

National  
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# Research **46**

MONOGRAPH SERIES

## **Behavioral Intervention Techniques in Drug Abuse Treatment**

# Behavioral Intervention Techniques in Drug Abuse Treatment

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NIDA Research Monograph 46

1984

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Alcohol, Drug Abuse, and Mental Health Administration

National Institute on Drug Abuse  
5600 Fishers Lane  
Rockville, Maryland 20657

NIDA Research Monographs are prepared by the research divisions of the National Institute on Drug Abuse and published by its Office of Science. The primary objective of the series is to provide critical reviews of research problem areas and techniques. The content of state-of-the-art conferences, integrative research reviews and significant original research. Its dual publication emphasis is rapid and targeted dissemination to the scientific and professional community

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# Behavioral Intervention Techniques in Drug Abuse Treatment

## ACKNOWLEDGMENT

This monograph is based upon papers and discussion from a technical review, Behavioral Intervention Techniques in Drug Abuse Treatment, held July 8 and 9, 1982, in Bethesda, Maryland, sponsored by the Division of Research, National Institute on Drug Abuse.

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Library of Congress catalog card number 83-600623

DHHS publication number (ADM) 84-1282

Printed 1984

NIDA Research Monographs are indexed in the Index Medicus. They are selectively included in the coverage of American Statistics Index, Biosciences Information Service, Chemical Abstracts, Current Contents, Psychological Abstracts, and Psychopharmacology Abstracts.

# Foreword

Knowledge of the behavioral, environmental, and pharmacological correlates of substance use and abuse is central to the interests of the National Institute on Drug Abuse. Thus, NIDA has contributed to the expansion and dissemination of such knowledge by supporting research and sponsoring major reviews to examine the mechanisms that determine substance abuse and other habitual behaviors, with particular emphasis on the common explanatory elements. The publications that resulted from these reviews have explored what we know about the specific behavioral pharmacological processes which underlie the observed effects of drug use and abuse.

Several volumes in the NIDA Research Monograph series have embodied the perspective of behavioral pharmacology.\* With varying emphasis, each has examined broad theoretical issues, sought to expand on and contribute to a sound conceptual framework, and applied its findings to improving the science and techniques of treatment--in which basic research ultimately comes to fruition. Behavioral Intervention Techniques in Drug Abuse Treatment, the ninth of these monographs, focuses directly on treatment applications as well as broader issues in the treatment domain.

Behavioral intervention techniques are based on the premise that behavior is controlled by its positive and negative consequences and can be modified by making changes in selected aspects of the environment so as to reinforce desired behaviors. They encompass numerous related procedures, variously labeled as behavior modification, behavior therapy, contingency contracting, contingency management, or token economy. These interventions are increasingly being used, integratively with other more traditional forms of therapy, in treating the diverse disorders associated with drug dependency. They can enhance the effectiveness of essentially all available treatment components, including pharmacological adjuncts, psychotherapy, family therapy, and job training. Through such a spectrum of uses, behavioral intervention techniques, thoughtfully planned and applied, promise increasing levels of success in the treatment of drug abusers.

The contributors to this monograph all are actively involved in various aspects of drug abuse research and treatment in which behavioral techniques are used. Representing a broad range of areas of expertise, their presentations will be of interest to those who are engaged in clinical research, treatment, and analysis of drug abuse treatment systems.

William Pollin, M.D.  
Director  
National Institute on Drug Abuse

\*Behavioral Tolerance: Research and Treatment Implications

(No. 18)

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# Therapeutic Application of Behavioral Techniques: An Overview

John Grabowski, Ph.D., Maxine L. Stitzer, Ph.D., and Jack E. Henningfield, Ph.D.

## Observations on the History of Treatment

History is replete with examples and reports of drug abuse despite the current popular perspective that drug abuse is a relatively recent behavioral anomaly. References to maladaptive patterns of drug use are prevalent in the treatment literature of the past century, and, on even casual examination, the characteristic efforts to eliminate the problems are not unfamiliar.

The techniques have ranged from essentially entirely pharmacological to completely behavioral-psychological. An early example of treatment in the realm of pharmacological manipulations was that of Bentley (1880; see Byck 1974, p. 15), who, among others, treated heroin use by administering cocaine. Later, some clinicians, researchers, and observers of the discipline did recognize or acknowledge the importance of environmental factors. As was noted by Bernfeld (1953), "Neither cocaine nor any other chemical, in itself, produces addiction. It is a psychological [behavioral] phenomenon. In the '80s [1880s] the problem of addiction was approached, if at all, as one of toxicity specific to certain habit-forming drugs" (see Byck 1974, p. 3473).

Nevertheless, despite a century of documented treatment experience, intensive research, and repetition of comments paralleling those of Bernfeld, continued belief in the singular importance of the substance is frequent, and failure to acknowledge the importance of behavioral and environmental factors in the development, maintenance, and elimination of drug use is not uncommon. Thus, for example, methadone maintenance, when introduced 20 years ago, constituted a pharmacological intervention which was commonly administered as a primary therapy rather than as a pharmacological adjunct to other therapy. Furthermore, this practice is not altogether unusual today.

Early reports of treatment illustrated the general inadequacy of approaches not explicitly attending to the interactive nature of drug use. In the United States, "drug addiction," i. e.,

maladaptive drug use, was for many years essentially synonymous with use of narcotic analgesics. "Treatment" for the stereotypic user was equated, at one extreme, with inpatient drug withdrawal and discharge, and, at the other, with long-term incarceration at the United States Public Health Service hospitals. In this case, seeming attention to the environmental factors, i.e., through removal from the drug-taking environment, was in fact founded in a pharmacological perspective. Later, Wikler (1965) and others pointed to the difficulties in the model and developed a theoretical position delineating the role of some environmental factors in the maintenance of opiate use (e.g., Stitzer et al. 1983; Grabowski and Cherek 1983). As Stitzer et al. (1983) have noted concerning treatment based on the incarceration strategy, "the therapeutic success...was not impressive." It was, however, consistent with a general societal view which dictated that removal of an individual with behavioral disorders to a separate environment would contribute to a return to health or provide an opportunity for rehabilitation. As with the mentally ill and mentally retarded individuals of an earlier era (e.g., see Thompson and Grabowski 1977; Deutsch 1949), it has since become clear that temporary, or even prolonged, removal from the natural environment in which the behavior occurs does not, in and of itself, have any particular utility unless it is intended that the individual will never return to that environment. Overall it became evident that treatment by simple isolation from drugs is neither a necessary nor sufficient condition to eliminate drug use. As is indicated elsewhere in this volume, there still exists some tendency, if not to remove the users from society, at least to segregate them from other components of the behavioral health care system.

Interestingly, the reverse condition, of increased likelihood of drug use under novel environmental conditions, has also been described. Robins et al. (1974) observed that individuals whose first exposure to, and repeated use of, heroin occurred in Vietnam did not in the main continue use of the drug after returning to the United States. Thus, it may be argued that availability of the drug in a different environment devoid of other reinforcers may greatly increase the likelihood of use. In turn, return to the original environment where drug use may be less acceptable and where the drug is less available may result in discontinuation of use. This further illustrates that diverse environmental stimuli serve to control and determine the probability of both use and nonuse. This phenomenon has been adequately documented in the behavioral pharmacology laboratory (e.g., Thompson and Ostlund 1965).

It is clear that the treatment issues as well as the drugs of current concern (e.g., heroin, cocaine) are the same as those about which much has been written in the last century. And yet there now exists a substantial data base focusing attention on the importance of nonpharmacological, in addition to pharmacological, factors in treatment. Numerous reviews delineate the potential or demonstrated importance of the interactions between behavioral and environmental factors (e.g., Grabowski and Cherek 1983; Stitzer

et al. 1983; Griffiths et al., 1980). Nevertheless, only slowly is acceptance emerging at a more general level of the importance of drug-behavior-environment interactions and the need to attend to the problems principally from this perspective,

#### Treatment Strategies and Brief Overview

Both pharmacological and environmental factors must be considered in treating the specific problems of drug abuse and the plethora of correlated disorders. However, in fact there are several basic strategies to "treatment" of drug use and in the main they "treat" rather different phenomena (e. g, see Grabowski and O'Brien 1981). Approaches include: (1) pharmacological treatment of cessation (i. e., withdrawal and rebound symptoms); (2) pharmacological maintenance treatment; (3) rehabilitation and treatment of collateral problems; and (4) behavioral intervention techniques. It is clear that the first strategy, drug withdrawal, is unlikely to have any long-term utility. The second strategy, administration of opiate partial agonists (e. g., methadone), antagonists (e. g., naltrexone), or drugs intended for treatment of extant psychopathology such as depression (e. g., tricyclic antidepressants) or anxiety (e. g., benzodiazepines) has potential benefits. It must be recalled, however, that these drugs are rarely of utility alone and should, indeed, be viewed as adjuncts to other treatment. The third strategy, which involves major efforts to treat psychological problems and to develop social skills and educational or vocational opportunities is important but should not take precedence over all other foci of intervention. Further, this strategy is often applied in an unintegrated and unsystematic fashion. The fourth strategy is integrative; it takes in essence a longitudinal perspective encompassing and using the other techniques as adjuncts and components. A behavioral analysis is undertaken for the individual. Current behaviors are examined, goals are developed, and techniques for achieving these goals are delineated. Depending on the needs of the individual, the resultant individualized program may be narrow or broad and rather, all inclusive, dealing with diverse aspects of the individual's behavioral repertoire. The program is best implemented in the context of a clinical milieu based on behavioral management techniques. It should be evident in this regard that this does not refer to those systems of punitive consequences which on occasion are purported to be the foundation of a clinic-wide behaviorally. based program

It is important to note that "behavioral intervention techniques" has been used here as a generic phrase that encompasses the numerous related specific procedures which are discussed under the rubrics of behavior modification, behavior therapy, contingency contracting, contingency management, token economy, and other labels. In addition it is intended that the phrase indicate the use of specific behavioral principles in the application or introduction of other more traditional therapy forms. Thus, for example, behavioral analysis and procedures can well be used to enhance the effectiveness of pharmacological adjuncts, therapy

involving families, job training, and essentially all other components of treatment. While pharmacotherapy, family therapy, and other elements are components focusing on specific loci of intervention, behavioral intervention constitutes and refers to a scientific analysis and treatment superstructure.

When a procedure of potential clinical utility is identified, it should, ideally, proceed through a series of investigations and evaluations through which its usefulness and limitations are defined. It should be understood, however, that the development of more precise techniques does not imply that their application has always progressed smoothly. Early reports tended to describe the application of fairly circumscribed techniques to equally limited problems. These are often thought to have followed preliminary laboratory efforts in a logical and systematic fashion, but as Tharp and Wetzel (1969) noted, this logical progression from laboratory to clinical setting, from simple to more complex, is not as much in evidence as the historian of a discipline might wish.

Nevertheless a systematic approach to analysis has developed. Most important is the recognition that behavioral research and clinical application are conducted with emphasis on "operationism and observable anchors" (Craighead et al. 1976). This is essential to, and indicative of, precise and effective implementation of behavioral techniques. The requirement for use of measureable intermediate goals and endpoints does not, as some suggest, limit one to simple interventions, and this is reflected throughout the present volume. Rather it simply requires and assures that any therapeutic procedure has been demonstrated with some rigor to be efficacious.

In the present volume diverse applications of behavioral interventions are discussed, ranging from the pharmacological, through the broad rehabilitative efforts involved in socialization and training, to possible alternative treatment systems based on integration into the community at large. In addition, background is provided in the form of a behaviorally based "ethological" classification system delineating some of the behavioral repertoires in the natural environment of opiate users' who are not in treatment and treatment clients who are not using opiates.

Hunt et al. have provided an interesting first step in identification of behavioral patterns characterizing methadone clients in their natural environment and provide insight into both adaptive and maladaptive patterns of behavior which emerge not only in the clinic but away from it. Perhaps most important from the perspective of behavioral analysis is that Hunt and her coworkers used a procedure explicitly involving in vivo observation rather than simply relying on the self-reports of the patients, who are necessarily compromised in their ability to report objectively on some aspects of their own behavior or the behavior of others in treatment. These data assist in understanding the problems and issues raised by Woody et al. Woody's paper describes the structure and the functioning of a clinic

which is representative, although it is perhaps more elaborate and sophisticated in its resources than many, since it is invested in extensive research activities. This suggests that some of the problems which emerge reside in basic aspects of the system of treatment rather than the presence or absence of extensive resources. Further it is clear that some of the prototypic problems inherent in the extant treatment system are represented in the problems described by both Hunt et al. and Woody et al.

Bigelow et al., Pickens and Thompson, Stitzer et al., and Crowley provide detailed analyses of various aspects of application of behavioral intervention techniques in a variety of settings with widely differing populations. Paramount in appreciating this series of papers is the diversity in the populations and specificity of the procedures considered. In addition it should be noted that Bigelow's overview provides a substantive review and background for considering approaches to behaviorally based treatment of drug abuse and the development of interventions in numerous facets of the patient's life. Stitzer et al; attend in detail to a common problem in the treatment of drug-using patients: that is, control of ongoing opiate use as well as use of other drugs, an issue that must be addressed if treatment is ultimately to be successful.

Those unfamiliar with the scope and utility of the philosophy of behavioral intervention techniques as well as their explicit application often assume that behavioral strategies may work well with the stereotypic opiate user but have little relevance to other groups. In fact, Pickens and Thompson, as well as Crowley, amply demonstrate the broad utility of the techniques with respect not only to populations but also to the drugs in question--in one case, barbiturates and benzodiazepines, and in the other, cocaine. A critical issue in this area is that the scope of application is increasing rapidly and techniques are undergoing development, refinement, and redefinition. Early efforts by Crowley in dealing with the particularly pernicious problems related to abuse of cocaine, an especially effective positive reinforcer, in patients who have numerous alternative reinforcers emphasized the control and utilization of punitive consequences in therapy. Although procedures based on avoidance are clearly effective, alternative techniques based on positive reinforcements are being explored which may also be effective and have more desirable characteristics in terms of both patient and community acceptance. The efforts of Crowley, as well as those of Pickens and Thompson, are especially important today since they represent treatment of forms of drug misuse only recently acknowledged as prevalent in the mainstream of the population.

The clinical research efforts of Todd in delivering family therapy, as well as those of Hall et al. in job seekers' training, illustrate extensions into areas not often thought to be amenable to intervention through behavioral techniques. In this regard it should be recalled that the conceptual framework and philosophical underpinnings of behavioral techniques can readily be applied to a diversity of behavioral-psychological problems. These authors

indicate that the collateral behavioral problems and rehabilitation needs in treatment of drug abuse are amenable to analysis and resolution using behaviorally based techniques.

As becomes evident throughout the volume, the generality of behavioral intervention strategies is limited only by the ingenuity and precision of implementation. Specific behaviors such as supplemental drug use may be addressed on one hand while the more global aspects of family interactions may be attended to on the other. Given the scope of the problems and resources requisite in many cases of drug use, Thompson et al. address the more general issues inherent in a "behavioral analysis" of extant treatment systems for drug abuse problems. The questions are difficult and answers are not readily achieved. However, it is apparent that some of the problems related to drug abuse treatment will not be resolved by patchwork modifications. Given the increasing diversity and magnitude of drug abuse problems, the suggestion of Thompson et al. that alternative strategies be pursued may be especially timely.

