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ABSTRACT

Contingency contracting, as a viable treatment modality for the rehabilitation of drug abusers, has been investigated, and promising results have been attained. During the past two and one-half years drug abuse treatment and paraprofessional training models have been developed. Treatment for drug abuse has been facilitated within the natural environment, utilizing extensive volunteer paraprofessional involvement. This research, stemming from a behavioral conceptualization of treatment, stresses continuous evaluation and accountability. (Author)

CONTINGENCY CONTRACTING WITH DRUG ADDICTS IN THE NATURAL ENVIRONMENT

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Introduction

The overall objective of the Drug Project is to examine the feasibility of behavior modification techniques, specifically contingency contracting, as a major treatment modality for drug dependent individuals. In addition to being a useful method of managing academic and social behaviors, contingency contracting has been effective in dealing with a broad range of maladaptive behaviors. The contingencies presented to or withdrawn from the client may be as wide and varied as the behaviors being managed. Any event that has a positive or negative reinforcing value on the client may be recruited for use in the contract.

Homme and Tosti (1969), in their discussion of contingency management and motivation, point out that high probability behaviors may be used as effective contingencies for the management of low probability behaviors. Their discussion centers around the application of the Premack Principle which states that when a low probability behavior is followed by a high probability behavior, the probability of the first behavior increases. This principal affords the possibility of using many natural reinforcers and contingencies, as well as the more obvious extrinsic reinforcers common to contingency contracting.

The development of the use of contingency contracting within the context of the natural environment has been the focus of our

investigation for the past 2 1/2 years. (Boudin and Valentine, 1972; Krasnegor and Boudin, 1973;). Concurrently, a "treatment team" approach has been developed which utilizes the services of trained volunteers in treating drug abusers. The present paper briefly describes the Drug Project's system for implementing treatment, then presents in some detail its method of contingency contracting. This is followed by a discussion of results thus far obtained.

Treatment Personnel: Organization and Functions

Paraprofessional Involvement

Paraprofessional volunteers implement much of the Drug Project's treatment program. The paraprofessional must complete a thorough training program, usually lasting six to nine months, before assuming the role of counselor/manager (i.e., working with an individual client.) As a Phase I paraprofessional, the volunteer receives an intensive orientation to drug counseling, behavioral analysis, and project procedures. The trainee studies specially prepared materials in such areas as drug effects and drug abuse, contingency contracting, detoxification and crisis intervention. He also participates in special research projects and begins sitting "phone shifts".

As the volunteer moves into Phase II, he continues his academic training and also increases his contact with clients. He will assume crisis duty several times a month, which entails being available to respond to clients' emergency needs 24 hours a day. He may take part in a supervised detoxification. Also, within the context of therapeutic goals, volunteers may participate with clients in social activities. During Phase II the volunteer becomes more knowledgeable

in contract development and works to develop his counseling skills through such means as sensitivity training and role-playing. These skills are also attained through management of Phase I volunteers and experience in crisis intervention.

Once in Phase III, the volunteer begins working directly with an individual client as a counselor/manager. He continues his training in all areas, and in addition, participates in a weekly "process group" for the purpose of enhancing counseling skills.

Throughout all levels of training, an ongoing assessment of the paraprofessional's performance is made by the staff to provide corrective feedback and to assure competent delivery of services. A work study during a recent 70 day period showed that approximately 500 paid staff work hours invested in training paraprofessionals has resulted in more than 2500 volunteer man hours, a 1 to 5 ratio.

Treatment Team

While many paraprofessionals and staff may become involved with a client, a treatment team is responsible for developing and implementing the program for an individual client. This team consists of a counselor/manager, who is a Phase III paraprofessional; a management supervisor, who is an experienced staff member; and a psychotherapist, who functions as the team leader.

The counselor/manager has the most frequent contact with the client. During the early weeks of treatment the manager is closely supervised. During this period, the manager and supervisor meet jointly with the client several times a week in order to explore the clients life situation in depth. Following a thorough analysis of the

client's environment and needs, treatment goals are formulated and the contingency contract is developed. Within two or three weeks after the contract is signed the supervisor discontinues meetings with the client and assumes the role of consultant to the manager. The manager then has the primary responsibility for negotiating and implementing the terms of the contingency contract.

The management supervisor is a staff member experienced in client management. His role is one of teacher and consultant to the counselor/manager in areas of contract development, data compilation, behavior analysis and "follow through" on contracted privileges, responsibilities, and consequences. Normally the supervisor is directly involved with the client only in the early weeks, although in some instances he or she continues as a counselor for the client.

Therapy sessions are usually concerned with self-exploration and the development of self-awareness rather than contract development.

All members of the treatment team meet weekly in order to share information and evaluate client progress. Decisions are made regrading intervention and contract amendments, and the relationship between the client's behavior and intra-and interpersonal dynamics is explored.

In addition, daily staff meetings (rounds) are held during which the resources of the entire staff may be brought to bear on a client's treatment. A staff member with particular experience in data analysis serves as a consultant for all treatment teams.

Treatment Procedures

Client Intake

Clients are referred to the Drug Project in a variety of ways.

These include referrals from the court, local health-related community agencies, and the local jail (through a Drug Project sponsored group which meets weekly). Some are self-referrals - individuals who have heard of the project through the local media and by word of mouth. Following any initial contact, an interview is arranged for the potential client. This interview is conducted by a Drug Project staff member who begins compiling an intake summary encompassing a variety of demographic and psychological variables. The purpose of this summary is to determine if this person meets admission criteria: (a) Is this person dependent on drugs? (b) Is no overt evidence of neurological damage present which would exclude him/her from being held accountable for their behavior? (c) Does this person intend to remain in the local geographic area long enough for treatment to be effective, i.e., at least a year? (d) Is this person motivated to enter treatment as specified by the terms of a contingency contract?

