariable numbers are identified in Table 1.

The failure to cross-validate LOS results was especially puzzling since the type of discharge criterion had been shown to be reliable between the same two groups. One possible explanation for this was that Groups A and B may have different distributions of the predictor variables that were utilized in the multiple R equations. To test this possibility, the means and standard deviations of predictor and criteria variables were obtained for each sample group. These data, together with t-test scores between groups, are presented in Table 6. It can be seen that none of the t values approached significance, and that differences in the reliability of LOS and type of discharge were not due to distribution differences between Groups A and B.

LOS for All Patients

Simple bivariate correlations were calculated between the 20 client features and LOS for both TC and "detox only" patients. The results are presented in Table 7. While nine of the 40 possible correlations achieved statistical significance, no single predictor achieved significance for both Groups A and B. This suggested that the correlations which did reach significance did so on the basis of sampling error.

A multiple linear regression was performed on the data from Group A and the results are summarized in Table 8.

Table 6

Means, Standard Deviations (s.d.), and t -Test Scores for
22 Variables Obtained from the TC Sample Groups A and B

Predictor Variable ^a	Group A		Group B		t ^b
	\bar{x}	s.d.	\bar{x}	s.d.	
1	5.73	2.71	5.28	2.59	1.32
2	1.49	.50	1.47	.50	.32
3	1.20	.40	1.20	.40	.03
4	11.90	1.63	12.15	1.66	-1.16
5	1.94	.22	1.92	.26	.74
6	2.50	2.56	2.89	2.97	-1.11
7	1.64	1.83	1.83	1.91	-.81
8	4.49	8.97	6.35	12.61	-1.34
9	1.47	.49	1.63	.48	-.90
10	1.46	.84	1.30	.71	1.56
11	.58	.49	.68	.46	-1.70
12	1.26	.44	1.21	.41	.92
13	3.98	1.86	4.04	1.67	-.27
14	8.15	6.65	7.13	4.98	1.33
15	6.67	5.69	6.20	4.65	.68
16	1.67	.46	1.63	.48	.68
17	1.58	.49	1.44	.50	1.40
18	1.21	.41	1.25	.44	-.47
19	1.80	.40	1.70	.46	1.17
20	1.66	2.16	1.48	2.10	.43
21	9.19	5.14	9.34	5.31	-.23
22	1.29	.45	1.39	.49	-1.59

^a Variable numbers are identified in Table 1.

^b $df = 238$, for variables 1 through 16, and variables
21 and 22;
 $df = 105$, for variables 17 through 20.

Table 7

Bivariate Correlations (r) of the 20 Predictor
Variables With LOS for All Patients, Groups A and B

Predictor Variable ^a	Group A		Group B	
	<u>n</u>	<u>r</u>	<u>n</u>	<u>r</u>
1	556	-.010	523	.063
2	556	-.057	523	.008
3	556	-.084*	523	-.053
4	556	.058	523	.054
5	556	.063	523	.093*
6	556	.090*	523	.008
7	556	.086*	523	-.014
8	556	.077	523	.026
9	556	.077	523	.076
10	556	.080	523	.170**
11	556	-.044	523	-.173**
12	556	-.005	523	.030
13	556	-.000	523	-.087*
14	556	-.052	523	.051
15	556	-.034	523	.027
16	556	-.067	523	-.092*
17	167	-.176*	169	-.076
18	167	.029	169	-.127
19	167	-.013	169	-.020
20	167	-.013	169	.026

^a Variable numbers are identified in Table 1.

* p .05, two-tailed

** p .001, two-tailed

Table 8

Summary of Stepwise Multiple Regression Analysis for
Group A (All Patients) With LOS as Dependent Variable

Step	Predictor Variable Entered ^a	<u>R</u>	<u>R</u> ²	Final B Weights
1	17	.176	.031	-1.845
2	5	.201	.040	1.716
3	4	.223	.050	.253
4	16	.245	.060	- .823
5	8	.262	.068	.027
Constant				1.266

^a Variable numbers are identified in Table 1.

After five steps, an F-ratio of 2.375 was obtained which was statistically significant at the .05 level (df = 5 and 161). The multiple R obtained at this step was .262 which accounted for 6.8% of the variance. Thus, while these figures achieved statistical significance, the relationship between the five best predictors and overall LOS was quite small in magnitude.

The B weights obtained from this multiple regression were again combined with the raw data from Group B. From this, a cross-validation r of .122 was obtained. This value would indicate that yet further shrinkage occurred on the original multiple R which was small in magnitude to begin with.

LOS Subgroup Analyses

One possible reason for this study's failure to predict overall LOS was that the statistics above were conducted on all 1079 subjects. This may not have been a reasonable analysis, however, since 399 patients had limited their stays to the completion of a detoxification. Thus, while these individuals can be classified as treatment successes on the basis of their discharge, they had LOS's of two or three weeks, which has not traditionally been considered a sufficient treatment period. In an attempt to control for this, another set of analyses was undertaken which eliminated this group of 399 from the calculations. The bivariate correlations

from this analysis are presented in Table 9. Once again these correlations were small in magnitude and no single client feature was significantly related to LOS in both Groups A and B.

The results of the Group A multiple regression are summarized in Table 10. After nine steps, a multiple R of .366 was recorded, accounting for 13.4% of the variance. While small, this multiple R represents some improvement over the previous overall LOS multiple R . The F -ratio at this step was 2.08 which, with nine and 117 degrees of freedom, was significant at the .05 level.

Data from Group B were then placed into the regression equation obtained from Group A. An r of .224 was obtained from this calculation. This figure displays some shrinkage from the original multiple R of .366 but maintains some predictive power and was an improvement over the LOS results obtained from the inclusion of all patients.

Prediction of Detoxification Dropouts

A summary of the correlations between the 20 predictor variables and the successful completion of detoxification is presented in Table 11. Once again the correlations appeared quite low and, of the six that achieved statistical significance, all were in Group B. In this summary, positive

Table 9

Bivariate Correlations (r) of the 20 Predictor Variables
With LOS for All Patients, Except "Detox Only" Completers

Predictor Variable ^a	Group A		Group B	
	<u>n</u>	<u>r</u>	<u>n</u>	<u>r</u>
1	346	.117*	336	.014
2	346	.063	336	-.014
3	346	.047	336	-.089
4	346	.072	336	.081
5	346	.106	336	.080
6	346	-.012	336	.113
7	346	-.043	336	.080
8	346	.075	336	.064
9	346	.065	336	.044
10	346	.173**	336	.100
11	346	-.182***	336	-.047
12	346	.019	336	-.026
13	346	-.122*	336	-.013
14	346	.096	336	-.025
15	346	.068	336	.000
16	346	-.054	336	-.072
17	127	-.099	131	-.164
18	127	-.148	131	.037
19	127	-.014	131	-.035
20	127	.022	131	-.002

^a Variable numbers are identified in Table 1.