#### Concluding Comments

In considering the techniques described in the present volume a "word of caution" should perhaps be provided. As has been noted, there exists an extensive experimental and clinical literature on the application of behaviorally based intervention techniques to a wide range of behavioral problems in diverse settings, with equally diverse populations. Application of therapeutic techniques, conceptual models, or technological advances to a new problem outside the mainstream of use may result in disregard of past use and of experience gained elsewhere. The applications often emerge de novo in the setting, and as a result the benefits, as well as errors, of past experience are likely to be overlooked. Thus it is suggested that attention both to development of specialized knowledge of behavioral techniques and to experience in psychopharmacology and behavioral pharmacology will be important in pursuing the development of new approaches and implementing the approaches which are currently available. It is hoped that the present volume will contribute to the wider application of behavioral techniques in drug abuse treatment by indicating the scope of applicability of these techniques and that the papers which follow will serve as a stimulus to the reader to seek further information from appropriate sources.

#### REFERENCES

- Bentley, W.H. Erythoxylon coca in the opium and alcohol habits. (In: Brodie, W., and Jungk, C., eds. Detroit Therapeutic Gazette, IV(g), September 1880.) Reprinted in: Byck, R. Cocaine Papers, by Sigmund Freud. New York: Stonehill Publishing Co., 1974. pp. 15-19.
- Bernfeld, S. Freud's studies on cocaine. J Am Psychoanal ASSOC. 1(4), 1953. Reprinted in: Byck, R. Cocaine Papers, by Sigmund Freud. New York: Stonehill Publishing Co., 1974. pp. 321-352.

- Craighead, W.E.; Kazdin, A.E.; and Mahoney, M.J. Behavior Modification: Principles, Issues, and Applications. Boston: Houghton Mifflin, 1978.
- Deutsch, A. The Mentally Ill in America. 2nd ed. New York: Columbia University Press, 1949.
- Grabowski, J., and Cherek, D. Conditioning factors in opiate dependence. In: Smith, J., and Lane, J., eds. The Neurobiology of Opiate Reward Processes. Amsterdam: Elsevier Biomedical Press, 1983.
- Grabowski, J., and O'Brien, C.P. Conditioning factors in drug dependence: An Overview. In: Mello, N., ed. Advances in Substance Abuse: Behavioral and Biological Research. Vol. 2. Greenwich, CT: JAI Press, 1981. pp. 69-121.
- Griffiths, R.R.; Bigelow, G.E.; and Henningfield, J.E. Similarities in animal and human drug-taking behavior. In: Mello, N., ed. Advances in Substance Abuse: Behavioral and Biological Research. Vol. 1. Greenwich: JAI Press, 1980. pp. 1-90.
- Robins, L.N.; Davis, D.H.; and Goodwin, D.W. Drug use by U.S. Army enlisted men in Vietnam: A followup on their return home. Am J Epidemiol, 99:235-249, 1974.
- Stitzer, M.L.; Bigelow, G.E., and McCaul, M.E. Behavioral Approaches to Drug Abuse. Progress in Behavior Modification, Vol. 14. New York: Academic Press, 1983. pp. 49-124.
- Tharp, R.G., and Wetzel, J.J. Behavior Modification in the Natural Environment. New York: Academic Press, 1969.
- Thompson, T., and Grabowski, J., eds. Behavior Modification of the Mentally Retarded. New York: Oxford University Press, 1977.
- Thompson, T., and Ostlund, W. Susceptibility to readdiction as a function of the addiction and withdrawal environments. J Comp Physiol Psychol, 60:388-392. 1965.
- Wikler, A. Conditioning factors in opiate addiction and relapse. In: Wilner, D.J., and Kassenbaum, G.G., eds. Narcotics. New York: McGraw Hill, 1965. pp. 85-100.

# Problems in Methadone Treatment: The Influence of Reference Groups

Dana E. Hunt, Ph.D., Douglas S. Lipton, Ph.D.,  
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Since its introduction in the late 1960s, methadone treatment has been evaluated, researched, and reviewed by the scientific community in innumerable studies focusing on different types of treatment and treatment strategies: methadone maintenance versus therapeutic communities, detoxification versus maintenance (Lowenson et al. 1981; Gearing 1970; Cushman 1972). Others have described problems in drug treatment such as alcohol abuse among patients, patterns of criminal activity, or methods for modification of undesirable patient behavior. Few studies, however, have left the confines of the treatment facility to describe the total milieu of methadone treatment.

The Tri-State Ethnographic Project (TRISEP) was a cooperative effort of researchers and program administrators in New York, New Jersey, and Connecticut to examine multifaceted aspects of methadone treatment. By gathering information from patients, staff, and addicts not in treatment, the project sought to focus attention on the processes of methadone treatment and the characteristics of patients which affect those treatment processes. The purpose was to determine whether informal social networks among persons in and around a methadone clinic influence attitudes and opinions about methadone and, consequently, affect patients' cooperation and compliance. The TRISEP research also examined problems common to most methadone programs--diversion, loitering, and polydrug abuse--to gather information which might be helpful for developing strategies to alleviate these problems. This paper describes four distinguishable groups identified in and around the methadone treatment clinic which act as referents for the behavior of their membership. These groups have important influences on addicts' decisions regarding whether or not to enter into and/or to cooperate with methadone treatment. The problems common to treatment programs can also be better understood in terms of the social organization of these groups. Therefore, this paper concentrates on the importance of reference groups and the normative behavior which characterizes each of them.

## TRISEP METHODS AND SAMPLE

Interviews and extensive field research were conducted at four methadone maintenance clinics in three States: New York, New Jersey, and Connecticut. The four programs were comparable in terms of demographic makeup of the patient population and the presence of common clinic behavior problems among clients. The total patient population of all four sites was approximately 2,000 persons. The study sample consisted of 510 people, 368 patients randomly selected, from the clinic rolls and 142 narcotics users not currently in treatment. The individuals not in treatment were identified through both snowball sampling and the use of indigenous field workers, trained methadone clients working for TRISEP. Participation was voluntary; subjects were paid for participation. The interviewing and field observations were conducted in a four- to six-block radius of each clinic. This territory included the drug-dealing areas and the social areas commonly used by both patients and current street addicts who interact with the clinic population.

## RESULTS AND DISCUSSION

The methadone patient population is varied in a number of ways, including drug histories, previous treatment experiences, and motivations for treatment. These differences influence the patients' receptivity to treatment. Methadone patients are also different in terms of their reference groups in the treatment setting. The reference groups share common values and beliefs, have established forms of social interaction, definition of membership, and recognition of membership by nonmembers (Merton 1968). Four clearly delineated groups have been identified through ethnographic field observation and through cluster analysis of respondent behaviors and attitudes:

- 1) street addict group: active narcotics users not currently in treatment
- 2) methadone treatment group: a compliant patient group with a positive attitude toward treatment
- 3) methadone street group: a noncompliant patient group who are involved in alcohol and polydrug use
- 4) self-prescribing group: composed of (a) persons not in treatment using illegal methadone to avoid withdrawal and (b) persons in treatment who are systematically adjusting their own dose to detoxify without the knowledge of the program

Characteristics of these four groups will be described, followed by a discussion of their differential contribution to the problem areas commonly identified with methadone treatment: premature treatment dropout, polydrug abuse, loitering, and methadone diversion. Demographic characteristics of each subcultural group are summarized in table 1.

TABLE 1. DEMOGRAPHIC INFORMATION ON GROUPS

	<u>Street Addict Group</u>	<u>Methadone Treatment Group</u>	<u>Methadone Street Group</u>	<u>Self-Prescribing Group</u>
<u>Age</u>				
Mean Age	29	32	31	30
<u>Race</u>				
White	38%	45%	48%	46%
Black	54%	38%	42%	54%
Hispanic	8%	18%	10%	0%
<u>Sex</u>				
Male	69%	70%	51%	73%
Female	31%	30%	49%	27%
<u>Employment</u>				
Employed	28%	41%	14%	41%
Unemployed	72%	59%	86%	59%
<u>Education</u>				
Mean years	10.2	11.5	11.0	11.3
N*=	117	185	177	22**

\*Nine persons originally interviewed in the study are not included in this classification system.

\*\*The Self-Prescribing Group size is disproportionately small for several reasons. First, this group was not anticipated in the research design and no questions directly related to self-detoxification were included in the interview. Secondly, those persons buying methadone in the clinic area, but not wishing to become patients, are very difficult to gain access to. The size of this group in our sample should not be taken as reflective of the size of this group in the larger population.

### Street Addict Group (N=117)

The "street addict" lifestyle has been described by many researchers (Preble and Casey 1969; Agar 1973; Stephens and McBride 1976). Members of this group are described as heroin addicts still "ripping and running," involved in daily or near daily use of heroin often financed through illegal activities. When heroin is difficult to obtain, the addict may substitute other drugs such as morphine, codeine, hydromorphone (Dilaudid), meperidine (Demerol), methadone, or paregoric (Gould et al. 1974), but heroin is considered the drug of first preference and highest status.

Results of the present study support previous findings about the "street addict." Johnson (1981), in a recent study of the economic behavior of "street addicts" in East Harlem, found that drug use in the natural environment has been greatly influenced by the influx of methadone as an available opiate. Methadone is now the most attractive substitute for heroin, and the street addict is rarely a user of heroin alone. However, among the "street addict" community, methadone is seen as a drug of lower status than heroin. The "street addict" group member can reel off a list of side effects of methadone which are part of the basis for its inferior reputation compared to heroin. Its use is justified by this group in terms of perceived medical necessity rather than as a desirable euphoriant.

The "street addict" population is, as would be expected, more heavily involved in criminal activity than the treatment population in general. They can be found around methadone programs as merchants of stolen goods and as dealers of pills and cocaine, using methadone patients as customers.

A strong antitreatment attitude markedly differentiates the "street addict" from other groups. Over 50% of this group rated methadone treatment as "not good with some qualification" to "not good at all." They express contempt for the idea of treatment, regard treatment as unnecessary, and are suspicious of treatment staff. This group of subjects argues that methadone has deleterious side-effects and that it is simply an inexpensive alternative to more desirable drugs. They also tend to believe that treatment is unnecessary and that, if they chose to, they could readily terminate opiate use without treatment.

### Methadone Treatment Group (N=185)

This group is composed of individuals formally in treatment, generally acting in compliance with program rules concerning loitering, polydrug use, and methadone diversion. In addition, commonly accepted treatment goals such as working for a living, staying clear of serious criminal activity, and maintaining a stable family situation are adhered to by the methadone treatment

Their values and behavior are thus congruent with those of the treatment staff and of the middle class culture in general.

The methadone treatment group is somewhat less integrated and less visible than other groups, primarily because many of its members work and do not gather for long periods of time at or near the clinic. They typically come for medication early in the morning or late in the evening, i. e., before or after work, and remain only briefly. Because of their cooperative behavior, they also contribute disproportionately to the list of patients receiving "take home" doses of methadone and thus do not show up at the clinic every day. Members of this group generally know each other, call greetings, and ask about each others' families. Their network of friends includes other members of the treatment group and drug-free people. They make a clear distinction between themselves and members of the methadone street group, with whom they choose not to interact.

Although the methadone treatment group members are generally oriented toward cooperation with the positive goals of methadone treatment, they nevertheless occasionally engage in antitherapeutic activities. Although most work at legitimate jobs, 32% reported income from criminal activities in the week prior to the interview. Further, some of the jobs cited as regular employment involve illegal activities, such as policy writing and bookmaking.

Methadone treatment group members have many complaints about program policies and even about methadone itself as a treatment for drug abuse. However, the overall attitude is one of cooperation with treatment. In contrast with other groups, this one expresses affirmative and socially valued reasons for entering treatment, such as avoidance of social, legal, and health hazards associated with heroin use.

#### Methadone Street Group (N=177)

There are two clusters within this broad category. The first is composed of individuals in treatment, taking their methadone dose as well as any extra doses they are able to purchase, who are involved in low-level dealing or criminal activity, abusing other substances such as tranquilizers, drinking to excess, and unemployed. These are considered to be the lowest status individuals in the clinic community, referred to by the street addicts and the compliant patient group as "pillheads" and "lowlife." They are also the patients who are most disruptive to methadone programs. The second cluster is in treatment but using the methadone dose only as an adjunct to continued active heroin use. Members of this second group routinely sell their medication to obtain money for heroin or cocaine purchase.

Methadone is viewed as a drug of pleasure as well as a medication by the methadone street group. At times, it is used as an inexpensive euphoriant in combination with other drugs, including alcohol. When a euphoriant drug effect is sought with methadone, these patients will ingest extra quantities. For example, if they have take-home dose, they will commonly "double dose," taking twice the usual daily dose.

Criminal activity in this group is confined to small-scale operations such as shoplifting, dealing in stolen merchandise or dealing drugs, primarily pills such as diazepam or amitriptyline. Stolen merchandise is sold openly among members of this group. They deal in pills on a small scale, rarely having more than \$15 or \$20 in operating capital.

Of all the groups, the methadone street group reports the highest level of ambivalence about methadone as a treatment. Side effects such as lethargy, muscle and bone aches, and edema are widely discussed and home remedies exchanged. However, even as they complain about the methadone and its effects, returning to the street to shoot heroin or to kick the habit without methadone is not viewed as a desirable alternative. Methadone is a source of problems but it is also a source of stability, because of its relative safety in comparison with the less reliable street heroin.

#### Self-Prescribing Group (N=22)

The sample size of self-prescribers in the present study is considerably smaller than that for any of the other groups. This is primarily due to the difficulty of reaching persons not in treatment rather than to their scarcity in the population. Reports of clinic patients and trained patient field workers indicate that these individuals are an integral part of the clinic setting. The self-prescriber group also consists of two subgroups, one existing in the clinic population and one outside the clinic population. The behavior common to both is the self-manipulation of methadone dosage, usually in the direction of detoxification. Both subgroups view methadone as a therapeutic medication rather than a euphoriant.

Self-prescribers who are not clinic patients are people either attempting to maintain themselves on methadone as if they were regular maintenance patients or attempting to detoxify themselves from heroin, but who do not wish or are unable to become clinic patients. These individuals regularly buy street methadone (usually from only a limited number of sellers) and titrate their dosage to maintain a steady state and preclude withdrawal. These people appear to self-administer illicit methadone as if they were compliant patients. They are similar to the methadone treatment group in terms of stability and appear to be "good patients" who are simply not enrolled in a program. In some cases they are on waiting lists, while in others they are avoiding program regulations and schedules, and in still others they are avoiding the perceived possibility of disclosing their drug use to friends or employers.

The other half of this group consists of patients who engage in self-regulated dose reduction and withdrawal without the knowledge or permission of program staff. Unused methadone is sold or given away. Thus, this portion of the self-prescribing group operates symbiotically with the other self-meditators. The reasons given for self-regulated dose reduction fall into two broad categories:

dissatisfaction with the physician-prescribed rate of dose reduction and concern over either acute or long-term side-effects of methadone.

The self-prescribing group is the most difficult to characterize empirically. Many of the behaviors and characteristics of its members overlap with the methadone treatment group in terms of attitudes toward methadone, criminal involvement, and extra drug use. Further research is needed on this difficult to contact but important element in the treatment milieu.