If the prospective client is physiologically addicted, a medically supervised detoxification program is arranged.

Following the initial interview, the prospective client has an intake interview with the entire staff. At this time project responsibilities may be implemented. These include requesting a daily urine sample, making prearranged phone calls, making daily log entries and counting a variety of dependent variables on wrist counters. This period is referred to as pre-client status. Significant information received from the client during the intake is verified and a treatment team is assigned. A review is made of the prospective client's performance by the entire Drug Project

Staff after approximately 2 weeks have elapsed. If admission criteria are met, a tentative treatment plan is formulated by the treatment team and the client is considered to be in "pre-contract" status with the Drug Project. Those requesting services who do not meet criteria are referred to other helping agencies.

Contingency Contracting

Contingency contracts are used to shape goal-directed behavior through the extinction of behaviors associated with a drug-dependent lifestyle and replacement of those behaviors with functional antagonists, i.e., work/school, project structure adjustment, and appropriate personal/social behaviors. In its simplest form, these contracts are an agreement between two people. If person A exhibits a specific behavior(s), then person B will consistently present or withdraw a specific consequence(s): person A then becomes a client and person B a manager.

Use is made of four major types of contracts which reflect the client's progress through treatment.

Pre-contract agreement. A material "commitment" (asking the client to turn over to the Project some possession of great value to him) is asked of the client at this time. This commitment demonstrates the client's motivation toward his own rehabilitative effort. If it is monetary, all monies are deposited in a bank account held jointly by the client and the manager. If the commitment is property other than money, it is held at the Drug Project. During this phase of treatment, the client's responsibilities include making as many as seven scheduled phone calls to the Project each day, keeping appointments with his manager, writing daily log entries of personal thoughts and feelings to be turned over to the manager, and giving

three to four monitored urine samples per week at the Drug Project. During the pre-contract phase, the client is introduced to the use of the wrist counter. Both overt and covert dependent variables are recorded on this device. (Dependent variables, or pinpoints, will be discussed further under "data analysis"). The client is instructed to carry the wrist counter with him at all times. The client must also seek a job or continue in his current employment. In order to gather baseline data, there are no formal consequences or contingencies placed on the clients behavior during the pre-contract agreement period. Once these data reflecting environmental variables and project structure performance have been analyzed, the client's contingency contract can be formulated.

Managerial contract. The Managerial contract, which is relatively nonnegotiable, is a specific and individualized behavior program established by the treatment team. It is divided into five major areas: Responsibilities, Consequences, Privileges, Bonuses, and Special Considerations.

Responsibilities are defined in two ways: those behaviors the client agrees to engage in to change his maladaptive life style; secondly, those behaviors the treatment team agrees to engage in to facilitate these behavior changes. In addition to structural responsibilities, the client agrees to abstain from taking specified illicit drugs, to hold a job, and to deposit all earned monies into the joint bank account and to attend all appointments with treatment team members. Treatment team responsibilities include keeping scheduled appointments, supplying crisis personnel 24 hours a day and properly managing the joint bank account.

Joint bank accounts are useful in two ways. First, control of the account is used to teach appropriate budgeting skills. Secondly, the joint account provides the treatment team with a means of reinforcing and maintaining adaptive behavior. For example, a client may earn a weekly allowance by complying with contractual responsibilities.

Acting in accordance with the goals set forth in the contract, the manager has direct involvement with the client in bringing about changes in the client's life style. This entails counseling the client to enhance his or her problem solving skills. A job-seeking schedule may be set up with the manager responsible for arranging contingencies around related behaviors such as getting up on time in the morning and showing up for job interviews. Also, behavior rehersal may be utilized, aimed toward the client's learning appropriate job interview behaviors. In addition, the manager acts as liason with other community agencies such as welfare, hospitals, and the courts.

A consequence is a specified penalty which is implemented by the manager following a specific contract breach. For example, a client may be fined $5.00 for failure to attend a scheduled meeting without giving prior notification. A contract is a mutual agreement, so a manager may also be fined by the client for not upholding agreed upon responsibilities.

Privileges are earned as a result of contractual compliance, e.g. A client earns the privilege of having a paraprofessional collect a monitored urine sample at his home. The client must then maintain previously agreed upon levels of performance criteria, as stated in his contract, in order to retain the site check privilege.

Bonuses are used initially to reinforce desired behaviors, and

may later function as reinforcers for achieving and maintaining performance criteria. Bonuses often take the form of community based reinforcers, (eg. record albums, theater passes, free meals and gift certificates) provided by the community and solicited by paraprofessionals.

Special considerations are best described as individualized concerns specified by a particular client's needs. (i.e. parole conditions, furloughs, etc.)

Transitional contract. As the client continues to meet performance criteria, amendments are added to the contract to reduce project structure. These amendments increase his responsibility to effect his own treatment.

Personal contracts. During the final stage of treatment, the client develops his own personal contract outlining long-range goals, and the means for attaining them through self-management. After continued evidence of the client's ability to maintain the behaviors outlined in the personal contract, treatment is terminated. As a program graduate, no further therapeutic intervention occurs. The graduate is requested to continue providing urine samples and validated evidence of satisfactory social and personal adjustment for monetary compensation.