* p .05, two-tailed

** \bar{p} .005, two-tailed

*** \bar{p} .001, two-tailed

Table 10

Summary of Stepwise Multiple Regression Analysis
 for Group A (All Patients Except "Detox Only"
 Completers) With LOS as Dependent Variable

Step	Predictor Variable Entered ^a	<u>R</u>	<u>R</u> ²	Final <u>B</u> Weights
1	11	.182	.033	- .858
2	18	.237	.056	-2.235
3	14	.282	.080	.054
4	17	.300	.090	-2.116
5	1	.327	.107	.345
6	10	.338	.114	.803
7	16	.347	.120	- .960
8	8	.356	.127	.056
9	13	.366	.134	.274
Constant				10.478

^a Variable numbers are identified in Table 1.

Table 11

Bivariate Correlations (r) of the 20 Predictor Variables With the Completion of Detoxification for All Patients, Groups A and B

Predictor Variable ^a	Group A		Group B	
	<u>n</u>	<u>r</u>	<u>n</u>	<u>r</u>
1	556	.057	523	.140**
2	556	.064	523	.091*
3	556	.009	523	.015
4	556	.081	523	.009
5	556	.018	523	.047
6	556	.046	523	-.047
7	556	.002	523	-.083
8	556	-.069	523	.058
9	556	-.044	523	-.006
10	556	.018	523	.071
11	556	.010	523	-.045
12	556	-.052	523	.030
13	556	-.047	523	-.103*
14	556	.066	523	.107*
15	556	.067	523	.096*
16	556	-.036	523	.089*
17	167	-.053	169	-.026
18	167	.023	169	-.033
19	167	-.126	169	.002
20	167	-.011	169	.004

^a Variable numbers are identified in Table 1.

* p .05, two-tailed

** p .005, two-tailed

correlations indicated that the greater the magnitude of the predictor variable, the more likely it was that a patient would complete detoxification since detoxification completion was given a value of 2, while incomplete detoxification was rated as a 1.

The data from Group A were then placed into a multiple regression equation and the results of this procedure are demonstrated in Table 12. With four predictors in the equation, a multiple R of .237 was recorded which accounts for 5.6% of the criterion's variance. While the F -ratio at this step was statistically significant ($F = 2.932$, $df = 4$ and 164), the regression's predictive power is extremely limited and it was, in fact, the smallest of all multiple R 's obtained in this report.

The B weights and constant from the multiple regression in Table 12 were applied to the data from Group B. The r obtained in this procedure was $-.022$. This figure represented a chance occurrence and indicated that no reliable relationships had been found.

Table 12

Summary of Stepwise Multiple Regression Analysis for
 Group A (All Patients) With Completion of
 Detoxification as Dependent Variable

Step	Predictor Variable Entered ^a	<u>R</u>	<u>R</u> ²	Final B Weights
1	19	.126	.015	- .664
2	12	.206	.042	- .493
3	2	.225	.050	.203
4	16	.237	.056	- .163
Constant				2.949

^a Variable numbers are identified in Table 1.

DISCUSSION

The Prediction of Retention By Individual Variables

Perhaps the most striking outcome of this study was the inability of any single client feature to consistently predict any retention measure. In fact, out of all the correlations calculated, there was not a single instance in which a significant bivariate correlation for one-half of the sample was cross-validated by the other half. Thus, all hypotheses were rejected which had stated that retention measures would be related to an individual's number of prior treatments, years of education, employment status, history of drug usage, and number of arrests.

These findings were especially perplexing, since so much of the literature had reported many significant relationships between retention and these variables. One possible explanation for this was that no prior study attempted to cross-validate their findings on a second independent sample. The significant findings such projects have reported may therefore have been relatively unstable phenomenon and actually due to chance. This possible explanation is most plausible when one considers this paper's previous review of the literature in which contradictory results abounded. Another factor which adds plausibility to this argument was

the results of the present study. It has been reported above that a single predictor was significantly correlated to a retention variable in numerous instances for one-half of the sample but not for the other half. This indicated that these significant correlations were not stable and suggests that they may have been due to chance or sampling error. A third possible explanation for the failure of this study to produce reliable and statistically significant bivariate correlations may be that a short-term TC was studied. Nearly all of the previous literature had been conducted at long-term TCs and their results may reflect the fact that individual client characteristics could predict long-term retention. The inability of this study to replicate these results may therefore reflect the lack of relationships between some client characteristics and short-term retention.

In summary, the results of the bivariate correlational analyses have indicated that client characteristics by themselves were unreliable predictors of all retention criteria. The reasons for this failure may be due either to the lack of rigor and cross-validation procedures in earlier studies or to the short-term nature of the treatment facility examined. Future research needs to address these issues and should be cross-validated whenever the relationships between client characteristics are examined in either the long- or short-term TCs.

Predicting Type of Discharge in the TC

The most significant positive finding of this report was that type of discharge from a TC could successfully be predicted from a multivariate approach. The original multiple R of .342 was cross-validated by a Pearson r of .306 between the actual and predicted type of discharge for the second sample. In specific terms it was found that drug abusers who lived with their parents, spouse, or alone; have had another treatment attempt recently; and have been arrested in the last 24 months were more likely to complete the TC program and obtain a favorable discharge.

A patient's living arrangements were found to be the single most important predictor of type of discharge in both Groups A and B, and may be some indication that greater involvement in the drug subculture adversely affects treatment completion. While there was no hard evidence to support this contention, it seemed reasonable to presume that patients who lived with parents, a spouse, or alone were less likely to be living with other members of the drug culture than those patients who lived with "others". If this is true, it supports Hendler and Stephens' (1977) notion that the cure for drug abuse is to separate the addict from the positive reinforcements that he obtains in the drug subculture and replace them with the positive reinforcements available in society at large. A corollary to this is that individuals who are heavily

invested in a drug abuse style of life are the least likely to give up their drug support systems and reinforcements and obtain lengthy treatment.

The second and third predictors, length of time since last treatment, and number of arrests in the past 24 months appear to reflect motivational features of the individual addict. While this is again speculative, it seemed reasonable to presume that patients who have recently been in treatment and/or arrested may have more motivation to complete treatment either because of recent commitments to this or to protect themselves from going to jail. This later feature appears most plausible in light of studies by Vaillant (1974) and Lieberman and Brill (1972) who concluded that extrinsic pressure on the addict greatly increased retention and treatment success.