#### PROBLEMS IN TREATMENT AND THE INFLUENCE OF REFERENCE GROUPS

A variety of problems is generally acknowledged to exist in methadone maintenance programs. Three problem areas have been selected for discussion in the present paper: (1) early exit from treatment, (2) the somewhat related problems of loitering and methadone diversion, and (3) polydrug use. These will be considered in relation to the attitudes and behaviors of the reference groups which have been described in the first part of the paper.

##### 1. Early Exit From Treatment

Recent data indicate that there is a trend towards shorter periods of enrollment in methadone maintenance treatment. Senay et al. (1977) found a 27% dropout rate within the first 8 weeks of methadone treatment, while Brown et al. (1975) reported an 18% termination rate from three different New York clinics during 44 clinic-months of treatment delivery. Other researchers report premature exit rates from 7% - 64% (DuPont 1971; Gearing 1971; Perkins and Richman 1972). Drug-free programs fare even more poorly, with dropout rates as high as 82% (Kaufman 1972). The problem of early exit is a serious one, since data indicate that individuals leaving treatment suffer a higher incidence of problems than those remaining. Des Jarlais et al. (1978) reported that 72% of patients who left methadone maintenance treatment returned either to daily narcotic use or to methadone treatment programs. The type of discharge was important in predicting return to narcotics. Those who had completed a full course of treatment were less likely to return either to treatment or to narcotics use.

In addition to renewed narcotics use, methadone patients who leave treatment early appear to have high mortality rates. A recent report by Des Jarlais (in press) indicates that the death rate of persons leaving methadone treatment was more than double the rate of those still in treatment. These deaths were most often related to drugs, alcohol, accidents, or violence. Compared to the general population, there are more deaths in both the methadone treatment and post-treatment populations. Among persons 25 - 44 years of age, those in treatment have death rates five times higher than the general population, while persons no longer in treatment have death rates twelve times higher than the comparable group in the general population. Methadone patients who leave

treatment appear to be more susceptible to overdose or other drug-related calamities. Keeping patients in treatment until they have a reasonable chance of remaining drug free appears to be not only an important measure of success, but a life-preserving action.

One goal of the TRISEP study was to examine patient views concerning treatment termination. Sixty-two percent of the patients reported that they had given serious consideration to leaving the program without the sanction of the staff. Reasons given included the desire to be drug free, fear of the long-term side effects of methadone, and anger at program rules, schedules, or policies. Most patients who considered leaving, however, did not follow through. When asked why they stayed if dissatisfied, patients cited a sense of uncertainty about the future, fear of a return to the street, or the monetary advantages of methadone compared to street hustling.

It is interesting that although the safety of long-term methadone administration has been demonstrated, many of the self-reported reasons for leaving early or considering doing so are related to fears about methadone's side effects. The perception that methadone produces many serious side effects compared to heroin is an important belief extant among both street addicts and current methadone patients. The list of side effects reported is long and often contradictory. Misinformation or lack of staff attention to the perceived seriousness of these complaints appear to be factors in early exit from methadone treatment, especially among the compliant methadone treatment group.

Members of the methadone street group are more likely to leave treatment due to disciplinary action by the program than self-selection. These individuals may commit repeated infractions of program rules concerning loitering, diversion of methadone, and polydrug use and thus may have histories of disciplinary actions. They may also leave programs due to incarceration for recent, criminal activities. When disciplinary dismissals occurred, the methadone street group members became agitated, and discussion increased among the group about the program abuses and unfairness of program policies. Such behavior within the group may contribute to perpetuating the chronic lack of treatment cooperation evidenced by this group. Released from treatment into the community, methadone street patients are likely to escalate polydrug use while adding street methadone and/or heroin to their list of abused drugs.

The self-prescribing group members who are in treatment commonly depart prematurely. These individuals report that the physician-prescribed rate of dose reduction is not sufficiently rapid and that they must therefore establish a self-determined dose reduction regimen. In some cases patients may have saved or hoarded methadone to continue their detoxification after the planned departure. Because the self-prescribers have a rational reason for leaving treatment, they are likely to be amenable to retention through thoughtful distribution of information and policy changes such as self-regulated detoxification opportunities.

Members of each reference group may leave treatment early for different reasons. Consequently, intervention in premature exits should be approached differently for each group. However, the serious consequences of return to heroin use and increased risk of death exist for all groups.

## 2. Loitering and Diversion

Loitering is often mentioned by program administrators as an annoying clinic problem. Though often seen as synonymous with the diversion problem, loitering is not necessarily related to drug

In the present study, loitering was found to be predominantly a social activity, with only a small group of elements routinely using the loitering site as a place to sell their medication.

Methadone street group members are most involved in loitering in the clinic area. These people congregate in areas close to the programs, often in a snack bar or other eating establishment. Members of the methadone street group will typically go into the program about midmorning for medication, then go to the loitering area and remain there for one to several hours afterward. Individuals who loiter in the clinic area before and after receiving medication are usually unemployed and often female. This daily meeting is often the chief social contact for the methadone street group members. They stay to socialize, to sell methadone and other drugs. This group is a highly visible crowd in the clinic vicinity and frequently the target of community concern.

Some of the people in the loitering group are not patients in the nearby clinic. Sociometric analyses of the loitering areas indicated that a number of people in the loitering group are ex-methadone patients and "street addicts" using the clinic population as buyers of stolen merchandise or drugs and as sellers of methadone. The core of the group, however, tends to be current patients meeting daily who consider each other to be friends.

Related to the loitering problem is diversion of methadone by clinic patients (Martin et al. 1973; Stephens and Weppner 1973) often in the immediate vicinity of the clinic. "Street addicts" appear to be the most frequent customers for diverted methadone. This was reported to be the case by the majority of patients interviewed in the present study. Further, 50% of the street addicts interviewed reported using illegally obtained methadone in the week prior to the interview. Other sales are made to self-prescribers and methadone street group members who are double dosing.

A large percentage of patients in the TRISEP sample reported selling medication while in their current treatment program, although only a small portion appeared to be regular sellers. The reasons for selling, however, vary with the group to which the seller belongs. A methadone street group member may use money from the sale of methadone to purchase other drugs of abuse

(including extra methadone). A few methadone street group members reported selling all their methadone to support heroin habits or as a regular income source. It was also members of this group with limited take-home privileges who sold "spitback" doses, i.e., doses held in the mouth at the medication dispensary and spit back into a cup for resale.

In the compliant methadone treatment group, selling a portion of one's take-home medication was considered legitimate under some circumstances. These patients will sell or share their medication with persons not in treatment if the buyer is using medication either to avoid withdrawal sickness or to maintain a self-regulated withdrawal regimen. The buyer may be a friend or a relative and will almost invariably be known to the seller, while the seller may be the only source of methadone for that particular buyer. Interestingly, an occasional sale for financial gain is also defined by this group as legitimate when the money is to be used for family-related needs rather than for drug purchases.

In summary, the function and the circumstances of sales are quite different in different reference groups. The methadone treatment group may sell to regular customers, often to friends or relatives not in treatment. The self-prescribing group members manipulating their dosage on the program may also sell to self-prescribers not in treatment or to the street addict buying methadone to alleviate withdrawal rather than to get high. Overall, ethics prevail, and it appears that sales of methadone are neither random nor indiscriminate.

### 3. Polydrug Use

Earlier reports have suggested that methadone maintenance patients exhibit substantial levels of polydrug use (Stephens and Weppner 1973; Cohen and Stimmel, 1978). Benzodiazepines and cocaine have been identified as popular drugs of abuse in this population, while alcohol abuse has long been reported in the treatment literature (Carroll et al. 1977). The present study was designed both to investigate the prevalence of polydrug use and to delineate attitudes toward drug use among the reference groups.

Table 2 indicates the drug use of each group in the week prior to interview. Use of heroin is generally limited to the "street addict" group; over half of the street addict subjects reported heroin use in the previous week. Although some patients in treatment may also use heroin, in general, patients agreed that it is neither safe nor cost effective to try to override methadone's blocking properties by injecting high doses of heroin. Use of cocaine, marijuana, and methadone is also frequently reported by members of the "street addict" group. Occasionally, members of this group report using other drugs such as diazepam or amitriptyline. This usage is justified as medicinal, e.g., as a sleeping aid. In general, these drugs are disdained as drugs of pleasure.

TABLE 2. ILLICIT DRUG USE IN WEEK PRIOR TO INTERVIEW

	<u>Heroin</u>	<u>Cocaine</u>	<u>Metha-</u> <u>done</u>	<u>Barbitu-</u> <u>rates</u>	<u>Ampheta-</u> <u>mines</u>	<u>Benzodia-</u> <u>zepines*</u>	<u>Cannabis</u>
<u>Methadone Street Group (N=177)</u>							
none	71%	47%	83%	91%	95%	52%	45%
once	16%	23%	12%	4%	2%	16%	9%
2-6 Xs	2%	22%	2%	2%	2%	23%	14%
7 Xs or daily	4%	7%	1%	2%	0	9%	32%
<u>Methadone Treatment Group (N=185)</u>							
none	94%	81%	95%	96%	98%	83%	41%
once	5%	14%	5%	3%	1%	7%	11%
2-6 Xs	**	5%	0	**	**	11%	28%
7 Xs or daily	0	**	0	**	**	3%	20%
<u>Street Addict Group (N=117)</u>							
none	48%	34%	50%	90%	99%	75%	45%
once	19%	28%	28%	4%	1%	9%	4%
2-6 Xs	22%	27%	19%	4%	0	12%	21%
7 Xs or daily	11%	9%	2%	2%	0	3%	28%
<u>Self-Prescribing Group (N=22)</u>							
none	77%	73%	46%	91%	90%	73%	27%
once	23%	9%	27%	9%	0	14%	9%
2-6 Xs	0	13%	18%	0	5%	5%	28%
7 Xs or daily	0	5%	9%	0	5%	9%	36%

\* This category also includes reports of the use of amitriptyline (Elavil), a drug popular in the New York area.

\*\* less than 1%

The methadone treatment group is characterized by the absence of reported drug use except for marijuana and some cocaine. Both marijuana and cocaine may be used recreationally and support of this drug use does not usually require substantial criminal activity. About 20% reported recent use of cocaine. Cocaine is viewed as a highly desirable drug whose use connotes high status and upward mobility of the user. Concurrently, this group views methadone only as a medication rather than a euphoriant and disdains the use of pills.

Members of the methadone street group typically use tranquilizers and other pills as euphoriants. This can be seen in table 2 in the high rates of reported recent benzodiazepine use. These pills are readily available in the illicit drug market and relatively inexpensive. Heroin may also be used as a supplemental drug of abuse. Their use of drugs and attitude toward methadone as a drug of pleasure clearly distinguish this group from the others and are, in part, the basis for their negative status among the groups. Benzodiazepines and alcohol may be used in combination with methadone; patients report that such combinations can enhance the effects of the methadone. On the other hand, prevailing lore also indicates that heavy alcohol use increases the rate of metabolism of methadone and thereby exacerbates withdrawal signs prior to the next daily dose. Discomfort after heavy drinking may also be due to alcohol hangover effects. The sheer quantity of alcohol, sedatives, and tranquilizers which may be consumed by this group explains much of the sedated appearance they often display on the street.

#### SUMMARY AND CONCLUSIONS

Methadone patients can be distinguished into unique but overlapping groups both quantitatively and through qualitative, ethnographic data analysis. These groups operate in the setting of treatment and dramatically affect patient behavior and consequently, treatment outcome. Members are known to each other, distinct norms govern interaction within and between groups, and the behavior of group members is affected in the degree to which the individual identifies with the group.

All groups are in contact with each other and the effect of that contact appears to be mediated through common values and behaviors and complementary needs. The street addict group serves the methadone street group as dealers of illegal goods and in turn uses them for income to support heroin habits. The self-prescribing group members who are patients and the nonpatient self-prescribing group members operate symbiotically: the nonclinic member requires accurate, reliable supplies of methadone which are best obtained from the methadone treatment or self-prescribing group seller. The buyer and the seller often share the same definition of drug use in those transactions in viewing methadone as a therapeutic agent, thus perhaps diffusing a sense of deviance in making sales. This is in contrast to the street addict who often sells to the methadone street buyer and views drugs as a way either of getting high or of making money, a view the methadone street group member shares.

Common goals and behavior such as these are important keys to recruitment into or passages between each of the groups. Groups which share the same definitions of drugs and similar use patterns have important common ground, and it is the areas where values and behaviors overlap which seem the most sensitive to membership recruitment. The self-prescribing group member not in treatment shares all of the characteristics of the methadone treatment group, except participation in treatment program. Program policies which can identify and reach the self-prescriber can bring into treatment a potentially compliant patient. The methadone street group member may begin to divorce himself or herself from that group through an assumption of some of the methadone treatment groups' behaviors and attitudes and perhaps gain membership in the latter group. Potential members of each group take on the characteristics and behaviors of the group in anticipation of membership. Once a person becomes a member of the group, the group norms and values become powerful referents for behavior. In addition, the group members themselves become powerful reinforcers of individual members' behavior.

While a fascinating study in reference group behavior, this study has far more significant ramifications. The problems facing methadone treatment programs are inextricably linked to these groups and their interactions. The problem of loitering will not be adequately dealt with by simply prohibiting loitering in the clinic area because of the important social function loitering serves for the methadone street group. The loiterers will continue their behavior in a different place. The problem of diversion may be alleviated somewhat by a 7-day pickup of medication schedule for all patients. Unfortunately, however, the methadone treatment group member and the self-prescribing group member, the very patients clinics are most eager to keep, may leave treatment prematurely because of such a policy. Similarly, program activities or policies which put the methadone treatment patients and the methadone street patients together may fail because of the status antagonisms of these groups; participants remaining in such activities will undoubtedly be the more idle methadone street group members.

In short, problems in the setting of methadone treatment can not be adequately addressed without a recognition of the impact of the unique reference groups on individual behavior. Each group is both an adaptation to methadone and to each of the other groups. The delicate interfaces between groups, while affected by program policy, are also maintained in a complex pattern of their own. Intervention in the form of individual treatment contracting or group intervention must consider the social organization of the methadone setting in the development of successful contingency planning.