Data Analysis

Therapeutic decisions regarding crisis prevention and intervention are based on three categories of data. These data are charted by Project paraprofessionals and staff on an ongoing basis. Pinpoints are chosen for the individual client by the treatment team, depending on the individual's drug abuse history as obtained from

intake procedures. Behaviors such as number of cigarettes smoked, the number of marijuana tokes, heroin urges and feelings of frustration are recorded by the client on wrist counters. Throughout treatment the client contracts to record appropriate pinpoints which may be dropped or substituted at any time. Changes in pinpoints are based on the ongoing evaluations of the client's progress. Operational definitions of pinpoints are periodically evaluated for consistency of meaning. Drug Project structural adjustment (DPSA) behaviors represent a variety of basic program requirements. These include making data phone calls, giving scheduled urine samples, keeping a daily log, and attending managerial and therapy sessions. During the pre-client status period, the individual is placed on a highly structured DPSA schedule, and on the basis of the data collected, the treatment team determines the level of structure that the individual will require initially as a full client. Structural adjustment data is recorded and charted by the client managers directly from client data notebooks. Social Adjustment indicators, such as daily work and/or school attendance, are charted daily, and may be independently validated by managers through employer and parole officer contact. The client may report several duration counts daily, such as the number of hours worked, hours slept and hours spent in social situations. From these duration counts the manager obtains a description of how a client's day is spent.

Behavioral pinpoint charts are analyzed by Project staff and examined for significant accelerations, decelerations, behavior maintenance, cyclic effects and variability trends. Functional relationships between pinpoints (dependent variables) and significant

events charted from client logs are also sought. Trends in behavioral pinpoint data are analyzed in relation to social adjustment duration counts to determine how the present environmental factors are related to the client's behavior outside the Drug Project. For example, if a client's daily recordings of cigarettes, marijuana tokes and heroin urges show a steadily accelerating coverse function, and if it is also evident from the data that there is a disruption in the client's work behavior that is inversely related to the time spent in social situations, a high probability of impending crisis (e.g. heroin use) may exist. The treatment team would then intervene accordingly. The manager evaluates the charted performance on DPSA and may increase the structural schedule and require the client to leave his present living environment as a crisis prevention measure. Structural adjustment behavior charts are also examined daily for such trends, and maintenance behavior is sought as an index of the clients adjustment to both Project programmed (i.e., telephone calls, urine schedules etc.) and self programmed social structure, such as job maintenance, meeting financial responsibilities appropriately, and general adherence to social and legal dictates of daily living. When a client demonstrates consistent maintenance in DPSA behavior during the contracted time periods, no drug usage is confirmed by ongoing urine analysis, and social adjustment variables maintain at satisfactory rates, the structural requirements are decreased by the managers to reinforce client behavior. Structural requirements may be increased when a disruption occurs in the social adjustment variables or when trends in behavioral pinpoints indicate greater structure is necessary. At such times, the manager will seek to

identify any unreported environmental changes in the clients life which may be signaling an impending crisis.

When a client approaches the completion of treatment, a data analysis presentation incorporating data evaluations on all the areas discussed is prepared for the staff by the treatment team. At this time, the client is considered for follow-up status and a decision is reached based on the presentation. If it is determined that the client has met his individually designed criteria, he progresses into the follow-up group.

Results

Data are reported for all subjects who were in client status with The Drug Project for a minimum of fifteen days; at least part of which occurred sometime between April 1, 1973 and June 30, 1974. April 1, 1973 was chosen as the beginning of the reporting period because at that time a urinalysis system was instituted allowing for sufficiently reliable detection of drug intake by subjects. This date also approximates the conclusion of the first year of Drug Project operation, during which the basic client treatment and paraprofessional training models were developed and operationalized. The thirty-four subjects who met the above criteria represent 70.8% of all those who have been in client status with the Drug Project. Fourteen subjects did not meet the above criteria, twelve because client involvement had ended prior to April 1, 1973, and two because they were in treatment for less than fifteen days. Appendix 1 reports raw data on thirty-four subjects, but due to one non drug, non project related accidental death (subject T) while in treatment, analysis will be restricted to the remaining thirty-three subjects' data. Of these

subjects, fourteen are current clients and nineteen terminations are meeting positive case outcome criteria as of the end of the reporting period. Four of the nineteen are meeting negative case outcome criteria, and current performance of the remaining two subjects is unknown.

Case Outcome Criteria

Distinctions among positive case outcome, negative case outcome, and unknown case outcome were made for the following reasons: 1. In addition to a group of program graduates, discernable through meeting performance criteria, there exists a group of clients who terminated against advice but continued to maintain socially adaptive behavior. 2. A large percentage of those subjects terminating against advice came to this decision not as a result of personal crisis or drug related incidents, but in fact were meeting performance criteria at that time. The decision came as a function of their reaching conclusions concerning their own ability to deal appropriately with their problems, in advance of staff decisions recommending termination. Although these clients' behavior may have significantly moved in a positive direction, the Project staff usually prefers to see a period of behavioral maintenance while Project influence is still in effect. It is important to consider that after termination, none of these former clients received psychotherapeutic or rehabilitative services from any other source. One of these clients did, however, undergo a brief period of psychiatric hospitalization prior to termination from the Drug Project. 3. Although it has not yet occurred, it is possible that program graduates being monitored for drug intake during follow-up may exhibit recidivism in this area thus indicating treatment success as temporary.

The Drug Project uses four criterion variables to determine case outcome disposition; 1. work/school performance, 2. personal/social adjustment, 3. incidence of drug intake, and 4. the frequency of arrests or convictions.