An alternate explanation for these results was that addicts with these three characteristics may have fewer support systems than their counterparts and were therefore more dependent upon the treatment facility. This possibility loses some credibility, however, because other dependency characteristics in this study such as marital and employment status had no significant effect on the type of discharge an addict received at the TC. The dependency hypothesis loses even more credibility when one considers that addicts who were most likely to attain favorable discharges were not

significantly different from other patients in LOS. If the dependency hypothesis were true, it would be expected that LOS would be greatest among these clients.

Predicting LOS in the TC

The results of the LOS multiple regression are less clear than those for type of discharge. While a multiple R of .636 was obtained for Group A, the cross-validation Pearson r for Group B was a mere .127. This result indicated that the regression weights and constant from the multiple regression were highly unstable and were probably due to chance differences and sampling error.

This result strongly questions the results of prior studies which have found LOS related to any number of client features. Once again it is suggested that this departure from the previous literature may have been due to the earlier studies' lack of result cross-validation or to this study's use of a short-term treatment facility.

The discrepancy between the LOS and type of discharge results for the TC are in need of some clarification. It should be pointed out that these two measures of retention were significantly correlated to each other at the .01 level in both Groups A and B but that their respective correlations of -.395 and -.408 were far from unity. Since t -tests between all variables revealed no differences between Groups A and B,

it was apparent that differences in the reliability of LOS and type of discharge must have been due to differences in what each criterion measured. That is, while LOS and type of discharge were correlated, they do measure different aspects of treatment outcome and may be expected to relate differently to the predictor variables. Although there is no hard data to support this position, it is quite reasonable to presume that the favorable completion of a program is much less subject than LOS to such nontherapeutic reasons for staying in treatment as the lack of a place to live, the inclement weather outside, or being indigent. Type of discharge, on the other hand, can be entirely dependent upon the subjective evaluation of a staff member. The question then becomes which of these measures has the more important implications for treatment. The answer depends upon the goals of the researcher and treatment facility. While prior research has tended to favor the LOS viewpoint, the current paper believes that type of discharge is a far better reflection of treatment success. The critical test for these hypotheses is, of course, whether LOS or type of discharge is more related to successful outcome measures. Such a study is currently in progress with the subjects used in this research and should provide some clarification about the usefulness of these retention criteria.

The Prediction of Overall LOS and the Completion of Detoxification

The overall LOS multiple regression, which included all detoxification and TC patients, was undertaken to investigate the feasibility of predicting LOS at the time of admission to the treatment unit. A multiple R of .262 was therefore obtained from Group A and a cross-validation r of .122 was achieved using Group B data. These were extremely weak results and tended to indicate that while these predictions were better than chance, they only explain $1\frac{1}{2}\%$ of the variance and are too small to be useful in making clinical or program judgments.

The prediction of overall LOS was somewhat improved if subjects who left treatment immediately after completing a detoxification were eliminated from the analysis. In this case, a multiple R of .366 was obtained which has a cross-validation r of .224. While this represents a mild improvement over the earlier analysis, the fact remains that the later r still accounts for only 5% of the LOS variance and has little practical value.

The prediction of detoxification dropout was even more disappointing. A multiple R of .237 was obtained in this regard from Group A and was cross-validated by a Pearson r of -.022 from Group B. These figures strongly indicated that while the multiple R was statistically significant, it was a

chance occurrence and could not be replicated on a second independent sample.

Summary

The overall pattern of results from the bivariate correlations has indicated that no prediction of any retention variable could be done on the basis of any single client characteristic. While some significant bivariate correlations were found between predictor and retention variables, not one of these was cross-validated with a second sample of data. Instead, the only consistently significant results were found when individual factors were combined. This strongly suggests that multivariate approaches should be employed in future research of this type.

The results of the multiple regression analyses indicated that it was virtually impossible to predict overall LOS and the completion of detoxification. Once an individual had entered the TC, however, it was possible to predict which patients were likeliest to complete the program and obtain positive discharges. These successful clients were more likely to have lived alone, with parents or a spouse, to have been in another treatment recently, and to have been arrested in the past 24 months. The multiple prediction of how long a TC patient would remain in treatment (LOS) could not, however, be made.

The lack of statistically significant results in this study was notable since this contradicted a plethora of

studies which found client demographics, drug history, and psychosocial background related to client retention. Possible explanation for this may have been the shorter treatment length of the present study or the general lack of cross-validation procedures in the previous research. Further research is needed to test these possibilities.

The lack of significant results in predicting detoxification completion and overall LOS was also interesting from another standpoint, since later predictions of type of discharge could be made for TC patients. This pattern of results suggested that the predictor variables used in this study may not be related to the early phases of treatment (e.g. detoxification) but have some predictive validity once an addict has made a commitment to longer rehabilitative treatment. This implies that other unmeasured influences such as motivation played an important part in an individual's decision to enter the TC. Once having made this commitment, however, an addict's social and drug background may interact with the treatment regime of a specific facility and have an influence on whether or not the total treatment experience is realized. Thus, a drug patient's reasons for entering and staying in treatment may be entirely different. At present, these reasons remain unclear and further research is needed. Future studies should be wider in scope and include a variety of other variables such as additional addict

features and treatment program features. This is seen as extremely important since a simple study of client background fails to explain a great deal about drug treatment retention.

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APPENDIX A

CODAP ADMISSION REPORT

REPORT IDENTIFICATION

CARD 1

Cat.