## REFERENCES

- Agar, M Ripping and Running: A Formal Ethnography of Urban Heroin Addicts. New York: Seminar Press, 1973.
- Brown, E.M.; Benante, J.; Greenberg, M; and MacArthur, M Study of methadone terminations. Brit J Addict, 70: 83-88, 1975.
- Carroll, J.; Malloy T.; and Kendrick, R. Alcohol abuse by drug dependent persons: A literature review. Am J Drug Alc Abuse, 4(81):293-315, 1977.
- Cohen; M.J., and Stimmel, B. Amitriptyline (Elavill) abuse in persons on chronic methadone maintenance. In: Lowinson J., ed. Critical Concerns in the Field of Drug Abuse. New York: Marcel Dekker, 1978. pp. 403-404.
- Cushman. P. Arrests before and during methadone maintenance. In: Proceedings of the Fourth National Conference on Methadone Treatment. New York: NAPAN 1972. pp. 487-488,
- Des Jarlais, O.; Dole, V.; Joseph, H.; and Smeidler, J. Predicting Post-treatment Narcotics Use Among Patients Terminating From Methadone Maintenance. Report to the New York State Division of Substance Abuse Services, 1978.
- Des Jarlais, D. Research Design, Drug Use and Death: A Cross-Study Comparison. In press.
- DuPont, R.L. Profile of a heroin addiction epidemic. New Eng J Med, 285:320-324, 1971.
- Gearing, F.R. Successes and failures in methadone maintenance treatment of heroin addiction in New York City. In: Proceedings of the Third National Conference on Methadone Treatment. Washington, D.C.: Public Health Publication No. 2172: 2-16, 1970.
- Gearing, F.R. Evaluation of methadone maintenance treatment programs. In: Einstein S., ed. Methadone, Maintenance. New York: Marcel Dekker, 1971.
- Gould, L.D.; Walker, A.L.; Crane, L.E.; and Ledz, C.W. Connections: Notes from the Heroin World. New Haven: Yale University, 1974
- Johnson, B.D. "The Criminal Behavior of Street Heroin and Cocaine Users." Presentations at International Institute on the Prevention and Treatment of Drug Dependence, Austria, June, 1981.
- Kaufman, E.A. A psychiatrist's views on addict self help programs. Am J Psychiatry, 128: 846-851, 1972.
- Lowenson, J.; Ruiz, P.; Langrod, J.; and Martinez, M Consumer input in the evaluation of drug addiction services. Int J Addict, 16(1):165-171.
- Martin, .R.; Jasinski, D.R.; Haertzin, C.A.; Kay, D.C.; Jones, B.E.; Mansky, P.A.; and Carpenter, R.W. Methadone: A re-evaluation. Arch Gen Psychiatry, 28: 286-295, 1973.
- Merton, R. Social Theory and Social Structures. New York: Free Press, 1968.
- Perkins, M.E., and Richman, A. Prevalence of participation in methadone programs, Am J Psychiatry, 128: 846-851, 1972.
- Preble, E., and Casey, J.H. Taking care of business--The heroin user's life in the street. Int J Addict, 4:1-24, 1969.

- Senay, E. C. ; Dorus, W. ; Goldberg, F. ; and Thornton, W. Withdrawal from methadone maintenance: Rate of withdrawal and expectation, Arch Gen Psychiatry, 34 (March):361-367, 1977.
- Stephens, R. C. , and McBride, D. Becoming a street addict. Human Organization, 35(1), 1976.
- Stephens, R. C. , and Weppner, R. Legal and illegal use of methadone: One year later. Am J Psychiatry, 130(12):1391-4, 1973.

#### ACKNOWLEDGMENT

This research was supported by a grant from the National Institute on Drug Abuse (1 H81 DA 02300-01) to Narcotics and Drug Research, Inc., New York, and by the New York State Division of Substance Abuse Services.

# Treatment of Behavioral and Psychiatric Problems Associated With Opiate Dependence

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## INTRODUCTION

Diverse problems and challenges confront the staff members of programs/clinics intended to treat individuals with histories of opiate use and associated problems. The clinic sponsored and staffed by the Philadelphia Veterans Administration Medical Center and University of Pennsylvania provides numerous examples of the merits and problems of such treatment programs. The clinic's patient population over the past decade has varied from two to four hundred patients. A range of services is provided along with pharmacological interventions including opiate-specific treatments such as methadone, LAAM, naltrexone, and a variety of psychotherapeutic agents administered in treatment of diverse presenting disorders. It should be noted that the clinic differs in some respects from "standard" clinics insofar as it includes numerous associated ongoing basic and applied research projects. There may therefore be more options and staff available from time to time but there may also be considerable variability uncharacteristic of other clinics. In any case the clinic appears to have many of the problems reported to prevail in other nonresearch clinics. It can therefore be used as a reference in the sorts of issues which do arise.

Patients entering standard treatment programs for opiate use often display serious behavioral and psychiatric problems both within and outside treatment programs. The successful management of these problems is of great importance for both the patient and the community. Failure on the part of a treatment program successfully to control behavioral problems of its patients has sometimes resulted in community pressure to close the program, and in some cases this pressure has achieved its intended result. Inadequate treatment of the psychological disorders of the opiate user/patient has contributed to poor treatment response and sometimes to premature termination from therapy.

## BEHAVIORAL AND PSYCHIATRIC PROBLEMS

Many of the behavioral problems demonstrated by these patients originate from drug-seeking behavior which is, of course, a normal part of the drug-using cycle. Patients may fabricate elaborate stories to obtain prescriptions for a variety of controlled substances, buy or sell illicit drugs, attempt to falsify urine samples to avoid loss of take-home methadone doses, or attempt to divert methadone at the pharmacy window.

A common problem viewed as serious by most program staff members is loitering. Its origins and rewards are diverse. The most common motive for loitering appears to be social contact (see Hunt et al., this volume), but a considerable amount of drug dealing also takes place when patients loiter. Persistent loitering can serve as a nidus for the development of other behavioral problems such as arguments or fights. The loitering and associated behaviors can also be frightening to people who happen to be in the vicinity and who are not familiar with the personalities and lifestyles of the opiate-using patient population. Threats and disruptive behavior including fighting may occur, and when clients carry weapons, special problems are encountered.

These patients also bring with them to the clinic the full range of social and family problems. Many are unemployed, have few skills, and could likely benefit from training programs, although questions as to how best to achieve the training are numerous (e.g., see Hall et al. and Thompson et al., present volume). In addition, problems with both family of origin and current family may exist (e.g., see Todd, this volume). All of these problems may or may not be related to the addiction or to other factors such as personality disorders, psychiatric problems, or socio-environmental circumstances.

As might be expected, the range of psychiatric disorders reported in the general population has been observed in opiate-using patients. Table 1 summarizes the Research Diagnostic Criteria (RDC) diagnoses reported in a sample of 533 opiate users who were given a thorough and careful psychiatric evaluation as part of a study recently completed by Rounsaville et al. (1982). Depression was the most common diagnosis, with about 60% of the sample having had some form of depression at least once. The next most common problem was alcoholism, followed by antisocial personality and anxiety disorders. Occurring with a much lower frequency were schizophrenia, other types of personality disorders, mania, and hypomania. Not included in this table but also seen regularly are acute situational reactions which involve intense but transient feelings of anger, anxiety, or depression; psychiatric disorders complicated by medical conditions such as hepatitis; and illnesses or injuries which produce chronic pain, such as pancreatitis, sickle cell anemia, or trauma resulting in nerve root irritation.

The diverse medical, behavioral, and psychiatric problems observed may be closely related to one another and interact to produce constellations of complex disorders. For example, either

Table 1

Lifetime Rates of Psychiatric Diagnoses  
per 100 for Opiate Addicts\*

Type of Disorder	SEX	
	(n=403)	(n=130)
<b>AFFECTIVE DISORDERS</b>		
Major depression	48.9	69.2
Minor depression	9.4	5.4
Intermittent depression	18.1	20.8
Cyclothymic personality	2.5	6.9
Labile personality	17.1	14.6
Manic disorders	0.5	0.8
Hypomanic disorder	5.5	10.0
Bipolar 1 or 2	3.7	10.8
Any Affective Disorder	70.7	85.4
<b>SCHIZOPHRENIC DISORDERS</b>		
Schizophrenia	0.7	0.8
Schizoaffective, depressed	2.2	0.0
Schizoaffective, manic	0.5	0.0
<b>ANXIETY DISORDERS</b>		
Panic	0.5	3.9
Obsessive-Compulsive	1.7	2.3
Generalized anxiety	4.7	7.7
Phobic	8.2	13.9
Any anxiety disorder	13.2	25.4
<b>ALCOHOLISM</b>	37.0	26.9
<b>PERSONALITY DISORDERS</b>		
Antisocial personality	29.5	16.9
Briouet's syndrome	0.0	0.7
Schizotypal features	8.7	7.7
Other psychiatric disorders	5.7	10.0

\*From: Rounsaville, B.J., et al. Heterogeneity of Psychiatric Diagnosis in Treated Opiate Addicts. Arch. Gen. Psych. (39):161-166, 1982. Copyright 1982, American Medical Association. Reprinted with permission.

antisocial personality disorder or addiction itself can lead a patient to fabricate stories about psychiatric or other medical problems in attempts to obtain prescriptions for controlled substances; depression can result in chronic anger and hostile behavior; and paranoia secondary to schizophrenia or amphetamine psychosis can lead the patient to carry a weapon for "protection."

In other cases the behavioral and psychiatric problems appear to be unrelated. Examples include anxiety attacks or schizophrenic hallucinations which result in psychiatrically correlated behavioral problems which are not characteristic of the typical opiate user.

As seen from this brief overview, many combinations of behavioral and psychiatric problems can occur in a methadone treatment program. Comments throughout the remainder of the paper review some thoughts on management and treatment of these problems. They derive from the perspective of persons who are responsible for directing a clinic very much invested in methadone maintenance but with the adjuncts previously mentioned. In any case the comments have a strong practical orientation,

#### GENERAL APPROACHES

The staff members of the treatment clinic have spent many hours deliberating about and experimenting with various general and specific approaches to management and treatment of patients' behavioral and psychiatric problems. The strategy that has emerged is one which uses external environmental controls combined with procedures designed to change internal processes and affective states. The external measures are primarily behavioral-psychological, while the internal ones are mainly pharmacological. The external interventions aim primarily to punish certain behaviors and to reinforce others. These in turn affect attitudes, or reduce the intensity of the affects and impulses which are part of the problematic behaviors and psychiatric disturbances demonstrated by the patients.

Clinic patients are similar in many ways, but dissimilar in others. In this combined approach it is essential to diagnose the problem correctly in order to make the appropriate response. For example, a primary focus on behavioral controls and limit-setting can be destructive for patients who are primarily depressed, but it can be constructive for patients who are displaying only sociopathic behavior. Thus the needed strategies and arrangements to maximize reinforcement must be individualized as well as being established for the clinic as a whole.

The first treatment priority is often control of the behavioral problems because they can be detrimental to the entire program, including staff. The techniques used focus on three potentially problematic target behaviors: (1) loitering, (2) drug dealing or other forms of drug-seeking behavior, and (3) disruptive or aggressive behavior. Many drug treatment programs implement specific techniques that are aimed to modify these behaviors, and

the techniques are usually implemented from specific behavioral guidelines presented in the form of general program rules.

Treatment occurs within the program milieu, and it is necessary to consider certain aspects of it that contribute importantly to the success or failure of the specific techniques used. The milieu includes the physical location, appearance, and design of the program facilities, as well as the attitudes, hierarchies, and power structures that exist within the staff.

The physical layout of programs can vary tremendously and may include storefront clinics, medical offices in separate buildings, and offices in both general and psychiatric hospitals. Drug treatment programs can be located in urban or rural areas and their level of maintenance can vary from exceptionally clean to extremely insanitary. The formal and informal power structures within the staff, and the way patients and staff interact, form another important part of the milieu. In combination, these factors determine the success of treatment.

#### A VIEW OF CLINIC ADMINISTRATION

From the onset, the administrative structure that will be used to run the program must be clearly established and made known. This step may sound trivial, but it is extremely important. Drug abuse programs typically have both professional and paraprofessional staff who work together to solve many complicated problems, and competition or role diffusion often occurs. Similarly, the contributions to general policies and to program rules that can appropriately be made by patients and staff members are sometimes unclear, especially concerning issues of the degree of authority and administrative latitude accorded to the group.

The administrative structure that has been found to be effective in the Philadelphia VA Medical Center clinic is fairly standard. It is a hierarchical organization which involves differing levels of power and responsibility for various categories of people within the program. Examples of these levels are a service chief, senior program staff member, nurse, counselor, and patient. Patients should have input into the formation of rules and policies, but the program staff must retain the authority to make final decisions. The hierarchy of responsibility and authority should begin with one person who is clearly identified as being in charge and given the authority to act accordingly and is also the one held responsible if problems occur. Job descriptions and delegations of authority must be clearly specified. Regular staff meetings must be held in which management and clinical issues are discussed and comment from all staff members can be used in making decisions and in setting policies. These meetings serve to unify and coordinate program activities.

Patients often request a democracy, or accuse the administration of being dictatorial when administrative decisions are made unilaterally. However, a "democracy" can pose very difficult problems in a methadone program. One of these is that the

drug-seeking behaviors among the patients are often so intense that there is a strong tendency to attempt to use "democracy" to manipulate the system in order to obtain extra supplies of drugs or whatever other tangible rewards are be available in a manner that subverts the prevailing rules or contingencies. Other serious problems can occur in situations where rules must be enforced and patients disciplined. Attempts to implement democratic forms of government within this population have been numerous. For example, a committee (the "Judicial Committee") was established that consisted of patients and staff members whose purpose was to hear the comments of all interested parties in situations where program rules had allegedly been violated. It was never clear that the committee was very effective. Rarely did the committee agree on whether rule infractions had occurred. The deliberations often took hours and required large amounts of staff time, and meaningful punishment (such as suspension from the program) almost never occurred. After trying very hard to make this committee work for almost 2 years, it was disbanded and a much more authoritarian approach to problems was taken. It resulted in more penalties and more success in controlling behavioral problems.

There must be written program rules which consist of explicit guidelines for conduct with specific penalties for violations. The rules should be carefully formulated by the combined efforts of staff with comment from patients. Penalties should, of course, be graduated according to the severity of the offense. The rules are helpful to both patients and staff, because they provide a consistency and uniformity of consequences for behavioral problems. The rules should be explained to all patients when they are admitted to the program, and patients should sign a copy which is then placed in their chart. The rules should also be conspicuously posted in the clinic. Program rules can be modified if necessary, but only after a similar thoughtful and deliberate process.

Many of the specific rules used by programs will vary depending on the local situation. For example, the program discussed herein is in a separate building remote from the main hospital. One of the results of reducing loitering in the clinic and in the immediate vicinity was that patients spent considerable time and caused some difficulty in the cafeteria of the main hospital. Therefore specific rules were developed governing appropriate and inappropriate use of the cafeteria. Many programs such as those located in storefront clinics rather than general medical centers have no need for such rules.

As noted earlier there must be a clear line of authority that is consistent and readily understandable to both patients and staff if the established rules and policies of the clinic are to be meaningful. It must be expected that patients will "test the limits" of the system and this will result in "going to the top," especially when serious problems develop, including cases involving suspension. Good communication among staff members and clear policies for review of patient requests to speak with people at higher levels of authority are necessary in these situations.

As in any treatment setting, all aspects of activity including infractions of rules that occur must be documented clearly. In publicly funded facilities, legislative or congressional inquiries about response to specific incidents may occur and accurate documentation is essential. In addition some patients in drug treatment programs are expert "jailhouse lawyers," experienced at casting a reasonable doubt upon any evidence of illicit behavior on their part. In some cases they may have been through similar procedures on repeated occasions during appearances in court. Thus, it is not uncommon for patients frankly and adamantly to deny engaging in a problematic behavior that has been witnessed by reliable staff people. On the other hand, many patients have been subjected to arbitrary, discriminatory, and unfair treatment by people in authority, and it is essential that this pattern not be repeated by the program. Thus, all alleged infractions of program rules must be examined thoroughly so that a fair and appropriate decision concerning consequences may be made.