Prior to acceptance into the program, background data relating to these four areas was gathered in order to determine whether a potential client would meet intake criteria. Clients were monitered during the treatment and arrangements were made to maintain this flow of information following termination. Post treatment data collected on program graduates may be found in Appendix II. Post treatment data for those who terminated against advice was often only irregularly obtainable, and occassionally of questionable validity.

Work/school performance was measured by the number of days gainfully employed and/or enrolled in school as validated by the clients employer and/or school personnel.

Personal/social adjustment was evidenced through a client's ability to maintain satisfactory relationships and ability to deal appropriately with personal crisis without resorting to inappropriate physical or verbal aggression. These data were obtained daily from both clients' logs and program records.

Incidence of drug intake was derived from urinalysis performed on a minimal tri weekly basis during client status. Arrangements were made for periodic urine samples to be obtained from program graduates and wherever possible, from subjects who terminated against advice. For those subjects who terminated against advice, periodic urine samples and verbal report by self and/or significant others were used as data.

Data on arrest and convictions were derived from reports by significant others, helping agencies, probation officers, and court officials. Arrangements between these agencies and the Drug Project follow-up staff were made to gather this information periodically.

Table I presents post-client data in the above mentioned areas to illustrate case outcome. Qualitative and quantitative data were gathered on each former client's present life style (as of the end of the fifteen month reporting period). This information provided the data base for rating each former clients' adjustment as positive or negative in each of the four criterion variables catagories (work/school performance, personal/social adjustment, incidence of drug intake, arrests and convictions). Case outcome is a function of adjustment in all four criterion variables during the post-treatment period. Minimum criteria for psoitive case outcome has as its lower limit the possibility of a negative adjustment rating in only one of the four criterion variables. However, the maladaptive behavior leading to a negative adjustment rating in a criterion variable must have occurred with such low frequency that overall adaptive behavioral maintenance was not threatened. Furthermore, any incident of maladaptive behavior could not be extreme. For example, commission of a felony, post-treatment, by a former client would constitute a negative case outcome.

Insert Table 1 about here

All program graduates had positive case outcomes, two of the 11 self-terminated clients had negative outcomes and two self-terminated clients were categorized as case outcome unknown due to unavailability

of data. The small number of negative case outcomes (N=4) precludes contrasting negative and positive case outcomes statistically.

It was decided that degree of program completion (graduation or self-termination) treated as an ordinal variable, should be examined in relation to demographic and program performance variables. This decision was based on the assumption that program graduates, due to their greater degree of program completion, will be less likely to return to a drug life style than those who decide to terminate their involvement with the project.

Methods of measurement and the small number of cases required these researchers to limit analysis to nonparametric statistical techniques. Kendall's Tau-C rank-order correlation coefficients, (Siegel, 1956, pp. 217-219; Nie, Bentand Hull, p. 277) between degree of program completion and independent variables meeting statistical assumption of ordinal data were calculated. Tau-C is the ordinal measure of association appropriate for grouped data (Blalock, pp. 221-226). Statements of generalizability on the basis of the Kendal Tau significance levels (Siegel, 1956, pp. 220-222) are omitted, since the entire population was used in the analysis. Fisher's exact probability was calculated when independent variables fell into two discrete categories producing a 2 x 2 matrix (Nie, Bentand Hill, p. 275). Fisher's exact probabilities, Kendall's Tau-C s and significance levels indicating associations between degree of program completion and thirty-four demographic and program performance variables are reported in Appendix III.

Demographic Variables

Personal data (age, sex, birthdate) and biographical information (including family educational, medical, judicial and drug use histories, and previous institutionalization) were recorded during the initial intake interview. Whenever possible, this information was verified through other agencies and individuals mentioned by the subject during this interview. The following variables were analyzed for degree of association with program completion: drugs of choice, pre-treatment years of addiction and pre-treatment daily cost of habit, age, sex, and marital status of subject, subject's legal status (voluntary referral, or parole/probation/work release referral), years of formal education, previous medical and/or psychiatric hospitalization, parental family disorganization (broken home), number of time previously in methadone maintenance programs, the number of previous arrests, previous convictions, and whether or not the subject served a prison sentence. Insufficient data for statistical treatment were available on number of times in therapeutic community or drug programs other than methadone maintenance, previous military service, and previous commital to juvenile correctional facilities. Race was omitted from the demographic data because only one subject (a program graduate) is black, the remainder being white. Although 19% of Drug Project clients prior to April 1, 1973, were black, and several blacks have been accepted as clients since that date, only one black subject chose to enter the program during the fifteen month reporting period.

During the intake interview, each subject was asked to indicate which drugs he has used, the extent of use of each drug, and which drug

he preferred above all others. On the basis of the subject's responses, one drug indicated was determined to be the primary drug of choice, and all others mentioned to be secondary drugs of choice. Analysis of these data indicate that program completion (i.e. graduation) is significantly, positively associated with levels of preference for opiates, primarily heroin. Levels of preference for barbiturates and sedatives, hallucinogens and methaqualone were significantly, negatively associated with program completion as a dependent variable. Levels of preference for cocaine were found to have no significant relationship with degree of program completion. Insufficient data for statistical treatment were available on preference for alcohol, marijuana, amphetamines, methadone, psychotropics, and other analgesics.

The degree of program completion was also significantly, positively related to subjects' years of addiction, pre-treatment daily cost of habit and number of times in methadone maintenance programs.

Although these data indicate that the treatment modality under investigation is best suited for the opiate addict, it must be remembered that the above mentioned associations are based on program completion. Previously discussed follow-up data indicate that program completion is not essential to positive case outcome, and individuals dependent upon other drugs have appeared to benefit from the program.