1. Clinic Identifier:

10-17 2. Date Form Completed:

--	--	--	--	--	--

 18-23

ADMISSION STATUS

3. Client Number:

--	--	--	--	--	--	--	--	--	--	--

24-31

29

● CLIENT CHARACTERISTICS

10. Sex 1 = Male ☐ 49
 2 = Female

4. Date of Admission:

--	--	--	--	--	--

 34-39

11. Year Of Birth 19 50-51

5. Admission Type ☐ 40

1 = First Admission (to any Clinic within Program)

2 = Readmission (to any Clinic within Program)

3 = Transfer Admission (from another CODAP Clinic within Program)

4 = Transfer Admission (from a non-CODAP Clinic within Program)

12. Race Or Ethnic

01 = White	06 = Other Asian	<div style="border: 1px solid black; width: 100px; height: 40px; display: flex; align-items: center; justify-content: center;">11</div>	32-53
02 = Black	07 = Puerto Rican		
03 = American Indian	08 = Mexican American		
04 = Japanese	09 = Cuban		
05 = Chinese	99 = Other (Specify in Remarks)		

6. Modality Admitted To

1 = Detoxification	3 = Drug Free	<input type="checkbox"/> 41
2 = Maintenance	9 = Other (Specify in Remarks)	

13. Employment Status

0 = Unemployed

1 = Part-time (less than 30 hours per week)

2 = Full-time (30 or more hours per week)

☐ 5±

7. Environment Admitted To

1 = Prison	4 = Day Care
2 = Hospital	5 = Outpatient
3 = Residential	

☐ 42

EDUCATION STATUS

14. Last Formal School Year Completed 55-56

8. Medication(s) Prescribed				
00 = None	05 = Cyclozocine			43-44
01 = Methadone	06 = Disulfiram			
02 = LAAM	07 = Other Antagonist			45-46
03 = Propoxyphene-N	09 = Other			
04 = Naloxone	(Specify in Remarks)			

15. Currently In Education Program 1 = Yes ☐ 57
2 = No

16. Currently In Skill Development Program 1 = Yes ☐ 5a
2 = No

9. Legal Status

01 = Voluntary	07 = BOP Probationer
02 = NARA I	08 = Other BOP
03 = BOP-NARA II	09 = Federal TASC
04 = NARA III	10 = VA ASNRC
05 = BOP IPODR	20 = State Non-Voluntary
06 = BOP STUDY	30 = Local Non-Voluntary

47-48

④ PRIOR TREATMENT

17. Number Of Prior Treatment Experiences (in any drug treatment Program) 59-60

18. Months Since Last Treatment Experience 51-62

● DRUG PROBLEMS

	CARD 2	PRIMARY PROBLEM	Col	SECOND PROBLEM	Col	THIRD PROBLEM	Col
19.	Drug Type(s)		10-11		19-20		23-25
20.	Frequency of Use At Admission		12		21		30
21.	Year of First Use	19	13-14	19	22-23	19	31-32
22.	Year of First Continuing Use	19	15-16	19	24-25	19	33-34
23.	Year of Last Continuing Use	19	17-18	19	26-27	19	35-36
24.	Has Problem With More Than 3 Drugs				1 = Yes		37

DRUG TYPES

00 = None	07 = Amphetamines
01 = Heroin	08 = Cocaine
02 = Illegal Methadone	09 = Marijuana; Hashish
03 = Other Opiates & Synthetics (with morphine-like effects)	10 = Hallucinogens
04 = Alcohol Abuse	11 = Inhalants
05 = Barbiturates	12 = Over-the-counter
06 = Other Sedatives, Hypnotics or Tranquilizers	99 = Other (Specify in Remarks)

FREQUENCY OF USE AT ADMISSION

0 = No present use
1 = Less than once per month
2 = Less than once per week
3 = Once per week
4 = Several times per week
5 = Daily

REMARKS

[illegible]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
ALCOHOL, DRUG ABUSE, AND MENTAL HEALTH ADMINISTRATION
NATIONAL INSTITUTE ON DRUG ABUSE

FORM APPROVED
OMB NO. 68-R1442

CODAP DISCHARGE REPORT

REPORT IDENTIFICATION

CARD 1

Col.

Col.

1. Clinic Identifier:

10-17

2. Date Form Completed:

18-23

DISCHARGE STATUS

3. Client Number:

24-33

4. Date of Discharge:

34-39

5. Date of Admission to This Clinic:

40-45

6. Reason for Discharge

- 1 = Completed Treatment
2 = Transfer to another CODAP Clinic within Program
3 = Transfer to a non-CODAP Clinic within Program
4 = Referred outside Program
5 = Program decision to discharge Client for non-compliance to Program rules
6 = Client left before completing treatment
7 = Incarcerated
8 = Death

46

7. Modality at Time of Discharge

- 1 = Detoxification
2 = Maintenance
3 = Drug Free
9 = Other (Specify in Remarks)

47

8. Environment at Time of Discharge

- 1 = Prison
2 = Hospital
3 = Residential
4 = Day Care
5 = Outpatient

48

9. Medication(s) Prescribed

- 00 = None
01 = Mefenidone
02 = LAMIN
03 = Propoxyphene-N
04 = Naloxone
05 = Oxycodone
06 = Disulfiram
07 = Other Antipsychotic
99 = Other (Specify in Remarks)

49-50

51-52

TIME IN TREATMENT

10. Number of Months and Weeks of Uninterrupted Treatment Prior to This Discharge

(In any and all Clinics in this Program)

53-54

55

CLIENT CHARACTERISTICS

11. Sex
1 = Male
2 = Female

56

12. Year of Birth

57-58

13. Race or Ethnic

- 01 = White
02 = Black
03 = American Indian
04 = Japanese
05 = Chinese
06 = Other Asian
07 = Puerto Rican
08 = Mexican American
09 = Cuban
99 = Other (Specify in Remarks)

59-60

14. Employment Status at Time of Discharge

- 0 = Unemployed
1 = Part-time (less than 30 hours per week)
2 = Full-time (30 or more hours per week)

61

EDUCATION STATUS AT TIME OF DISCHARGE

15. Last Formal School Year Completed

- (00-20)

62-63

16. Currently in Education Program

- 1 = Yes
2 = No

64

17. Currently in Skill Development Program

- 1 = Yes
2 = No

65

DRUG USE STATUS AT TIME OF DISCHARGE

18. Identify Drugs Used, if any

66-67

- 00 = None
01 = Marijuana
02 = Heroin
03 = Other Opioids & Synthetics (with morphine-like effects)
04 = Alcohol Abuse
05 = Barbiturates
06 = Other Sedatives, Hypnotics or Tranquilizers
07 = Amphetamines
08 = Cocaine
09 = Marijuana
10 = Hallucinogens
11 = Inhalants
12 = Over-the-counter
99 = Other (Specify in Remarks)

REMARKS

19. Coded

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

20. Written

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
ALCOHOL, DRUG ABUSE, AND MENTAL HEALTH ADMINISTRATION
NATIONAL INSTITUTE ON DRUG ABUSE

FORM APPROVED
OMB No. 58-R1442

CLIENT ORIENTED DATA ACQUISITION PROCESS (CODAP)

ADMISSION REPORT (AR)