The chief administrator and the administrative system must, of course, maintain staff morale. Actions that successfully deal with problematic patient behaviors build and maintain morale, while lack of control of behavioral problems has the opposite effect. Morale is strengthened by providing staff regular opportunities to contribute to decisions, by encouraging discussion at the regular staff meetings where clinic policies, rules, and management problems are reviewed.

Inservice training sessions can make an important contribution to morale by providing the staff members with opportunities to develop professionally. This can be done in a variety of ways, the most direct one being a weekly presentation of topics related to the problems that are treated by the program. These can include sessions about family therapy, high- vs. low-dose methadone treatment, jobs programs, how to use psychotropic medicines, current issues in the criminal justice system, and many other topics.

It is essential that the administrators spend time working on the procedures that are necessary for program operations, such as scheduling hours, secretarial coverage, treatment manuals, and directives that the staff use in their daily work. These measures can be very helpful to staff morale via their organizing and supporting effects.

Finally, it is helpful to develop a clinic manual that defines and describes counseling duties. This manual should include guidelines for making treatment plans, making clinical notes, procedures for using ancillary medicines and for implementing clinic take-home policies. These written guidelines provide a framework that the counseling staff can use in formulating a unified approach to patient management.

Ideally the physical setting should be one that permits reliable provision of treatment and makes it easy to enforce rules. For example, it is sometimes difficult to have a methadone treatment

program located in the main traffic area of a general hospital. This may, depending on the characteristics of the drug patient population, lead to difficult interactions between addicts and other patients or hospital staff. Some feel that the ideal location for a drug treatment program is in a separate building which patients can enter without having to pass through other office or clinic areas. If this situation does exist, the building should have a waiting area that is comfortable yet highly visible. Patient access to treatment areas should be easily controlled by a clinic secretary or other staff via locks with buzzers or other appropriate traffic control devices. This type of physical design will facilitate control of patient traffic within the building, and this decreases the chances for behavioral problems within the clinic. On the other hand, it must be recognized that while a separate facility may have fewer obvious problems, it may simply be the case that the problems such as loitering are being displaced to other locations. It is most helpful to have a staffing pattern which includes people trained to manage the different behavioral and psychiatric problems that may occur. This includes counselors, medical personnel, secretaries, and depending again on the nature of the facility and patients, police. In general the important issue is that the clinic have well trained personnel for all the services it provides. If, for example, the clinic does not have professional job counselors, it should refer clients elsewhere for this service. Excellence in available services rather than diversity of services is probably important in reassuring patients concerning treatment.

Finally, it may at times be necessary to use legal sanctions, in addition to the program rules, for the more serious problems such as threats, weapons offenses, thefts, or fights. Since methadone programs are under Federal control, it can be valuable to work out an informal liaison with the Federal criminal justice system so that formal charges can be filed in situations where serious behavioral problems have occurred. Thus, in addition to suspension from the program, patients can be fined or may actually go to jail for certain offenses. When patients know that this process exists and that it will be used, problems occur less often.

Implementation of these clear guidelines has decreased problems in the vicinity of the clinic, although success in eliminating some problems is not as clear. In some instances, the behaviors are suppressed in the clinic area but transferred to another location. For example, some of the patients stopped loitering around the hospital but moved to a fast food restaurant located nearby. This shift of problems from one locale to another may limit their occurrence, but it indicates that these measures are far short of being curative. Nevertheless, they can have the positive effect of maintaining a therapeutic milieu within the immediate vicinity of the treatment program, and in developing positive regard for the program in the community.

## APPLYING BEHAVIORAL CONTROLS TO SPECIFIC INDIVIDUALS

Careful thought should be given to application of behavioral control techniques, especially when dealing with "problem behaviors" as opposed to development of adaptive behaviors leading to positive consequences. Patients who are often angry must be approached in ways that will maximize the chances of their benefitting from the sanctions to be applied, and minimize the chances for destructive acting out of their anger. Some of the patients are truly dangerous, and their potential for aggressive acting out should always be kept in mind. HOW the patient is approached is an extremely important factor for the safe and effective management of these situations. Several therapeutic guidelines may be helpful in these cases.

First, it is important to be open and nonjudgmental when discussing the specific infraction with the patient/violator. This should be done in a matter-of-fact, nonhostile manner, and he should be given the opportunity to express his point of view about the situation. This approach will minimize the chances for aggressive acting out by the patient. The patient may complain, but the complaints should not cause serious problems when things are consistent, open, and direct, and when he feels that sincere and honest efforts have been made to assess the situation accurately and to treat him fairly and in accordance with the program rules.

Thus one communicates a sense of firm and consistent limits, combined with the feeling of underlying support and some degree of flexibility about the exact timing of his expulsion from the program. The message that seems important to communicate when problem behaviors arise is, "We are very concerned with you and your treatment, but you must understand that certain behaviors are unacceptable and cannot be tolerated." Support is very important for this population. Many people have written about the necessity to provide support for drug-dependent individuals, and this clinic's experience is consistent with these observations.

Many details have been omitted in the above discussion, such, as comments about collecting urine specimens, pharmacy dispensing procedures, and specific techniques for control of patient traffic flow in the clinic area. Guidelines for these aspects of program management are also important, and many of them are specified in FDA or DEA regulations or are found in clinic treatment manuals or regulations used by the hospital police force.

## TREATMENT OF PSYCHIATRIC PROBLEMS

The psychiatric problems experienced by addicts are important contributors to overall treatment outcome; thus psychiatric treatments can make important contributions to a program's effectiveness. Some psychiatric problems appear closely related to drug dependence, and in these cases one problem cannot be brought under good control without effective treatment of the other (McLellan et al. 1979). In general, the psychiatric

problems of drug-dependent patients are treated in the same way similar problems are treated in non-drug-using psychiatric patients. This view and approach are empirical and do not derive from experimental evidence but do seem reasonable. Commonly observed psychiatric conditions are considered below.

Anxiety is one problem commonly observed, particularly in patients who have recently undergone withdrawal. The condition may have a different physiological basis from that observed in other patients with an anxiety disorder. However, post-detoxification anxiety is usually treated with a combination of supportive counseling or psychotherapy and psychotropic medications, much as it is treated in general psychiatric patients. Anxiety may also occur during the course of maintenance treatment and can be treated with psychotherapy, counseling, family therapy, biofeedback or relaxation exercises, or with anti-anxiety medications. These treatments can be used separately or in combination. Anti-anxiety medications are usually monitored very closely with these patients because there is a much higher risk of improper use or abuse than is seen among general psychiatric patients. The anti-anxiety medications that appear to be most effective are the benzodiazepines. Diazepam (Valium), however, appears to have high abuse potential in this population, and thus it is used under very specific conditions or not used at all. Examples might be patients being maintained on very low doses of methadone who are in regular contact with their counselors and who have consistently drug-free urines; or patients who are detoxified and keeping regular clinic appointments; or patients who are being treated with a narcotic antagonist such as naltrexone. Oxazepam (Serax) is a frequently used benzodiazepine which appears to be effective and which does not seem to be abused or misused to any significant degree.

Depression in its various forms appears to be even more common than anxiety disorder in drug-dependent and post-drug-dependent patients. These include major, minor, and intermittent depressive disorders. Depressive illnesses seen in drug-dependent patients are often precipitated by disruptive life events, and they commonly have a significant anxiety component. Depression in these patients is usually not as severe as that seen on general psychiatric inpatient units, and it appears to respond to counseling, psychotherapy, or antidepressant medications. Favorable results have been obtained with administration of doxepin, a sedative type antidepressant, when used in combination with counseling and psychotherapy (Woody, 1982). Doxepin appears to help control the symptoms of anxiety and depression that are so often found in these patients, and it also appears not to have any significant abuse potential. It is unclear whether the apparent positive effect of doxepin with this population is due primarily to its anti-anxiety or to its antidepressant effects; however, it seems to be a useful drug.

Sociopathic behavior is another common and serious problem, and our best treatment for it is to control and structure the milieu via clear and consistent rules. Treatment contracts emphasizing aversive control are sometimes used for patients demonstrating

sociopathic behavior or for selected patients without sociopathy who appear to be doing poorly in spite of our best efforts to help them through traditional psychotherapeutic strategies. These contracts call for the patient to engage in certain behaviors within a specific time period or face suspension. Patients who fail to comply with the conditions of the negative reinforcement-based treatment contracts have the option of detoxification or transfer to another program. About 50% of patients given a treatment contract fulfill its conditions.

Alcoholism is another common problem in this population, and it is one which we have not been able to treat very effectively. Counseling combined with regular verification of nondrinking, using breath testing and sometimes disulfiram (Antabuse) is typically used with these patients. Treatment contracts are also used with alcoholics, and those patients who fail their contracts are usually advised to enter an inpatient alcohol treatment facility. These patients are also encouraged to attend meetings of Alcoholics Anonymous or engage in other therapeutic activities.

Schizophrenia is observed only infrequently in this population but it can be quite disruptive not only for the patient but for other patients and staff members' efforts to maintain the clinic as a therapeutic environment for others. Almost every case of schizophrenia we have seen has been of the paranoid type. Patients with this disorder are usually treated with phenothiazines, often in the liquid form which can be mixed with the daily dose of methadone. It is important to mention that methadone itself has some antipsychotic effects; it appears to have a sufficiently positive psychotropic effect in some schizophrenic patients to make other medications unnecessary.

Patients with manic depressive illness (Bipolar I or II) are seen infrequently. They are usually treated with lithium or with combinations of phenothiazines and antidepressants, as are nonaddicted manic-depressives (Kleber et al. 1983). Special attention must be given to monitoring compliance if the patient is treated with lithium because of the narrow margin between the therapeutic and toxic dose. Patients taking it must thoroughly understand its dangers and how important it is to take it exactly as prescribed. Compliance with the regimen is probably encouraged if patients know that lithium cannot produce euphoria and that extra doses will only lead to severe adverse reactions. Drug dependence generated by administration of analgesics for medical problems involving pain is seen occasionally. Patients with chronic pain often have significant depression and can be treated with an antidepressant plus psychotherapy and relaxation. Amitriptyline HCl (Elavil) may be especially helpful for these patients, since it appears to have a mild analgesic effect; however, it has some degree of abuse potential, and compliance should be monitored carefully.

One serious problem seen occasionally is persistent opiate drug use in patients who appear to be maintained on doses of methadone that are more than sufficient to suppress withdrawal symptoms and

which also provide some degree of narcotic blockade. In these cases we will often raise the dose to the highest allowable levels (80-100 mg/day). Sometimes this process is also combined with a treatment contract.

## RESEARCH IN CLINICAL SETTINGS

An important situation that is worthy of comment is the interface between research and clinical work when both are performed in the same setting. The coordination of research projects with the clinical work is extremely important in these situations. Competition between clinical and research staff can occur if this interface is not monitored and cultivated. Lack of coordination between research and clinical programs can cause treatment or research staff to feel resentful, and both programs can suffer. A problem from the therapeutic perspective is that clinicians may have trouble dealing with the unknowns, e.g., placebos, that are part of many research projects. Clinical staff feel most comfortable doing something that will provide known, direct and tangible benefits. They may also feel uncomfortable with the basic supposition of research, which is that the most effective treatment is not known, that several therapeutic approaches will be examined and that these results will then be evaluated to delineate an improved treatment. These problems can usually be managed by explaining to clinical staff placebo effects, the purposes of research, how there is always a degree of experimentation in medical practice, what the purposes of the specific study in question are, and especially how it may improve treatment. Conversely, research staff may have trouble understanding or appreciating the interpersonal and unpredictable aspects of clinical practice which in fact arise from the same source; that is that diverse aspects of traditional therapeutic strategies are poorly understood. Regular meetings of the research and the clinical staffs will usually resolve problems that arise in this clinical/research interface. The benefits that may result from integrating research into a busy clinical program are considerable, and careful attention to these potential problems is well worth the effort.

## SUMMARY

Many difficult and complex behavioral and psychiatric problems can occur in a methadone treatment program. Some behavioral problems are very serious, and it is essential that the program place a high priority on controlling them. This is best done by structuring the treatment milieu via program rules. Careful attention must be paid to consistent, fair, and accurate enforcement of these rules. A proper staffing pattern is essential; this should include counselors along with medical, administrative, and pharmacy personnel, and police. Written policies explaining clinic procedures such as treatment plans, use of ancillary medications, and take-home policies are most helpful. They provide structure for the staff and increase the chances that work will be done in an organized and consistent manner. The physical facility may have features which either

enhance or interfere with treatment and must be taken into account when planning. Attention should be paid to accurate diagnosis and treatment of the patients' psychiatric, behavioral, and social problems, and staff morale must be maintained. The best general ingredients for good patient management appear to be a combination of structure and support, applied in a systematic and coordinated way by a well-trained staff. Finally, integration of research and clinical efforts may present unique problems but has considerable benefit in most programs.

#### REFERENCES

- Kleber, H.; Weissman, M.; Rounsaville, B.; Wilber, C.; and Prusoff, B. Imipramine as treatment for depression in methadone treated opiate addicts. Arch Gen Psych, 40(6):649-653, 1983.
- McLellan, A.T.; Woody, G.E.; and O'Brien, C.P. Development of psychiatric disorders in drug abusers. New Eng J Med, 301:1310-1314, 1979.
- Rounsaville, B.J.; Weissman, M.M.; Kleber, H.; and Wilber, C. Heterogeneity of psychiatric diagnosis in treated opiate addicts. Arch Gen Psych, (39):161-166, 1982.
- Woody, G.E.; O'Brien, C.P.; McLellan, A.T.; Marcovici, M.; and Evans, B. Use of tricyclic antidepressants in methadone-maintained addicts. Annals of the New York Academy of Science, 120-127, 1982.

# The Role of Behavioral Contingency Management in Drug Abuse Treatment

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The purpose of the present paper is to provide an overview of the role of behavioral contingency management procedures in drug abuse treatment contexts. The paper is organized so as to provide initially a discussion of the nature of a behavioral conceptualization of drug abuse, then to provide a brief review of some applications of contingent behavioral procedures to drug abuse problems, and finally to provide a discussion of some of the practical problems faced in implementing these procedures and of some of the potential future directions for work in this area.

## AN OPERANT BEHAVIORAL CONCEPTUALIZATION OF DRUG ABUSE

The value of any conceptualization of drug abuse lies in its ability to guide us to a valid scientific understanding of the determinants and controlling variables of the disorder and thereby to enable us to intervene effectively in either preventive or treatment modalities. The operant behavioral conceptualization of drug abuse is of value both in a definitional sense of specifying what drug abuse is -- i.e., what is the appropriate target of drug abuse treatment -- and also in the functional sense of specifying a range or domain of controlling variables which can be expected to influence this target. As will be described more fully below and elsewhere in this volume, this focusing upon objectively specified target behaviors and upon functionally defined classes of controlling variables has made the operant behavioral approach to drug abuse a productive one, both in terms of advances in scientific understanding and in terms of practical therapeutic applications.

Operant behavior is behavior which is controlled by its consequences. When drug abuse is viewed as operant behavior we are forced to specify precisely what behavior constitutes drug abuse and we are forced to look for maintaining consequences of that behavior. Examination of the range of substance abuse disorders, of both the experimental and the clinical data concerning these disorders and, in particular, of the commonalities within and between substance abuse disorders (cf. Griffiths et al. 1980)

leads us to conclude that: (1) drug abuse can be productively viewed as consisting of the behavior of drug self-administration; (2) this behavior is maintained by the pharmacological effects of the drug; and (3) this behavior is influenced in predictable ways by manipulations of behavioral contingencies in the same fashion as other classes of operant behavior.