Program Performance Variables

A significant difference was found between the number of days in client status for program graduates and self-terminating clients. Program graduates (N=6) had a mean of two hundred seventy-six treatment days, and self terminators (N=11) a mean of one hundred

thirty-two treatment days. A t-test for difference in means produced a t value of 2.14 and a F value of 4.57, both indicating a significance level of $p < .05$. This is not a tautological relationship, since program graduation is determined through behavioral criteria, not the number of days in client status. As would be expected from this relationship, similar significant but tautological positive associations were found between program graduation and the following variables: number of days reporting self-recorded dependent variable data totals, number of days under contingency contract, number of days gainfully employed or enrolled in school, and total number of scheduled telephone calls made.

A significant positive association was also found between degree of program completion and the percentage of scheduled telephone calls made. No significance was found between degree of program completion and number of scheduled telephone calls missed. These findings are consistent due to the differences in mean number of client days between program graduates and self-terminators.

Percent of clean urines given was found to be significantly positively associated with program graduation as opposed to self-termination while number of dirty urines given and percent of missed urine samples were significantly negatively associated with program completion. This would suggest that potential self-terminators were more likely to provide a "dirty" urine sample. However, the strength of this inference is reduced by the fact that the number of urines given was not significantly associated with program graduation. A lack of association in this case may result from the fact that three of the six program graduates were in treatment for a considerable

length of time prior to the implementation of the urinalysis system, and therefore had less opportunity to provide urine samples during total treatment time.

No significance was found between the percent of days reporting self-recorded dependent variable data totals and degree of program completion. A slight but positive significant association was found between the percent of days gainfully employed or enrolled in school and program graduation. Finally, although no significant relationship exists, the data indicate a trend between decreasing number of arrests while in client status and program graduation.

Current Client Population

Table 2 presents means and percentages for the twenty-one variables found significantly related to degree of program completion between program graduates and self-terminating subjects. Data from the current client population of fourteen subjects, complete through June 30, 1974, are also presented for comparison.

Insert Table 2 about here

Demographically, the current client population appears similar to the self-terminating clients accross all variables except legal status. The mean subject age of current clients (20.857) is closer to that of self-terminating clients (22.727 yrs.) than to the mean age of program graduates (26.167 yrs.). A trend away from opiate and heroin use is apparent for both the self-terminating clients and current clients, although more pronounced in the latter group. Barbiturates and sedatives are reported as primary or secondary drugs of choice for

78.6% of current clients, 81.8% of self-terminating clients, but for no program graduates. Relatively fewer years of addiction, reduced mean costs of habit per day and mean numbers of times previously in methadone maintenance programs reported for self-terminators and current clients are consistant with the lower mean ages and percentages of opiate users in those two groups.

In contrast to the demographic similarities between the current client population and the self-terminating client group are the similarities between current clients and program graduates in the program performance data. Although the means reported for the current clients are limited by an arbitrary cutoff in time, the percentage measures provide a basis for comparing the three groups. The current clients are much closer to the in-treatment performance of the program graduates in percentages of days employed or enrolled in school, scheduled telephone calls made, "clean" urine samples given and missed urine samples. Perhaps these similarities provide some support for the clinical judgement that the majority of the current clients will attain graduate status.

Implications

1. Drug related behavior of the self-terminators in the positive outcome group necessitates the rethinking of total abstinence as a success criteria. Self-terminators who are no longer enmeshed in personal-social crisis, who are self-supporting, who attend school, and who are not in trouble with the law, can hardly be regarded as having unsuccessful case outcome. Yet the information we have indicates that occasional discreet use of barbiturates or sedative hypnotics takes place. At the same time, there is a group of program graduates who

have totally abstained from drug use and who indicate as well a maintenance of adaptive behaviors. These findings suggest that both total abstinence and limited controlled usage may be indicative of positive case outcome.

In the case of total abstinence (most or 5 program graduates), there is no evidence of symptom substitution, since adaptive behavior in all other areas is maintained. Similarly, for the self-terminators occasional substance abuse does not appear to be related to a breakdown of adaptive behavior in other areas, nor does it appear to be indicative of eventual return to more frequent abuse of drug substances. These findings are consistent with the conclusions made by the Sobells in their controlled drinking studies (Sobell and Sobell, 1972).

One possible explanation is the fact that program graduates were all primarily opiate users, while self-terminators indicate barbiturates as their primary drug of choice. Since barbiturates are more accessible, less expensive, and have greater social sanction, stimulus control of these materials within the context of our treatment regimen is more difficult. On the other hand, opiates, expecially heroin, are more expensive, more easily discernible, and less socially sanctioned. Stimulus control of heroin users is more easily attainable, as the behaviors involved with acquisition and use are more easily discernible.

2. Examination of the current client population indicates that although they resemble self-terminated subjects demographically, their performance on programmatic variables resembles the performance of program graduates. It is possible that refinement of training and treatment procedures is primarily responsible for this result. It is also important to reiterate that much of the data received from the

self-terminated group is discrete and occasionally unverifiable, and conclusions made from this data must reflect the small number of subjects in each group. Final confirmation of these considerations will be forthcoming as the group of current clients either graduate or self-terminate, and follow-up data is collected.

3. Finally, it should be re-emphasized that the Drug Projects' continuous monitoring and evaluation of its own treatment procedures, coupled with its systematic follow-up of clients, allows for feedback resulting in constant refinement of the treatment model. In addition, it brings into sight for the first time the possibility of objectively assessing the effectiveness of various treatment modality.