CARD 1										Item 23-DRUG TYPE(S) USED									
1. CLINIC IDENTIFIER <input type="text"/>										11-18									
2. DATE FORM COMPLETED <input type="text"/>										19-24									
3. CLIENT NUMBER <input type="text"/>										25-34									
4. DATE OF ADMISSION TO THIS CLINIC <input type="text"/>										35-40									
5. ADMISSION TYPE <input type="checkbox"/>										41									
1 = First Admission-To Any Clinic Within This Program																			
2 = Readmission-To Any Clinic Within This Program																			
3 = Transfer Admission-From Another CODAP Reporting Clinic Within This Program																			
4 = Transfer Admission-From A Non-CODAP Reporting Clinic Within This Program																			
6. MODALITY ADMITTED TO (See reverse side for codes) <input type="checkbox"/>										42									
7. ENVIRONMENT ADMITTED TO (See reverse side for codes) <input type="checkbox"/>										43									
8. MEDICATION PRESCRIBED (See reverse side for codes) <input type="checkbox"/>										44-45									
9. SEX 1 = Male 2 = Female <input type="checkbox"/>										46									
10. DATE OF BIRTH <input type="text"/>										47-50									
11. RACE/ETHNIC BACKGROUND (See reverse side for codes) <input type="checkbox"/>										51-52									
12. SOURCE OF REFERRAL (See reverse side for codes) <input type="checkbox"/>										53-54									
13. MARITAL STATUS (See reverse side for codes) <input type="checkbox"/>										55									
14. LIVING ARRANGEMENT (See reverse side for codes) <input type="checkbox"/>										56									
15. EMPLOYMENT STATUS (See reverse side for codes) <input type="checkbox"/>										57									
16. CURRENTLY A HOMEMAKER (Maintains a household with one or more dependents) 1 = Yes 2 = No <input type="checkbox"/>										58									
17. HIGHEST SCHOOL GRADE COMPLETED (00-20) <input type="checkbox"/>										59-60									
18. CURRENTLY IN EDUCATIONAL OR SKILL DEVELOPMENT PROGRAM 1 = Yes 2 = No <input type="checkbox"/>										61									
19. NUMBER OF TIMES ARRESTED WITHIN 24 MONTHS PRIOR TO THIS ADMISSION (00 for none) <input type="checkbox"/>										62-63									
20. NUMBER OF PRIOR ADMISSIONS TO ANY DRUG TREATMENT PROGRAM (00 for none) <input type="checkbox"/>										64-65									
21. MONTHS SINCE LAST DISCHARGE FROM ANY DRUG TREATMENT PROGRAM (00 = none; 97 = not applicable) <input type="checkbox"/>										66-67									
22. HEALTH INSURANCE TYPE (See reverse side for codes) <input type="checkbox"/>										68									
23. DRUG TYPE(S) USED (Complete all blocks)										CARD 2									
										11 12 13 14 15 16 17 18									
										19 20 21 22									
										23 24 25 26									
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										575 576 577 578 579 580 581 582									
										583 584 585 586 587 588 589 590									
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										647 648 649 650 651 652 653 654									
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										671 672 673 674 675 676 677 678									
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										839 840 841 842 843 844 845 846									
										847 848 849 850 851 852 853 854									
										855 856 857 858 859 860 861 862									
										863 864 865 866 867 868 869 870									
										871 872 873 874 875 876 877 878									
										879 880 881 882 883 884 885 886									
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										999 1000 1001 1002 1003 1004 1005 1006									
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										1167 1168 1169 1170 1171 1172 1173 1174									
										1175 1176 1177 1178 1179 1180 1181 1182									
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										1263 1264 1265 1266 1267 1268 1269 1270									
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										1295 1296 1297 1298 1299 1300 1301 1302									
										1303 1304 1305 1306 1307 1308 1309 1310									
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ADMISSION REPORT CODES

Listed below are the Codes required for the completion of Items on the front of this Admission Report. This aid is NOT designed to replace the comprehensive definitions and instructions contained in Chapter 2 – Admission Report of the CODAP Instruction Manual and Handbook. A thorough review of the Instruction Manual and Handbook and its applicability at the reporting unit is required.

Item 6 – Modality Admitted To

- 1 = Detoxification
- 2 = Maintenance
- 3 = Drug Free
- 4 = Other

Item 13 – Marital Status

- 1 = Never Married
- 2 = Married
- 3 = Widowed
- 4 = Divorced
- 5 = Separated

Item 7 – Environment Admitted To

- 1 = Prison
- 2 = Hospital
- 3 = Residential
- 4 = Day Care
- 5 = Outpatient

Item 14 – Living Arrangement

- 1 = Living Alone
- 2 = Living With Parents
- 3 = Living With Spouse
- 4 = Living With Others

Item 8 – Medication Prescribed

- 00 = None
- 01 = Mefnadone
- 02 = LAAM
- 03 = Propoxyphene-N
- 04 = Naloxone
- 05 = Cyclozocine
- 06 = Disulfiram
- 07 = Other Antagonist
- 08 = Naltrexone
- 09 = Other

Item 15 – Employment Status

- 1 = Unemployed, Has Not Sought Employment In Last 30 Days
- 2 = Unemployed, Has Sought Employment In Last 30 Days
- 3 = Part-Time (Less Than 35 Hours A Week)
- 4 = Full-Time (35 Or More Hours A Week)

Item 11 – Race/Ethnic Background

- 01 = White (Not Of Hispanic Origin)
- 02 = Black (Not Of Hispanic Origin)
- 03 = American Indian
- 04 = Alaskan Native (Aleut, Eskimo, Indian)
- 05 = Asian Or Pacific Islander
- 06 = Hispanic-Mexican
- 07 = Hispanic-Puerto Rican
- 08 = Hispanic-Cuban
- 09 = Other Hispanic

Item 22 – Health Insurance Type

- 0 = No Health Insurance
- 1 = Blue Cross/Blue Shield
- 2 = Other Private Insurance
- 3 = Medicaid Insurance
- 4 = CHAMPUS (Civilian Hospital And Medical Program For The Uniformed Services)
- 5 = Other Public Funds For Health Care

Item 12 – Source of Referral

- 01 = Self Referral
- 02 = General Hospital
- 03 = Mental Hospital
- 04 = Community Mental Health Center
- 05 = Social Or Community Services Agency
- 06 = Private Physician Or Mental Health Professional
- 07 = Central Intake Unit Or Another Drug Treatment Program
- 08 = Family Or Relative
- 09 = Friend
- 10 = Employer
- 11 = School
- 12 = NARA I
- 13 = NARA III
- 14 = TASC
- 15 = State/County Probation

- 16 = State/County Parole
- 17 = Federal Probation
- 18 = Federal Parole
- 19 = Police
- 20 = Other