What is the scientific basis for this conceptualization? And, what are the practical implications for prevention and treatment?

#### Scientific Basis

The primary scientific basis for this behavioral conceptualization of drug abuse comes from the experimental! animal drug self-administration laboratory and from comparisons of these basic laboratory data with data concerning human drug self-administration and drug abuse. These comparative data have been reviewed extensively elsewhere (Griffiths et al. 1980), and only the conclusions will be briefly summarized here:

1. The same drugs which are abused by humans tend to be self-administered by animals in experimental studies. Thus, opioids, sedatives, and CNS stimulants all have been shown to sustain self-administration in a variety of species and have been found to be abused by humans. Conversely, a variety of compounds (e.g., opioid antagonists, certain anorectics) which have molecular similarities to abused drugs, but which are not self-administered by experimental animals, are not significantly abused by humans. This finding of cross-species generality in drug self-administration suggests that it is the pharmacological characteristics of the compounds (and not the personal characteristics of the individual organisms) which determine the reinforcing efficacy of drugs.

2. The temporal patterns of drug self-administration tend to be similar in animals and in humans. While different pharmacological classes of drugs are characterized by distinctively different patterns of intake over time there exists a remarkable cross-species generality in the temporal patterns of self-administration. For example, ethanol self-administration in both animals and humans is characterized by spontaneous wide fluctuations in intake, with several-day periods of voluntary abstinence (even in the presence of objective withdrawal signs) alternating on a somewhat irregular basis with several-day periods of heavy consumption. On the other hand, opioid self-administration in both animals and humans is characterized by a relatively steady level of intake, with a gradual increasing trend presumably due to tolerance development, but without periods of spontaneous abstinence. These dual findings of between-drug differences but across-species similarities in the temporal patterns of drug self-administration serve to emphasize the importance of the specific pharmacological characteristics of a compound as a potent determinant of drug self-administration and drug abuse.

3. The controlling variables of animal drug self-administration and of human drug abuse are similar. For example, manipulations of such variables as the drug dose, the response requirement (i.e., effort) required to obtain doses, and the scheduled consequences of drug use versus drug abstinence behaviors all tend to have similar effects in animal experimental settings, in human experimental settings, and in clinical drug abuse settings. This across-species generality to humans of relationships observed in the basic animal operant behavior laboratory argues in favor of the applicability of this operant behavioral conceptualization to human drug abuse problems.

4. The influences of many controlling variables upon drug self-administration are similar-across the different pharmacological varieties of drug abuse. That is, self-administration of pharmacologically dissimilar classes of compounds is often altered in a similar fashion by a given experimental variable. For example, variations in the drug dose, the response requirement to obtain doses, or the scheduled consequences of drug use versus drug abstinence behaviors may exert similar effects upon self-administration of opioids, sedatives, stimulants, etc. This across-drug similarity in the nature of the controlling variables has served as a basis for arguing for a general construct of substance abuse. These data can also be used to argue that drug abuse can best be understood and influenced by viewing it as an instance of an even more general construct -- that of operantly reinforced behavior in which the drug functions as the reinforcer, the maintaining consequence which sustains the behavior. The utility of this conceptualization is that it ties drug abuse to an extensive reservoir of scientific knowledge concerning factors which influence behavior, and it provides guidance to the researcher or the practitioner concerning the classes of variables to which one might profitably attend in an effort to modify drug abuse behavior.

#### Implications

This behavioral conceptualization has implications both for our specification of therapeutic target behaviors which we wish to change and for our search for a domain of controlling variables which we can work with or influence in order to produce these desired changes.

It is important to recognize that the central and common objective defining element of all the substance abuse disorders is the behavior of substance self-administration. Thus, the central goal of drug abuse treatment should be the reduction of drug self-administration. To the extent that the therapeutic focus is upon the many other collateral problems which are commonly observed in drug abuse clients, one is not treating drug abuse, but rather those other problems. It is quite possible that therapeutic efforts which impact upon these other areas will result in changes in drug use also. The point being made here is that if one wishes to evaluate the efficacy of drug abuse treatment, one must assess drug use outcomes and not rely upon assessment of hypothesized intermediary processes.

In essence this behavioral conceptualization holds that drugs of abuse exert actions which are intrinsically biologically reinforcing to organisms. According to this view drug self-administration behavior is a biologically normal and orderly process similar (in a scientific sense) to many 'other varieties of operant behavior. To the extent that pharmacological reinforcement by drug actions is a potent explanatory mechanism for understanding the development and maintenance of drug self-administration behavior, then one need not hypothesize the existence of unique individual or environmental circumstances as necessary for inducing and maintaining drug abuse. Once the behavior of drug self-administration is established, the drug itself can function as an adequate reinforcer to sustain continued self-administration. If one views drug self-administration as being reinforced and sustained by normal behavioral/biological processes, then it may be appropriate to ask what characteristics of the non-drug-abuser's history/environment have protected against the development of abuse rather than to search for factors which have produced it in the abuser.

In terms of what this behavioral conceptualization tells us about the classes of variables which we might expect to be effective in modifying drug self-administration, several possibilities are suggested. First, treatment might focus upon modifying the antecedent circumstances -- i.e., the conditions of drug availability. In general, this domain of influence is more characteristic of the law enforcement/legal regulation approach to drug abuse control. Certainly, ease of access to drugs of abuse would appear to be one very important element influencing the prevalence of drug abuse problems. Typically, this is not a set of variables over which a therapist is likely to exert significant control. However, residential treatment programs which remove the patient from environmental circumstances of drug availability are utilizing this approach, and the observation that drug abuse is reduced by changing the location of a drug abuser's residence in the community (Maddux and Desmond 1982) is certainly supportive of the importance of this class of variables.

Second, treatment could attempt to alter the pharmacological reinforcing consequences of drugs of abuse. This is the approach attempted when one uses pharmacological interventions to block or alter the drug effect (e.g., narcotic antagonist treatment of opioid abuse, or disulfiram treatment of alcohol abuse). This general approach is also attempted, though with much less success, when one uses behavioral conditioning procedures to establish conditioned responses to drug administration which reduce the drug's reinforcing efficacy.

Third, treatment might focus upon the nonpharmacological consequences of drug self-administration or drug abstinence in an effort to influence the future probability of those behaviors. This is an approach which shows considerable efficacy in research studies and considerable promise for therapeutic application.

Finally, since the behavioral conceptualization of drug abuse views drug self-administration as just one element in an individual's overall behavioral repertoire which is occurring excessively, it may be useful to examine the total behavior of the individual and to attempt to reduce this undesirable behavior in a competitive fashion by intervening to promote or develop other more desirable behaviors. This is the approach which is taken when drug abuse treatment attempts to promote education, employment, social functioning, etc., or otherwise to correct skill deficits or increase desirable prosocial behaviors.

#### TREATMENT GOALS

There are two points to be made concerning the goals of applying this operant behavioral approach to problems of drug abuse -- one has to do with the selection of specific target behaviors for modification, and the second has to do with the procedural element of positive reinforcement which is characteristic of this approach.

#### Target Behaviors

The above discussion, which emphasizes the view that drug abuse is a problem consisting objectively of excessive and/or inappropriate drug self-administration behavior, would certainly suggest that the goal of drug abuse treatment is to modify that behavior. This is certainly the case; but therapeutic goals are often not limited only to this domain. In clinical drug abuse treatment settings one encounters problems considerably in excess of drug self-administration. Drug abuse is a disorder with which a very wide variety of collateral behavioral problems are commonly associated -- such problems as poor education/employment skills, impaired social/marital behavior, criminal activity, psychiatric disturbance, etc. In emphasizing the importance of drug-taking behavior as the critical aspect of drug abuse we do not wish to minimize the importance of addressing these collateral problems when treating drug abuse patients.

We do, however, wish to make a very clear distinction between treatment of drug abuse and treatment of the drug abuser. We would argue that in the treatment of drug abuse the critical outcome variable is drug self-administration behavior. Both on a diagnostic and on an outcome assessment basis we feel it is crucially important to gain some measure of this behavior (usually indirectly via biological sample analysis -- e.g., urinalysis). On the other hand, drug abuser patients may present with a variety of collateral problems other than drug abuse itself which are themselves warranting of treatment. We would emphasize, however, that treatment of these other problems, while desirable, does not in itself constitute treatment of the drug abuse problem unless drug-taking behavior itself is changed. Still, one's goal in drug abuse clinics is to treat the drug abusing individual, not only to treat the drug abuse disorder itself. Thus, depending upon the characteristics of individual patients, it may be

appropriate to focus therapeutic attention upon any among a diverse array of target behaviors -- of which drug abuse itself is just one.

It should be noted that the functional basis for the relationship between drug abuse and collateral disorders is not understood at this time. There is, of course, considerable speculation that there is a contributing or even causal relationship between these different problems. However, interestingly, there is not agreement upon the direction of this influence. Some individuals argue that it is fruitless to attempt to treat the drug abuse problem without first (or concurrently) correcting collateral disruptive lifestyle problems -- thus implying that the drug abuse is at least in part caused by these collateral problems. At other times it is argued that it is fruitless to attempt to treat the collateral disruptive lifestyle problems of drug abusers without first achieving drug abstinence -- thus implying that the collateral problems are at least in part caused by the drug abuse. Of course, there may be truth to both positions. At the present time, however, we are simply able to note the correlation between drug abuse and other problems and to suggest that treatment programs must be prepared to address a range of therapeutic problems among drug abuse patients, including but not limited to drug abuse itself. Ultimately the therapeutic goals of drug abuse treatment will be to produce improvements in as many problem areas as possible for individual patients.

One advantage of the operant view of drug abuse is that this places the disorder within a broader behavior analytic and therapeutic framework which has generality beyond drug abuse per se, and which is applicable to understanding and treating the diverse array of disorders with which patients may present. That is, operant behavioral approaches can provide treatment programs with both a conceptual basis for understanding and a practical procedural basis for influencing a wide range of target behaviors which are of concern in the drug abuse clinic and among drug abusing patients. Thus, this is an approach which is fully compatible with the practical clinical necessity of individualizing the selection of specific treatment goals to be pursued with individual patients.

#### Positive Reinforcement

Positive reinforcement, in its technical definition, is the presentation of some consequence to a behavior which increases the probability of recurrence of that behavior; in informal, nontechnical language it is a reward procedure. An emphasis upon positive reinforcement procedures is characteristic of operant behavioral approaches: This is an emphasis which, in general, distinguishes the operant behavioral approach from other therapeutic modalities. It is one of the therapeutic goals of the operant approach to develop and implement positively reinforcing procedures for encouraging and promoting desired behavior change.

The implementation of positive reinforcement procedures can have a desirable effect upon the therapeutic and social atmosphere of a treatment program. It is unfortunately often the case that in drug abuse clinics the nature of the relationship between patients and the clinic can be a rather coercive and aversive one. Clinics often establish rules regarding standards of behavior and therapeutic progress which are difficult for patients to satisfy, and a pattern can develop in which some patients become characterized as chronic "failures" who are repeatedly berated, threatened with treatment discharge, and perhaps ultimately ejected from treatment for noncooperation or obstreperousness. On the other hand, the clinic (especially, for example, a methadone clinic) controls and dispenses a commodity (i.e., methadone) which is of considerable importance and desirability to patients; consequently, a pattern can develop in which some patients engage in various forms of manipulateness and deception in order to alter their methadone dose or schedule or to preserve their treatment program enrollment.

The use of positive reinforcement techniques can reduce the threats and manipulateness which can occur between staff and patients, and can provide a context within which patients can succeed in achieving goals and be positively reinforced for that achievement rather than facing threats and punishments for failure to make the desired therapeutic progress. Explicit description of the behavioral contingencies can be a positive contribution to clinic operation; it can serve to reduce much of the manipulateness, emotionality, and apparent arbitrariness which are so often involved in clinic management. At the same time that staff are freed from these distracting concerns, the contingency management procedure itself can be exerting a direct therapeutic effect in promoting the desired behavioral changes.

One important practical element involved in the design of contingency management procedures utilizing positive reinforcement procedures is the task of identifying and gaining control over appropriate positive reinforcers. An ideal procedure is one in which the therapist is able to gain control over some effective reinforcer which already exists within the patient's lifestyle and to arrange for that existing reinforcer to be made available on a contingent basis. In essence, this procedure of taking advantage of preexisting (i.e., so-called "natural") reinforcers allows one to implement positive reinforcement procedures without the costly requirement of having to produce additional resources to support the reinforcement procedure. Much of the discussion which follows will involve application of this cost-effective positive reinforcement procedure.

#### INTERVENTION SETTINGS

In this section we will discuss two drug abuse treatment intervention settings which we feel are especially appropriate for implementation of behavioral contingency management procedures. These are: (1) residential treatment facilities, and (2) methadone treatment programs. In both cases we feel that these are

appropriate for contingency management applications because they represent settings in which significant positive reinforcers are routinely dispensed to patients. Thus, they provide a convenient opportunity to interpose a contingent relationship to insure that these resources are dispensed in a way which promotes therapeutically desirable behavior.

### Residential Facilities

In residential treatment facilities the treatment program can exert control over a very substantial proportion of the reinforcers available to individuals within that environment. In such settings patients are dependent upon the treatment program for much of their personal support. Such potential reinforcers as social access, recreational access, quality of the living environment, dietary quality, extra program activities, therapeutic activities, personal autonomy, etc., are potentially available for incorporation in therapeutic contingent reinforcement arrangements. Such settings should provide a fertile ground for the development and implementation of positively reinforcing contingency management procedures for promotion of therapeutic improvements.

However, this potential has yet to be realized. Elsewhere we have recently reviewed the limited work which has been reported concerning contingency management procedures within residential treatment facilities (Stitzer et al. 1983). In general, reports to date have utilized contingency management procedures only to encourage the simplest forms of program rule compliance and personal hygiene activity among patients. It appears that, from a behavioral management point of view, the therapeutic possibilities of residential contexts have been dramatically underutilized. Ideally, one would like to see designed into such facilities a graded progression of contingent access to an increasingly large array of reinforcers consequent upon desired therapeutic progress. While this apparently has not yet been done by behaviorally oriented therapists, it should be noted that on a descriptive level one can suggest that similar procedures are being used in therapeutic communities of the Synanon type. Apparently in these programs patients enter the facility at the lowest functional status, with the lowest level of privileges, and then are permitted progressively to rise in the hierarchy of the program and in their level of privileges contingent upon their progressive development of improved social skills and verbal behavior relative to drug use and their development of occupational skills and performances. From such a behavior analysis perspective it can appear that such therapeutic communities are designed according to sound behavioral principles. However, until behavioral principles are utilized prospectively in the design of a therapeutic residential facility, our belief in the value of these reinforcement procedures in such settings must remain speculative.