The lack of reliable evaluation and follow-up has stood out historically as a blatant weakness of drug abuse programs. Ultimately, this means that there is little basis for determining whether or not the energy and money invested in treatment are yielding adequate results. For this reason, the development of effective evaluation and follow-up procedures are seen as a major priority in the area of drug abuse treatment.

TITLE 1

CASE OUTCOME SUMMARY

	PROGRAM GRADUATES	SELF-TERMINATED AGAINST ADVICE	TERMINATED FOR OTHER REASONS

	POSITIVE CASE OUTCOME													UNKNOWN CASE OUTCOME		NEGATIVE CASE OUTCOME			
CLIENT IDENTIFIER	A	B	C	D	E	F	G	H	I	J	K	L	M	R	S	N	O	P*	Q**
WORK / SCHOOL	+	+	+	+	+	+	+	+	+	+	+	+	+	?	?	+	+	+	−
PERSONAL / SOCIAL	+	+	+	+	+	+	+	+	+	+	+	+	+	?	?	−	−	−	−
DRUG INTAKE	−	+	+	+	+	+	−	+	+	+	+	−	+	?	?	−	+	−	−
ARREST / CONVICTION	+	+	+	+	+	+	+	+	+	+	+	+	+	?	?	+	−	+	−

+ = SOCIALLY ACCEPTABLE ADAPTIVE BEHAVIOR PRESENT

− = SOME DEGREE OF SOCIALLY UNACCEPTABLE BEHAVIOR PRESENT

* = TERMINATION TEMPORARY, RECONSIDERATION OF CLIENT STATUS PENDING

** = TERMINATION UPON REVOCATION OF PAROLE

TABLE 2: IN-TREATMENT MEANS AND PERCENTAGES

	PROGRAM GRADUATES	SELF-TERMINATORS	CURRENT CLIENTS
MEAN SUBJECT AGE	26.167	22.727	20.857
PERCENT SUBJECTS IN VOLUNTARY STATUS	50	81.8	7.1
PERCENT SUBJECTS IN NONVOLUNTARY LEGAL STATUS	50	9.1	92.9
PERCENT PRIMARY DRUG OF CHOICE, OPIATES	100	54.5	21.4
PERCENT PRIMARY DRUG OF CHOICE, HEROIN	100	54.5	14.3
PERCENT SECONDARY DRUG OF CHOICE, HEROIN	0	9.1	28.6
PERCENT PRIMARY DRUG OF CHOICE, BARBITURATES AND SEDATIVES	0	9.1	42.9
PERCENT SECONDARY DRUG OF CHOICE, BARBITURATES AND SEDATIVES	0	72.7	35.7
PERCENT PRIMARY DRUG OF CHOICE, HALLUCINOGENS	0	0	0
PERCENT SECONDARY DRUG OF CHOICE, HALLUNINOGENS	0	36.4	57.1
PERCENT PRIMARY DRUG OF CHOICE, METHAQUALONE	0	27.3	7.1
PERCENT SECONDARY DRUG OF CHOICE, METHAQUALONE	0	9.1	42.9
MEAN SUBJECT YEARS OF ADDICTION	3.917	2.045	0.679
MEAN PRE-TREATMENT COST OF HABIT PER DAY	$91.67	$50.91	$ 3.78
MEAN NUMBER OF TIMES PREVIOUSLY IN METHADONE MAINTENANCE PROGRAMS	0.667	.273	0.0
MEAN NUMBER OF DAYS IN CLIENT STATUS	275.833	132.273	188.357
MEAN NUMBER OF DAYS REPORTING DATA TOTALS (SELF-RECORDED DEPENDENT VARIABLES)	240.833	116.636	169.500
MEAN NUMBER OF DAYS UNDER CONTINGENCY CONTRACT	230.833	104.909	173.500
MEAN NUMBER OF DAYS EMPLOYED OR ENROLLED IN SCHOOL	216.333	80.364	153.500
MEAN NUMBER OF SCHEDULED TELEPHONE CALLS MADE	504.167	290.182	560.786
MEAN NUMBER OF "DIRTY" URINE SAMPLES GIVEN	0.0	2.364	1.214
MEAN NUMBER OF IN CLIENT STATUS ARRESTS	0.0	.273	.143
PERCENT OF DAYS EMPLOYED OR ENROLLED IN SCHOOL	78.825	53.687	71.217
PERCENT OF SCHEDULED TELEPHONE CALLS MADE	78.625	66.464	84.677
PERCENT OF "CLEAN" URINE SAMPLES GIVEN	100	87.762	98.497
PERCENT OF MISSED URINE SAMPLES	21.262	37.808	12.957