FOR BUREAU OR PRISONS ONLY

- 21 = SOP NARA II
- 22 = SOP – IPDDR
- 23 = SOP Study
- 24 = SOP Probationer
- 25 = Other SOP (Former / DAW)

FOR VETERANS ADMINISTRATION ONLY

- 26 = VA ASURO

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
ALCOHOL, DRUG ABUSE, AND MENTAL HEALTH ADMINISTRATION
NATIONAL INSTITUTE ON DRUG ABUSE

FORM A-107-3
OMB No. 32-0142

CLIENT ORIENTED DATA ACQUISITION PROCESS (CODAP)

DISCHARGE REPORT (DR)

CARD 1		CARD 2	
1. CLINIC IDENTIFIER	11-18	13. CURRENTLY IN EDUCATIONAL OR SKILL DEVELOPMENT PROGRAM 1 = YES 2 = NO	19
2. DATE FORM COMPLETED	19 24	15. SKILL DEVELOPMENT PROGRAM COMPLETED DURING TREATMENT 1 = YES 2 = NO	71
3. CLIENT NUMBER	25-34	20. NUMBER OF TIMES CLIENT WAS ARRESTED DURING TREATMENT (02 for None)	72-73
4. DATE OF DISCHARGE FROM THIS CLINIC	35-40	Item 21—DRUG TYPE(S) USED	
5. DATE OF ADMISSION TO THIS CLINIC	41-46	Include in the following order: —Drug Problem(s) at the time of discharge regardless of frequency of use at discharge —Other drug(s) used during month prior to discharge, whether or not a problem.	
6. DATE OF ADMISSION TO THIS PROGRAM	47-52	If 00 for None is entered, leave items 22-24 blank.	
7. REASON FOR DISCHARGE	53-54	00 = None 01 = Cocaine 02 = Marijuana 03 = Marijuana Main Stn 04 = Marijuana 05 = Other Cannabis and Synthetic 06 = Alcohol 07 = Barbiturates 08 = Other (Specify) Or Hyponotize 09 = Amphetamines 10 = Other 11 = Drug Unknown	
8. MODALITY AT TIME OF DISCHARGE	55	Item 22—SEVERITY OF DRUG PROBLEM(S) AT TIME OF DISCHARGE	
9. ENVIRONMENT AT TIME OF DISCHARGE	56	0 = Not A Problem At Time Of Discharge 1 = Primary 2 = Secondary 3 = Tertiary	
10. SEX	57	Item 23—FREQUENCY OF USE DURING MONTH PRIOR TO DISCHARGE	
11. DATE OF BIRTH	58-61	0 = No Use During Month Prior To Discharge 1 = Once Per Month 2 = Once Per Week 3 = Two To Three Times Per Week 4 = More Than Three Times Per Week 5 = Once Daily 6 = Two To Three Times Daily 7 = More Than Three Times Daily 8 = Frequency Unknown	
12. RACE/ETHNIC BACKGROUND	62-63	Item 24—MOST RECENT USUAL ROUTE OF ADMINISTRATION	
13. MARITAL STATUS	64	1 = Oral 2 = Smoking 3 = Intramuscular 4 = Intravenous 5 = Route Unknown	
14. LIVING ARRANGEMENT	65	PATTERNS OF DRUG USE AT DISCHARGE	
15. EMPLOYMENT STATUS	66	CARD 2	
16. CURRENTLY A HOMEOWNER (If yes, how long with one or more dependents) 1 = Yes 2 = No	67	21. DRUG TYPE(S) USED (Complete all drug(s))	
17. HIGHEST SCHOOL GRADE COMPLETED (00 for None)	68-69	22. SEVERITY OF DRUG PROBLEM(S) AT TIME OF DISCHARGE	
25. CROD REMARKS	70-75	23. FREQUENCY OF USE DURING MONTH PRIOR TO DISCHARGE	
		24. MOST RECENT USUAL ROUTE OF ADMINISTRATION	

ACM 427-3
Rev. 10-76

This report is required by P.L. 92-155. Failure to report may result in the suspension of the institution of the National Treatment Grant or Contract. The information entered on this form will be handled in the strictest confidence and will not be released to unauthorized personnel.

DISCHARGE REPORT CODES

Listed below are the Codes required for the completion of Items on the front of this Discharge Report. This aid is NOT designed to replace the comprehensive definitions and instructions contained in Chapter 3 – Discharge Report of the CODAP Instruction Manual and Handbook. A thorough review of the Instruction Manual and Handbook and its accessibility at the reporting unit is required.

Item 8 – Modality At Time Of Discharge

- 1 = Detoxification
- 2 = Maintenance
- 3 = Drug Free
- 4 = Other

Item 9 - Environment At Time Of Discharge

- 1 = Prison
- 2 = Hospital
- 3 = Residential
- 4 = Day Care
- 5 = Outpatient

Item 12 – Race/Ethnic Background

- 01 = White (Not Of Hispanic Origin)
- 02 = Black (Not Of Hispanic Origin)
- 03 = American Indian
- 04 = Alaskan Native (Aleut, Eskimo Indian)
- 05 = Asian Or Pacific Islander
- 06 = Hispanic-Mexican
- 07 = Hispanic-Puerto Rican
- 08 = Hispanic-Cuban
- 09 = Other Hispanic

Item 13 – Marital Status

- 1 = Never Married
- 2 = Married
- 3 = Widowed
- 4 = Divorced
- 5 = Separated

Item 14 – Living Arrangement

- 1 = Living Alone
- 2 = Living With Parents
- 3 = Living With Spouse
- 4 = Living With Others

Item 15 – Employment Status

- 1 = Unemployed, Has Not Sought Employment In Last 30 Days
- 2 = Unemployed, Has Sought Employment In Last 30 Days
- 3 = Part-Time (Less Than 35 Hours A Week)
- 4 = Full-Time (35 Or More Hours A Week)