### Methadone Treatment Programs

Methadone maintenance treatment programs represent a context in

which the utility of behavioral contingency management procedures has been clearly demonstrated. In fact, methadone treatment programs would appear to be an ideal context within which to conduct therapeutic contingency management interventions. The clinic provides a population of volunteer outpatient chronic drug abusers who, upon enrolling at the treatment clinic, have agreed to report to the clinic daily to receive under nursing observation a potent pharmacological reinforcer. This arrangement provides a structured basis for routine, frequent, convenient contact with drug abusers who are freely residing in the community (presumably continuing to be exposed to the high-risk situations of illicit drug availability), and it provides a basis for establishing behavioral contingencies so as to promote therapeutically desirable behavior change as a precondition for continued dispensing of reinforcers. We would argue that treatment programs should take greater therapeutic advantage of the positive reinforcing characteristics of methadone treatment so as to encourage desirable behavior change among patients. In the present section we will describe procedural development studies illustrating how this can be done.

Methadone treatment is a reinforcing (-i.e., desirable) treatment modality. This is documented by the patient acceptability or popularity of this modality; it is one of the few substance abuse treatment approaches for which it is possible to maintain a waiting list for patient admission. But there are reinforcers involved other than simple treatment admission. Inherent in the operation of a methadone clinic there are a variety of reinforcers available which could be used in therapeutic contingency management interventions. Some of the parameters which might be contingently manipulated so as to vary the reinforcing value of methadone treatment are listed in table 1.

TABLE 1: *Variations in Methadone Treatment Procedures with Potential for Use in Contingency Management Treatment Procedures*

Methadone take-home privileges  
Daily clinic attendance frequency  
Time of day of authorized clinic attendance  
Clinic-controlled dose changes  
Patient dose self-control  
Extent of counseling or other adjunct services  
Adjunct prescription medication  
Clinic fee requirements  
Lottery tickets  
Vacation arrangements

The items listed in the table are derived from a casual "armchair" analysis of the functioning of methadone treatment clinics. Two studies have conducted questionnaire surveys of methadone patients in an effort to identify factors which might serve as reinforcers in contingency management procedures (Yen 1974; Stitzer and

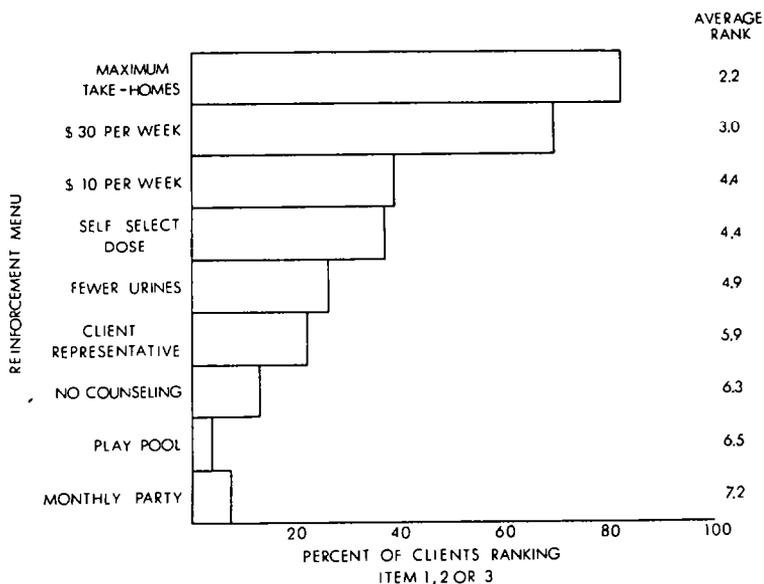


FIGURE 1. Methadone maintenance patients (N=53) ranked the desirability of various potential reinforcers (1 = most desirable). For each item the average rank is shown, as well as the percent of patients ranking it among the three most desirable alternatives. Reprinted from Stitzer and Bigelow (19781, p. 471, by courtesy of Marcel Dekker, Inc. © 1978, Marcel Dekker, Inc.

Bigelow 1978); both have indicated that the methadone take-home privilege is among the most effective of incentives available within the methadone treatment clinic. Results of the Stitzer and Bigelow (1978) survey study are presented in figure 1.

The initial experimental demonstration of the actual behavioral efficacy of methadone take-home privileges to serve as reinforcers to produce desirable therapeutic changes in the behavior of drug abuse patients was provided by Stitzer et al. (1977). In that study attention was focused upon a subgroup of methadone patients who were chronically failing to attend their weekly counseling sessions for the scheduled duration. Using a within-subject reversal experimental design the study evaluated the efficacy of using methadone take-home privileges to reinforce counseling session attendance. During two contingent reinforcement phases, each of 2-month duration, a weekend medication take-home privilege was available contingent upon attending a counseling session of at least 45-minute duration that week. Results are shown in figure 2. During the baseline and noncontingent phases the average counseling duration per patient-week was approximately

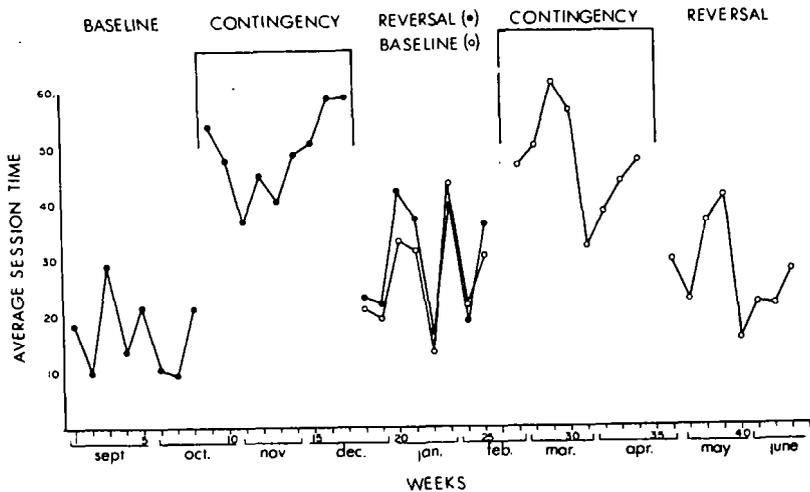


FIGURE 2. The functional efficacy of methadone take-home privileges as reinforcers for improving counseling session attendance was tested in a within-subject reversal design. During the contingency phases a weekend take-home privilege was provided contingent upon at least 45 minutes of counseling attendance. The average minutes of counseling attendance per patient is graphed over successive weeks. Reprinted, with permission, from Stitzer et al. *Addictive Behaviors*, Vol. 2(1), p.11, © 1977, Pergamon Press, Ltd.

in the 15-30 minute range; during the contingent reinforcement phases the average duration was approximately 40-60 minutes. Thus, contingent reinforcement with methadone take-home privileges effectively produced an approximate doubling in the desired target behavior.

In a subsequent clinical study the applicability of contingency management procedures within a methadone maintenance program was extended to include the use of methadone dosage self-control as the contingent reinforcer and the modification of supplemental drug use as the target behavior (Stitzer et al. 1979). Participants were methadone patients who had shown consistent urinalysis evidence of illicit supplemental use of benzodiazepine minor tranquilizers and who, as part of an effort to supplant some of their illicit drug supplementation, had received a clinic prescription making available to them up to two 10-mg diazepam tablets at each daily methadone clinic visit. The contingency management intervention trial focused upon self-administration of this prescribed supplemental diazepam as the target behavior and compared the efficacy of methadone take-home privileges and methadone dosage self-control as contingent reinforcers. A within-subject reversal experimental design was used, and the order of exposure to the two

contingency conditions was counterbalanced across subjects. During the contingent phases subjects could, by refusing the available diazepam for 3-4 consecutive days, gain the privilege of either a one-day methadone take-home privilege or a one-day opportunity to alter the methadone dose by as much as 20 mg above or below the maintenance dose. Results are shown in figure 3. During baseline conditions (i.e., with no contingency) 95.6% of available diazepam doses were self-administered. When diazepam refusal was contingently reinforced, this fell to 11.2% when the reinforcer was a take-home privilege, and to 69.7% when the reinforcer was methadone dose self-control. Thus, both consequences functioned to reduce supplemental diazepam use, but the methadone take-home privilege was far more efficacious than was the dose self-control option.

The studies described here are intended to be illustrative and to demonstrate the scientific background for devising and implementing contingency management interventions in methadone treatment clinics. The studies are admittedly experimental demonstrations rather than therapeutic trials. Our laboratory has, however, continued this line of investigation in the direction of true therapeutic trials. Some of those more recent procedures and data are discussed by Stitzer et al. elsewhere in this volume. The major point to be made here is that solid data now exist documenting the feasibility and effectiveness of implementing behavioral contingency management procedures within methadone maintenance clinics to promote therapeutic behavior change.

#### PRACTICAL PROBLEMS

The above discussion has reviewed both the theoretical/conceptual basis for contingency management approaches to drug abuse and the practical empirical demonstration of the applicability and utility of these approaches. We feel that these discussions clearly document the appropriateness and effectiveness of this behavioral approach to treatment of the variety of problems associated with drug abuse. However, it is appropriate to note here that a variety of practical problems remain which may limit application of contingency management treatments in drug abuse clinics (Bigelow et al. 1981).

#### Patient Diversity

Drug abuse patients are not a homogenous population, and they do not present for treatment with a homogenous array of treatment needs. This diversity is illustrated in figure 4 with data showing the treatment-entry characteristics of methadone maintenance patients enrolling in a behavioral treatment research project reported by Bigelow et al. (1980). Although this was a "narcotics addiction treatment" program, the intake data indicated that only 40% of patients could measurably improve on the available assessment index of narcotics use; This patient diversity argues for the necessity of individualization of treatment regimens for different patients. From a behavior management efficiency point

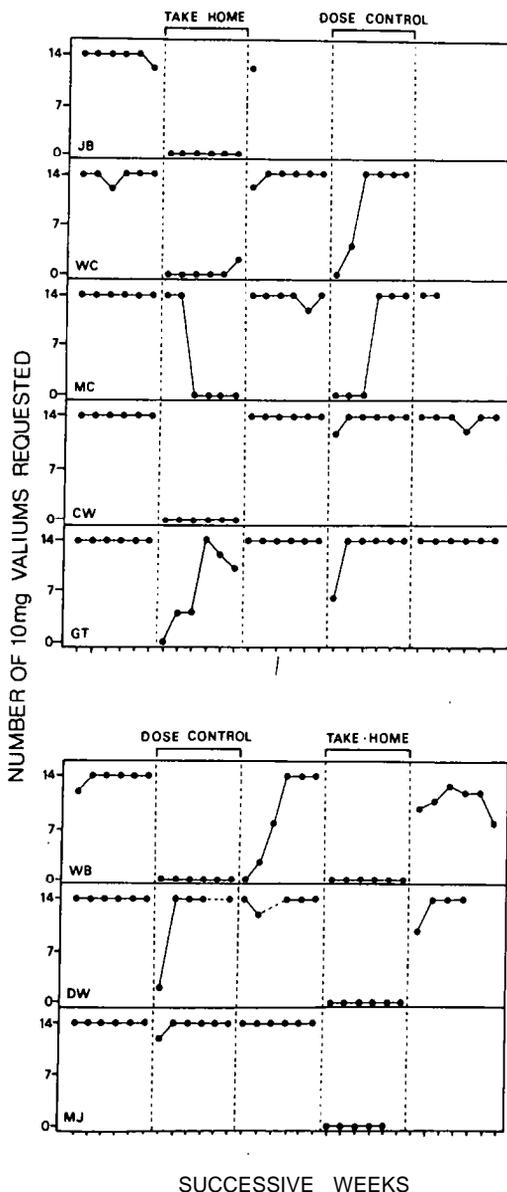


FIGURE 3. Contingent methadone take-home privileges and contingent methadone dose self-control opportunities were compared as potential reinforcers for reducing supplemental drug use. Subjects had available at the clinic two 10-mg diazepam (Valium(R)) tablets daily. During the contingent periods one of the alternative reinforcers was available contingent upon refusal of the available diazepam. Reprinted, with permission, from Stitzer et al. *Addictive Behaviors*, Vol. 4(3), p.249. © 1979, Pergamon Press, Ltd.

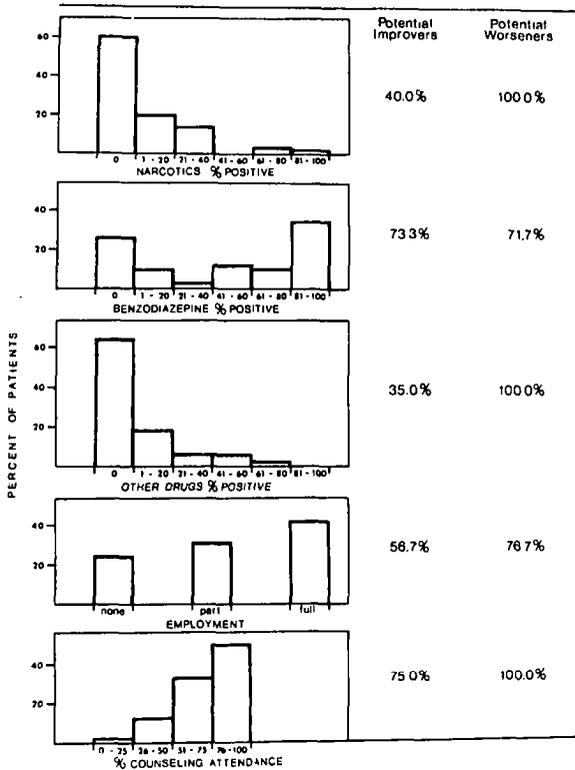


FIGURE 4. Drug abuse patients are a diverse population, who present for treatment displaying widely varying performance levels and therapeutic needs. Shown here is the distribution of clients across levels of illicit drug use (measured- as percent of urine samples positive for various drug classes), legal employment (categorized as none, part-, or full-time), and treatment compliance (measured as percent of counseling sessions attended) at the time of their enrollment in a methadone maintenance treatment program. Numbers at the right indicate the percent of patients whose initial level was such that they could possibly improve or worsen on that measure. Reprinted from Bigelow et al. (1980), p. 434, by courtesy of Marcel Dekker, Inc. © 1990, Marcel Dekker, Inc.

of view it would be attractive if "packaged" contingency management programs could be developed and implemented on a program-wide scale within treatment clinics. However, the data on patient diversity argue against the feasibility or desirability of such an approach. It may, however, prove possible to devise such programmatic approaches for more homogenous subgroups of patients who share similar needs.

## Access to Reinforcers

In the present paper we have discussed two primary settings in which it was felt contingency management approaches might be especially applicable -- residential facilities and methadone treatment programs. These were felt to be promising settings specifically because they would appear to permit the behavior therapist an especially easy opportunity to gain access to and control over reinforcers which might then be utilized in contingency management procedures. In other settings it may be much more difficult to gain control over any relevant reinforcers, and consequently the applicability of these procedures may be limited in such settings.

## Acceptability

At times contingency management approaches can encounter problems of acceptability in the community. In our applications of positive reinforcement procedures we have encountered no problems with patient acceptability; however, this could certainly happen if contingent reinforcement procedures were implemented as a substitute for a preexisting noncontingent free access arrangement. At the societal level it is sometimes felt that it is inappropriate to provide reinforcers to problem patients consequent upon improvements if those same reinforcers are not also provided to patients who never displayed the problem in the first place. A possible consequence of this view is that it may be suggested by some that contingency arrangements take the form of aversive or punishing contingencies for those patients who continue to display problems; certainly difficulties with patient acceptability would arise in such an eventuality. We feel it is essential that contingency management applications emphasize positive reinforcement procedures and that the ability to individualize reinforcer availability be retained. It would certainly be regrettable if the opportunity to promote therapeutic behavior change through positive reinforcement were to be sacrificed to an administrative requirement that reinforcers be dispensed noncontingently.