SUBJECT IDENTIFIER	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
SUBJECT RACIAL GROUP w-White B-Black	W	W	W	W	B	W	W	W	W	W	W	W	W	W	W	W	W
DRUG OF CHOICE, HEROIN *	P	P	P	P	P	P	P	P	N	S	N	N	P	P	N	P	P
DRUG OF CHOICE, OPIATE *	P	P	P	P	P	P	P	P	N	S	S	N	P	P	N	P	P
YEARS of ADDICTION	6	2	4	2	7	2.5	3.5	1.5	0	5	0	0	0.5	6	0	6	2
PRE-TREATMENT DAILY COST OF HABIT ($)	150	50	100	100	100	50	100	100	0	10	0	0	70	100	0	100	200
NUMBER of TIMES in METHADONE MAINTENANCE PROGRAMS	1	0	1	0	0	2	2	1	0	0	0	0	0	0	0	0	1
SUBJECT AGE	32	25	25	20	32	23	25	20	16	33	16	17	23	30	21	27	22
LEGAL STATUS (V-Voluntary self-referral; NV-Nonvoluntary Probation/Parole/Work Release)	NV	V	V	NV	NV	V	V	V	V	V	NV	V	V	NV	V	V	NV
DRUG of CHOICE, Hallucinogens *	N	N	N	N	N	N	N	S	N	N	S	S	N	N	S	N	N
DRUG of CHOICE, Barbiturates and Sedatives *	N	N	N	N	N	N	S	S	S	S	P	S	N	N	S	S	S
DRUG of CHOICE, METHAQUALONE *	N	N	N	N	N	N	N	N	P	N	S	P	N	N	P	N	N
SUBJECT SEX	M	F	M	F	F	M	F	M	M	M	F	M	M	F	M	F	F
YEARS of FORMAL EDUCATION	8	14	15	12	11	14	10	12	9	20	11	9	14	11	15	10	12
SUBJECT from BROKEN HOME	YES	NO	NO	YES	YES	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	YES	NO
SUBJECT EMPLOYED Upon ADMISSION	YES	YES	NO	YES	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	YES
NUMBER of Previous ARRESTS	3	1	0	5	3	1	1	1	2	0	4	1	0	7	0	1	2
NUMBER of Previous CONVICTIONS	1	0	0	2	3	0	0	1	1	0	0	1	0	5	0	1	2
SUBJECT SERVED PRISON SENTENCE	NO	NO	NO	YES	YES	NO	NO	YES	NO	NO	NO	NO	NO	YES	NO	NO	YES
DRUG of CHOICE, COCAINE *	S	N	S	S	S	N	N	N	S	S	S	S	S	N	S	S	S
NUMBER of DAYS in CLIENT STATUS	347	225	339	114	266	364	471	84	28	124	266	25	48	292	42	382	198
No. of DAYS REPORTING SELF-RECORDED DATA TOTALS	284	184	321	78	214	364	467	62	16	120	230	15	47	263	28	339	167
No. of DAYS UNDER CONTINGENCY CONTRACT	304	109	289	73	266	344	444	62	0	30	202	24	0	276	42	299	198
No. of DAYS EMPLOYED or ENROLLED in SCHOOL	300	196	200	83	247	272	398	55	0	124	80	0	0	128	40	240	198
No. of SCHEDULED TELEPHONE CALLS MADE	374	298	1441	97	355	460	1408	74	108	98	595	51	101	499	110	686	601
No. of SCHEDULED Telephone Calls Missed	1452	19	173	0	118	35	112	56	55	32	125	21	139	178	102	1185	208
No. of "DIRTY" URINE SAMPLES GIVEN	0	0	0	0	0	0	5	0	2	5	3	0	6	3	1	7	0
No. of Urine Samples GIVEN	32	0	2	14	79	134	83	9	7	15	77	8	18	81	11	44	53
No. of "CLEAN" urine Samples GIVEN	32	0	2	14	79	134	78	9	5	10	74	8	12	78	10	37	53
No. of MISSED URINE SAMPLES	23	0	0	10	43	13	28	8	5	33	37	4	7	36	3	28	23
No. of ARRESTS While in CLIENT STATUS	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	1