APPENDIX B

Correlation Matrix for TC Patients, Group A

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2	.1																				
3	-.1	-.1																			
4	.1	.2	-.0																		
5	.0	-.0	-.0	-.0																	
6	.0	.0	-.1	-.0	.0																
7	-.0	.0	-.1	-.0	.0	.8															
8	.2	.1	-.0	.0	-.0	-.0	-.0														
9	-.1	.1	.0	-.0	.0	.4	.5	-.2													
10	.0	.0	-.0	.1	.0	-.1	-.0	.1	-.0												
11	-.0	.0	-.0	.0	.0	.1	.0	-.1	.1	-.6											
12	.0	-.3	.1	.0	.0	-.2	-.2	.1	-.3	.1	-.3										
13	.0	.0	-.2	.0	-.0	.0	-.0	.1	-.1	-.1	.0	.0									
14	.3	.1	-.1	.1	.0	.1	.0	.2	-.0	.0	-.0	-.0	-.0								
15	.2	.0	-.0	.1	-.0	.1	.0	.2	.0	.0	.0	-.0	-.7	.8							
16	.1	.1	.0	.0	.1	.1	.1	-.0	.0	-.0	.2	-.0	.0	.0	.1						
17	.4	.1	-.0	.2	.2	-.0	-.1	.0	-.0	-.1	.2	-.1	-.0	.1	.0	.0					
18	.3	.1	.0	.0	-.0	.0	.0	.0	-.0	.2	-.2	.0	.0	.3	.2	.0	.0				
19	-.0	.2	-.1	.0	.1	.1	.1	.0	.2	-.2	.2	-.7	-.0	.2	.2	.0	.1	-.0			
20	-.1	-.1	-.0	.0	-.2	.0	.0	-.0	-.0	-.0	-.0	-.0	.1	.0	.1	-.1	.0	-.2	.0		
21	.0	.0	-.1	-.0	.1	.1	.0	.2	-.0	.0	-.0	-.0	.0	.0	.0	-.0	-.1	.0	.2	.0	
22	-.0	-.1	.0	-.0	.0	.0	.0	-.1	-.0	.0	-.1	.0	-.0	-.0	-.0	.0	.1	.1	-.1	.1	-.3

Correlation Matrix for TC Patients, Group B

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2	.2																				
3	-.0	-.1																			
4	.0	.0	.0																		
5	.0	-.0	-.0	-.0																	
6	.1	-.1	-.0	.1	.0																
7	-.0	-.1	-.0	.0	.0	.7															
8	.0	.1	-.0	-.0	.0	-.0	-.1														
9	-.0	-.0	.0	.1	.1	.3	.5	.0													
10	.1	-.0	-.1	.1	.0	.0	.0	-.1	.0												
11	-.0	.0	.1	-.0	.0	.1	.1	.1	.0	-.6											
12	.0	-.1	-.0	.0	-.0	-.1	-.1	-.1	-.1	.0	-.5										
13	-.1	.1	-.0	-.0	-.1	-.1	-.1	.1	-.1	-.3	.1	.2									
14	.4	.1	-.1	-.0	.1	.0	-.0	.0	-.0	.0	.1	-.1	-.1								
15	.4	.1	-.1	.0	.1	.0	-.0	.0	-.0	.0	.1	-.1	-.2	.8							
16	.1	.1	-.0	-.0	.0	.1	-.0	.0	.1	.0	.0	-.2	-.0	.0	.1						
17	.4	-.0	.2	-.2	.1	.3	.2	-.0	.2	.0	.1	.0	-.2	.0	.0	.2					
18	.1	.2	-.2	.0	.0	-.0	-.0	-.0	-.0	-.0	-.0	.0	-.0	.1	.2	-.0	-.0				
19	.0	.2	.0	-.1	.3	.0	.1	.1	.1	-.0	.3	-.6	-.1	.1	.1	.1	-.0	-.1			
20	.0	.1	-.0	.1	.1	.0	.0	.1	.0	.0	-.0	-.1	.0	-.1	-.1	-.2	-.0	-.1	.0		
21	-.1	-.0	.0	-.0	-.1	.0	.1	-.0	.1	-.0	.1	-.1	-.0	.0	.0	-.0	-.2	-.2	-.0	-.0	
22	-.1	-.0	.0	-.0	-.1	.0	.1	-.0	.1	-.0	.1	-.1	.0	-.1	-.1	-.0	.0	.2	-.0	.1	-.4

Correlation Matrix for All Patients, Group A

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2	.2																				
3	-.0	-.1																			
4	.0	.0	.0																		
5	.1	-.0	.0	-.1																	
6	.1	-.0	-.0	.0	.0																
7	.0	-.0	-.0	.0	.0	.7															
8	.0	.0	-.0	-.0	-.0	-.0	-.0														
9	-.0	-.0	-.0	.0	.0	.3	.5	-.1													
10	-.0	-.0	-.0	.0	.0	-.0	-.0	.0	-.0												
11	.0	.1	.0	.0	-.0	.1	.0	-.0	.1	-.5											
12	.0	-.2	.0	-.0	.0	-.1	-.1	.0	-.1	.1	-.5										
13	.0	.0	-.0	.0	-.0	-.0	-.0	.1	-.1	-.2	.1	.0									
14	.5	.1	-.0	.0	.0	.2	.0	.0	-.0	-.0	.0	-.0	.0								
15	.4	.1	-.0	-.0	.0	.1	.0	.1	-.0	-.0	.0	-.1	.0	.8							
16	.0	.0	.0	.0	.0	-.0	-.0	-.0	-.0	-.0	.1	-.0	.1	-.0	.0						
17	.4	.1	.0	.1	.1	-.0	-.1	.0	-.0	-.1	.1	-.1	-.0	.2	.1	-.1					
18	.1	.1	-.0	.0	.0	.0	.0	.2	-.0	.2	-.1	.0	-.1	.0	.0	-.0	-.0				
19	-.0	.2	.0	-.0	.0	.1	.1	-.0	.1	-.1	.2	-.6	.0	-.0	.0	-.0	.1	-.0			
20	-.0	-.0	-.1	-.0	-.0	.1	.0	.1	-.0	-.0	-.0	-.0	.0	.2	.0	-.2	.0	-.0	.0		
21	-.0	-.0	-.0	.0	.0	.0	.0	.0	.0	.0	-.0	-.0	-.0	-.0	-.0	-.0	-.1	.0	-.0	-.0	
22	-.0	-.1	-.0	-.0	.0	-.0	.0	.0	.0	.0	-.0	.0	.0	-.0	-.0	.0	.0	.0	.0	.0	-.2
23*	.0	.0	.0	.0	.0	.0	.0	-.0	-.0	.0	.0	-.0	-.0	.0	.0	-.0	-.0	.0	-.1	-.0	