DEMOGRAPHIC VARIABLES

PERFORMANCE VARIABLES

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*P-PRIMARY PREFERENCE; S-SECONDARY PREFERENCE; N-NO PREFERENCE

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	SUBJECT IDENTIFIER	R	S	T	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN
DEMOGRAPHIC VARIABLES	SUBJECT RACIAL GROUP W-White B-Black	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
	DRUG OF CHOICE, HEROIN *	P	P	P	P	N	S	S	P	N	S	N	S	S	P	N	S	N
	DRUG OF CHOICE, OPIATE *	P	P	P	P	N	S	S	P	N	S	S	S	S	P	S	S	P
	YEARS of ADDICTION	3	3	3	0	0	0	0	0	0	5	0	0	0	3	1.5	0	0
	PRE-TREATMENT DAILY COST OF HABIT ($)	150	30	150	0	0	0	0	0	0	0	0	0	0	50	3	0	0
	NUMBER of TIMES in METHADONE MAINTENANCE PROGRAMS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SUBJECT AGE	25	24	20	20	18	22	21	21	17	21	18	30	16	18	23	19	28
	LEGAL STATUS (V-Voluntary self-referral; NV-Nonvoluntary Probation/Parole/Work Release)	V	V	V	NV	V	V	V	NV	NV	NV	V	NV	NV	V	V	NV	NV
	DRUG of CHOICE, Hallucinogens *	S	N	N	N	S	S	N	N	N	N	S	S	S	N	S	N	N
	DRUG of CHOICE, BARBITURATES and SEDATIVES *	S	S	S	N	P	S	P	S	P	P	P	P	P	S	N	S	N
	DRUG of CHOICE, METHAQUALONE *	S	N	N	N	S	N	N	N	S	N	S	N	S	S	S	P	N
	SUBJECT SEX	M	M	M	F	M	M	M	F	M	F	M	F	F	M	M	M	M
	YEARS of FORMAL EDUCATION	12	13	11	13	12	11	13	12	11	10	10	12	11	11	12	12	11
	SUBJECT from BROKEN HOME	YES	NO	NO	YES	YES	NO	NO	NO	YES	YES	YES	NO	YES	YES	YES	YES	YES
	SUBJECT EMPLOYED upon ADMISSION	YES	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO
	NUMBER of PREVIOUS ARRESTS	7	2	2	1	6	1	2	3	2	1	2	2	2	3	1	5	3
	NUMBER of PREVIOUS CONVICTIONS	4	2	1	1	1	1	1	3	0	1	2	2	2	2	1	1	1
	SUBJECT SERVED PRISON SENTENCE	YES	NO	YES	YES	NO	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO	YES	NO
	DRUG of CHOICE, COCAINE *	N	S	S	N	S	P	S	S	S	N	S	S	S	S	S	S	N
PROGRAM PERFORMANCE VARIABLES	NUMBER of DAYS in CLIENT STATUS	19	56	86	270	172	255	241	122	174	94	265	278	359	276	83	30	18
	No. of DAYS REPORTING SELF-RECORDED DATA TOTALS	15	20	78	137	170	246	233	110	174	92	254	257	329	240	83	30	18
	No. of DAYS UNDER CONTINGENCY CONTRACT	19	55	71	250	166	255	234	118	174	72	265	202	357	249	63	24	0
	No. of DAYS EMPLOYED or ENROLLED in SCHOOL	19	40	69	195	170	255	147	121	153	52	220	245	320	200	69	2	0
	No. of SCHEDULED TELEPHONE CALLS MADE	34	114	307	324	746	899	537	469	728	365	459	1256	620	938	328	143	39
	No. of SCHEDULED Telephone Calls Missed	42	40	87	82	110	85	259	66	118	60	80	71	105	316	18	3	19
	No. of "DIRTY" URINE SAMPLES GIVEN	1	0	0	2	4	5	0	0	0	0	0	0	1	1	4	0	0
	No. of Urine Samples GIVEN	6	12	44	63	74	134	95	75	92	48	101	85	146	87	58	15	5
	No. of "CLEAN urine Samples GIVEN	5	12	44	61	70	129	95	75	92	48	101	85	145	86	54	15	5
	No. of MISSED URINE SAMPLES	3	14	1	27	12	13	11	1	3	2	11	12	13	35	0	1	4
	No. of ARRESTS while in CLIENT STATUS	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0

* P-PRIMARY PREFERENCE; S-SECONDARY PREFERENCE; N-NO PREFERENCE

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APPENDIX LL

PROGRAM GRADUATE POST TREATMENT DATA

SUBJECT IDENTIFER (SAME AS IN APPENDIX I)	A	B	C	D	E	F
DAYS IN FOLLOW-UP STATUS	323	417	453	333	132	12
NUMBER OF URINE SPECIMENS GIVEN SINCE TERMINATION	68	91	106	13	8	4
NUMBER OF ABOVE URINE SPECIMENS "DIRTY"	4	0	0	0	0	0
ARRESTS SINCE TERMINATION	0	0	0	0	0	0
CONVICTIONS SINCE TERMINATION	0	0	0	0	0	0
NUMBER OF DAYS GAINFULLY EMPLOYED OR ENROLLED IN SCHOOL SINCE TERMINATION	323	417	453	303	132	12

APPENDIX III

	VARIABLE	KENDALL'S TAU-C	SIGNIFICANCE
DEMOGRAPHIC VARIABLES	Drug of Choice, Heroin	0.41522	0.0067
	Drug of Choice, Opiate	0.41522	0.0067
	Years of Addiction	0.42907	0.0053
	Pre-Treatment Cost of Habit Per Day	0.41522	0.0067
	Number of Times Previously in Methadone Maintence Programs	0.27682	0.0496
	Subject Age	0.33218	0.0239
	Nonvoluntary Legal Status	-0.29066	0.0417
	Drug of Choice, Hallucinogens	-0.33218	0.0239
	Drug of Choice, Barbiturates and Sedatives	-0.74740	0.0000
	Drug of Choice, Methaqualone	-0.33218	0.0239
	Subject Sex	Fisher's Exact Test	0.33872
	Years of Formal Education	-0.09689	0.2819
	Subject from Broken Home	Fisher's Exact Test	0.85520
	Subject Employed upon Admission	Fisher's Exact Test	0.14480
	Number of Previous Arrests	-0.06920	0.3410
	Number of Previous Convictions	0.04152	0.4023
	Subject Served Prison Sentence	Fisher's Exact Test	0.79460
	Drug of Choice, Cocaine	0.02768	0.4345
PROJECT PERFORMANCE VARIABLES	Number of Days in Client Status	0.56747	0.0004
	Number of Days Reporting Data Totals (Self-Recorded Dependent Variables)	0.55363	0.0005
	Number of Days Under Contingency Contract	0.60900	0.0001
	Number of Days Employed or Enrolled in School	0.69204	0.0000
	Number of Scheduled Telephone Calls Made	0.35986	0.0160
	Percent of Scheduled Telephone Calls Made	0.49827	0.0015
	Number of Scheduled Telephone Calls Missed	0.05536	0.3708
	Percent of "Clean" Urine Samples Given	0.40138	0.0084
	Number of "Dirty" Urine Samples Given	-0.66436	0.0000
	Percent of Missed Urine Samples	-0.29066	0.0417
	Number of Urine Samples Given	-0.02768	0.4345
	Number of "Clean" Urine Samples Given	0.13841	0.2049
	Number of Missed Urine Samples	0.08304	0.3104
	Percent of Days Reporting Data Totals (Self-Recorded Dependent Variables)	-0.22145	0.0936
	Percent of Days Employed or Enrolled in School	0.27682	0.0496
	Number of Arrests While in Client Status	-0.16609	0.1613

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