* Detoxification Completion

Correlation Matrix for All Patients, Group B

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2	.3																				
3	-.0	-.0																			
4	.0	.0	.0																		
5	.0	-.1	-.0	-.1																	
6	.1	-.1	-.0	-.0	.0																
7	.0	-.1	-.0	-.0	.0	.8															
8	.0	.0	.0	.0	.0	-.0	-.0														
9	.0	-.0	-.0	.0	.0	.4	.5	-.0													
10	-.0	-.0	-.0	.0	.0	-.0	-.0	-.0	.0												
11	.1	.0	.0	-.0	-.0	.1	.0	.0	.2	-.5											
12	-.0	-.2	-.0	.0	.0	.0	.0	-.0	-.0	-.0	-.5										
13	-.0	.0	-.0	-.0	-.0	.0	.0	-.0	-.0	.0	.1	.0									
14	.5	.2	-.0	-.0	.0	.1	.0	.1	.0	-.0	.1	-.1	-.0								
15	.4	.1	-.0	-.0	.0	.1	.0	.1	.0	-.0	.1	-.1	-.1	.8							
16	.0	.2	.0	.0	-.0	.0	-.0	.0	.0	-.0	.1	-.2	-.0	.0	.0						
17	.4	-.0	.1	.1	.0	.0	.0	.0	.1	-.0	.1	-.0	-.0	.1	.1	.0					
18	.0	.0	-.1	.0	-.1	-.0	-.0	-.0	-.0	-.0	-.0	.0	-.0	.0	.0	-.1	-.0				
19	.1	.2	.0	-.0	.0	.1	.1	.0	.0	-.0	.3	-.6	-.0	.1	.2	.0	.0	-.0			
20	-.1	-.0	-.2	.0	.0	.0	.0	-.0	-.0	.0	-.1	.0	.0	-.0	-.0	-.0	-.0	-.1	.0		
21	.0	.0	-.0	.0	.0	.0	-.0	.0	.0	.1	-.1	.0	-.0	.0	.0	-.0	-.0	-.1	-.0	.0	
22	-.1	-.1	-.0	-.0	-.0	.0	.1	-.0	.0	-.0	.0	-.0	.0	-.0	-.0	-.1	.0	.0	-.0	.0	-.3
23*	.1	.0	.0	.0	.0	-.0	-.0	.0	-.0	.0	-.0	.0	-.0	.0	.0	.0	-.0	-.0	.0	.0	

* Detoxification Completion

Correlation Matrix for All Patients, Group A, Except "Detox Only" Completers

<u>Variables</u>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2	.2																				
3	-.0	-.1																			
4	.0	.0	.0																		
5	.1	-.1	-.0	-.0																	
6	.1	-.1	-.0	.0	.0																
7	.1	-.0	-.1	-.0	.0	.8															
8	-.0	.0	.0	.0	.0	-.0	-.0														
9	.0	-.0	-.0	.0	.1	.4	.5	.0													
10	.0	.0	-.0	.0	.0	.0	.0	-.1	.0												
11	.0	.0	.0	-.0	-.0	.1	.1	.0	.0	-.5											
12	-.0	-.2	-.0	.0	.0	-.0	-.0	-.0	-.0	.0	-.5										
13	-.1	.0	-.0	-.0	-.0	-.1	-.1	.1	-.1	-.3	.2	.0									
14	.5	.1	-.1	-.0	.1	.0	.0	.0	.0	.0	.1	-.1	-.1								
15	.4	.1	-.1	.0	.1	.0	.0	.0	.0	.0	.1	-.1	-.1	.3							
16	.0	.2	-.0	-.0	-.0	-.0	-.0	.0	.1	.0	.0	-.2	-.0	.0	.0						
17	.4	-.0	.2	.0	.0	.1	.1	.0	.1	.0	.1	-.0	-.1	.1	.1	.1					
18	.1	.0	-.1	.0	-.0	-.0	-.0	-.0	-.0	-.0	-.0	.0	-.0	.1	.1	-.2	-.0				
19	.0	.1	-.0	-.1	.1	.1	.1	.0	.0	-.0	.2	-.6	-.1	.1	.2	.0	.0	-.0			
20	-.1	-.0	-.2	.0	.1	.0	.0	-.0	-.0	.0	-.1	.0	.0	-.0	-.0	-.1	-.0	-.1	.0		
21	.1	.0	-.0	.0	.0	-.0	-.0	.0	.0	.1	-.1	.0	-.1	.0	.0	-.0	-.0	-.1	-.0	.0	
22	-.1	-.0	.0	-.0	-.0	.0	.0	-.0	-.0	-.1	.2	-.1	.1	-.1	-.1	-.0	.0	.1	-.0	-.0	-.7

Correlation Matrix for All Patients, Group B, Except "Detox Only" Completers

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2	.1																				
3	-.0	-.1																			
4	.1	.1	-.0																		
5	.1	-.0	-.0	-.1																	
6	.1	-.0	-.1	-.0	.0																
7	.0	-.0	-.0	.0	.0	.8															
8	.1	.0	-.0	.0	-.0	-.0	-.0														
9	-.0	.0	.0	-.0	.0	.4	.5	-.1													
10	-.0	-.0	-.0	.0	.0	-.0	-.0	.0	-.0												
11	.0	.0	-.0	.0	-.0	.1	.0	-.1	.1	-.5											
12	-.0	-.2	.0	-.1	.0	-.1	-.1	.1	-.1	.2	-.5										
13	-.0	.0	-.1	.0	.0	-.0	-.0	.0	-.1	-.2	.1	-.0									
14	.4	.0	-.1	.0	.0	.1	.0	.1	-.0	-.0	.1	-.1	.0								
15	.4	.0	-.0	.0	.0	.2	.0	.1	-.0	-.0	.1	-.1	.0	.9							
16	.0	.1	.0	.0	.0	.0	.0	-.1	.0	-.0	.1	-.0	.0	-.0	.0						
17	.4	.1	.0	.1	.2	-.1	.1	.0	-.0	-.1	.1	-.1	.0	.1	.1	-.0					
18	.1	.1	-.0	.0	-.0	.0	.0	.2	-.0	.1	-.1	-.0	-.0	.1	.0	-.0	-.0				
19	.0	.2	-.0	.0	.1	.1	.1	-.0	.2	-.1	.2	-.6	.0	.0	.0	.0	.1	-.0			
20	-.0	-.1	-.0	-.0	-.1	.0	.0	.0	-.0	-.0	.0	-.1	.1	.0	.0	-.1	.0	-.0	.0		
21	.0	-.0	-.0	.0	.0	.1	.0	.0	.0	.1	-.0	-.0	-.0	-.0	.0	-.0	-.1	.0	-.0	-.0	
22	-.0	-.0	.0	-.1	-.0	-.0	-.0	-.0	-.0	-.0	-.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.6

APPROVAL SHEET

The thesis submitted by Paul Fedirka has been read and approved by the following committee:

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The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

Date

4/14/80

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