## Measurement of Drug Abuse

Application of contingency management procedures to the target behavior of drug-taking itself is made difficult by the practical difficulties of detecting and measuring the occurrence of drug use. Clinics must rely upon urinalysis testing as the best available objective index of drug use. In many clinics this testing procedure involves the lapse of a week or more from the time a sample is collected until the analysis results return from an outside laboratory. This long delay may seriously impair the efficacy of contingency procedures which are targeted upon drug use behavior. In our clinic we utilize an on-site urinalysis testing procedure to minimize delays and to maximize the immediacy of contingencies. We would recommend this to other clinics whenever it is possible.

## Reversibility/Relapse

Contingency management procedures are sometimes perceived as having only short-term efficacy and of being uniquely susceptible to the problem of reversibility or relapse. Certainly it is the case that the data from many contingency management studies illustrate this problem -- including the data presented in this paper; when the contingency procedure is discontinued behavior tends to return to its prior level. We would suggest that this reversibility is not a problem unique to contingency management approaches; this is basically the relapse phenomenon, and this is an endemic problem for all varieties of substance abuse treatment. It is probably unrealistic to expect brief, short-term treatment interventions to display long-term behavioral efficacy. It is possible also that the appearance of uniquely rapid reversibility with contingency management procedures is an artifact of their efficacy; procedures which are not efficacious are incapable of appearing reversible. Further research on the relative reversibility or durability of various treatment interventions is clearly required. Until there exist clear data to the contrary, the concern about rapid reversibility of contingency procedures will probably continue to limit their application.

## CONCLUSIONS AND FUTURE DIRECTIONS

Drug abuse can be productively viewed as an example of operant behavior, with drug self-administration being reinforced by the pharmacological effects of the drug. The operant behavior conceptual framework provides a useful basis for understanding and therapeutically influencing not only the drug self-administration aspect of the drug abuse problem, but also many of the collateral behavioral problems which are commonly observed in drug abuse patients. The efficacy of contingency management approaches to problems of drug abuse has been clearly documented in clinical research, and several drug abuse treatment contexts would appear to be especially suitable for contingency management interventions because of the ease with which contingent access to preexisting reinforcers can be arranged. Despite this promise, considerable additional work is required to establish the extent to which these procedures will have widespread application and acceptability.

We would suggest several directions as being desirable for future work. First would be the task of continuing to improve the efficacy of the procedures -- and of pursuing the task of establishing long-term treatment efficacy. Second would be the use of contingency management procedures as aids for assessing the value of other treatments; a valuable treatment evaluation technique might be to assess the extent to which other treatments enhance patients' ability to respond successfully to contingency procedures. A third valuable direction would be the use of contingency management procedures to study the techniques used by patients to accomplish changes in their drug use behavior -- that is, to study what other aspects of the drug abuser's behavioral

repertoire change when drug use is discontinued (e.g., Burling et al. 1982). Fourth, and finally, contingency management procedures would appear to offer strong opportunities for the study of the relapse process.

#### REFERENCES

- Bigelow, G.E.; Stitzer, M.L.; Griffiths, R.R.; and Liebson, I.A. Contingency management approaches to drug self-administration and drug abuse: Efficacy and limitations. Addict Behav, 6: 241-252, 1981.
- Bigelow, G.; Stitzer, M.; Lawrence, C.; Krasnegor, N.; D'Lugoff, B.; and Hawthorne, J. Narcotics addiction treatment: Behavioral methods concurrent with methadone maintenance. Int J Addict, 15(3): 427-437, 1980.
- Burling, T.A.; Stitzer, M.L.; Bigelow, G.E.; and Russ, N.W. Techniques used by smokers during contingency motivated smoking reduction. Addict Behav, 7: 397-401.
- Griffiths, R.R.; Bigelow, G.E.; and Henningfield, J.E. Similarities in animal and human drug-taking behavior. In: Mello, N.K., ed. Advances in Substance Abuse. Greenwich, CT: JAI Press, Inc., 1980. pp. 1-90.
- Maddux, J.F., and Desmond, D.P. Residence relocation inhibits opioid dependence. Arch Gen Psychiatry, 39: 1313-1317, 1982.
- Stitzer, M.; Bigelow, G.; Lawrence, C.; Cohen, J.; D'Lugoff, B.; and Hawthorne, J. Medication take-home as a reinforcer in a methadone maintenance program. Addict Behav, 2: 9-14, 1977.
- Stitzer, M., and Bigelow, G. Contingency management in a methadone maintenance program: Availability of reinforcers. Int J Addict, 13(5): 737-746, 1978.
- Stitzer, M.L.; Bigelow, G.E.; and Liebson, I. Reducing benzodiazepine self-administration. with contingent reinforcement. Addict Behav, 4: 245-252, 1979.
- Stitzer, M.L., and Bigelow, G.E. Behavioral approaches to drug abuse. In: Hersen, M., Eisler, R.M., and Miller, P.M., eds. Progress in Behavior Modification. New York: Academic Press, 1983. pp. 49-124.
- Yen, S. Availability of activity reinforcers in a drug abuse clinic: A preliminary report. Psychol Rep, 34: 1021-1022, 1974.

#### ACKNOWLEDGEMENT

Supported in part by USPHS research grants DA-01022, DA-01472, DA-01943, and by Research Scientist Development Award DA-00050 from the National Institute on Drug Abuse.

# Behavioral Treatment of Drug Dependence

Roy W. Pickens, Ph.D., and Travis Thompson, Ph.D.

There are many different Interpretations of the problem of drug dependence. Some believe it is a medical disease, while others believe it is a behavioral problem. Some consider it to have genetic origins; others consider it to be primarily environmentally determined. Some examine it within a cultural context, others consider it to be an individual adjustment reaction. Some view it as a personality disorder, while others view it as a psychosocial problem. It is probably true that there is no single correct interpretation of drug dependence. To some extent all are correct, for, like the blind men examining the elephant, each reflects how reputable individuals working in various disciplines view different aspects of the same basic problem.

This is not to say that the interpretation given to the nature of drug dependence is unimportant. While the treatment of drug dependence may be unrelated to its causes, a clinician's view of the problem will affect his or her approach to treating it. The clinician who views drug dependence as primarily a personality disorder will probably take a different approach to treatment than will a clinician who views it as primarily a medical problem. The validity of an interpretation of drug dependence is also in part reflected by the effectiveness of treatment approaches suggested by that interpretation.

The present paper examines treatment of drug dependence from a behavioral perspective. Behavioral pharmacologists view drug dependence as learned behavior (Thompson and Pickens 1969; Pickens et al. 1978). According to this interpretation, repetitive and persistent drug-taking behavior is established and maintained by the consequences of that behavior. The consequences would include the drug effect on the individual as well as any change the drug produces in the individual's interaction with the environment. Within this context, drugs (and events surrounding drug use) are viewed as

reinforcers, that is, events that follow behavior and as consequences make the behavior more likely to recur. Behavioral theorists and practitioners typically make no attempt to explain reductionistically why drugs and related events function as reinforcers, only that they do. Thus, the behavioral approach attempts to relate drug self-administration to observable events rather than to hypothetical constructs or other unobservable events (Thompson 1981).

Viewing drugs as reinforcers and drug dependence as a form of learned behavior has been very useful. It has allowed factors controlling drug use to be studied experimentally in both humans and animals, and has also led to development of new techniques for screening new drugs for dependence potential prior to their marketing (cf. Thompson and Unna 1977). Equally importantly, however, the approach has suggested new methods for treating drug dependence (Thompson et al. 1973). The methods are based on behavioral principles and are directed towards reducing drug-taking and increasing alternative behavior. Clinically they are applied as behavior therapy or behavior modification treatment approaches.

There is an extensive literature describing behavior therapy techniques to treat individuals with drug dependency problems. These reports describe highly specific reinforcement and punishment procedures to modify the behavior of individual clients. Relatively few treatment programs have been based entirely on behavioral treatment approaches. For the past several years we have operated such a program for the treatment of drug dependence on a psychiatry ward in the University of Minnesota Hospital. The program was developed in part to support research activities in the area of human studies of drug dependence (Pickens et al. 1977; Healey and Pickens 1983).

It is the purpose of this paper to describe the ward's behavior therapy program in detail and to explain how behavioral principles are applied in the treatment of drug dependence. The reader is cautioned that no comparative experimental test of the effectiveness of the program has been made. Except in certain cases, limited resources have prevented followup of the patients treated on the ward. Thus, the procedures described here should be viewed as having possible clinical effectiveness, until their actual worth has been determined by controlled experimental testing.

#### GENERAL WARD PROGRAM

Our program is patterned after that originally described by Ayllon and Azrin (1965) for use in treating chronically hospitalized psychiatric patients, but modified by us to treat acute psychiatric patients (Pickens et al. 1979) and later to treat drug-dependent patients (Pickens 1979). The program has two parts. One part utilizes a ward-wide point-economy system to encourage desired behavior and to discourage maladaptive behavior, while the second part is an individualized treatment plan designed to meet the specific treatment problem of each individual client.

In the ward-wide program, points are used as the medium for behavioral change. Throughout the 24-hr day, points are given to patients contingent on desired behavior and taken away contingent on maladaptive behavior. Point transactions are administered by all staff who normally work on the ward, including psychiatric nurses, occupational therapists, alcoholism and drug abuse counselors, and psychologists. All point transactions are recorded in a small booklet that each patient is issued daily.

Points are given to patients contingent on three classes of desired behavior: participating in activities considered to be therapeutically helpful to patients, participating in social activities, and grooming and personal care. Participating in therapeutic activities includes attending various classes that are offered on the ward several times each week. The classes are designed to help the patients in rational thinking about themselves, assertiveness, and problem solving, and to improve interpersonal skills and communication. Not only are points earned for attending such activities, but extra points may be earned for being on time and for the quality of participation in the activity. The points are given to patients individually at the end of each activity. At this time a staff person marks the points earned in the patients' point booklet and briefly describes how the quality of participation earned them extra points, or how they might improve their participation in the class to earn extra points in the future.

Other therapeutic activities that may earn points on the ward include work on the patient's individualized treatment plan. This plan is devised during the patient's first week of hospitalization. It includes a detailed description of problem behaviors to be changed, the desired behavior, the approach to be taken in changing the behavior, and how the behavioral change is to be "consequated," that is, what the prescribed consequences of the behavior will be. The plan is developed with the patient's cooperation, and is signed by both the patient and the primary staff person. It is considered a document of agreement between the patient and the staff, indicating goals and methods for behavioral change during the patient's stay on the ward.

Points are also given to patients for attendance and for degree of participation in other ward activities, such as planned outings to shopping centers, movies, or parks, as well as various work chores that must be performed on the ward (e.g., watering plants, preparing meals). Personal care activities that earn points include cleaning room, washing clothes, appropriate dress, and regular showers.

The availability of activities for earning points and the number of points to be earned by each activity are clearly defined in the patient's point booklet. However, points can also be given spontaneously by staff to a patient contingent on especially important therapeutic behavior, such as acting responsibly or being particularly helpful. On such occasions, the staff approaches the patient, tells the patient what they observed and liked about his or her behavior, and awards the special points.

As points are given to patients for healthy behavior, points are also taken away from patients for maladaptive behavior. Maladaptive behavior is defined as any behavior that is not in the patient's long-term best interest, regardless of whether it relates directly to drug use or not. Examples of maladaptive behavior would include verbal abuse, assault, theft, or not working on treatment plan. If a particular behavior has been a major problem for the patient in the past, that behavior is typically included in the patient's treatment plan. Otherwise, it is consequated as it occurs on the ward. The same procedures used in point loss as in point gain. The staff person approaches the patient, tells the patient what was observed and what was inappropriate about the behavior, and then removes points for the behavior in the patient's point booklet.

Points earned by patients are exchangeable on the ward for a variety of goods and services. Points earned during a day are exchangeable for snack food and soft drinks, supplies, cigarettes, or personal care articles. Points not spent on a given day are placed in a savings account, from which the patient may purchase access to visitors, overnight passes, or weekend passes. The major use of points, however, goes towards purchase of the patient's daily privilege or responsibility level on the ward. With a low level of net point earnings, a patient may be able to purchase only the lowest privilege level on the ward—confined to ward. However, with higher levels of net point earnings, the patient may be able to purchase higher and higher privilege levels. At the highest privilege level, patients are able to purchase unlimited and unescorted privileges on the ward. The maximum privilege level obtainable by a patient is set by the staff and typically increases as a patient progresses through treatment.

Thus, the ward's point-economy program can be viewed primarily as a means for getting patients in contact with the therapeutic activities on the ward. Our patients typically attend most classes and participate actively in other ward activities. Though many of our patients are initially very disturbed, there is a low level of IT&-adaptive behavior. While we tend to stress behavioral and cognitive-behavioral approaches in the therapeutic activities available to patients on the unit, the ward program could equally well be used with other treatment approaches.

The program appears to be well liked by both staff and patients. In a study of nursing staff attitudes toward behavior therapy, after working on the ward for one year, the nursing staff said that the behavior therapy approach was less superficial and less mechanistic than did nursing staff working on a more conventional psychiatry unit which emphasized Interpretative Individual and group psychotherapy (Thompson et al. 1980). While some patients may complain initially about the "mickey mouse" nature of the point program, most eventually report liking the program, especially as it provides immediate feedback of progress through treatment. The program seemingly works well with all types of patients. While many of our drug-dependent patients are alcoholics or polydrug abusers from lower socioeconomic levels, patients have also included physicians, psychologists, engineers, and other professionals.

Why points are effective as reinforcers in changing the behavior of drug-dependent individuals is not clear. One reason is obviously that points can be used on the ward to buy goods and services. However, there may be other factors operating in the system as well. One factor may be that the awarding of points requires staff to interact with patients many times throughout the day. Not only does this increase patient-staff interaction, but it makes the staff more effective as social reinforcers and improves their ability to serve as role models for the patients. Another factor may be that points are just inherently reinforcing for many adults. After a long history of exposure to a wide range of generalized conditioned reinforcers, giving almost anything to an adult consistently after behavior may be reinforcing. The inherent reinforcing property of points is suggested by the fact that most patients earn considerably more points than they can ever spend on the ward, and leave the program with a large point surplus.

As an example of the type of treatment plan employed on the ward, figure 1 shows a representative treatment plan for one patient who was a chronic alcoholic. In addition to participating in chemical dependency counseling and attending AA meetings, the patient was required to spend increasingly longer intervals of time off the ward. Upon returning to the ward, however, the patient was given a breathalyzer test to determine if recent drinking had occurred. If drinking had not occurred, the patient's privilege level was extended and the patient was given an even longer pass for the next day. If drinking had occurred, the patient was to be incarcerated, as a condition of a court order. The purpose of this plan was to give the necessary counseling for alcoholism on the ward and then to require the patient to practice drug-free living outside the ward.

A representative treatment plan for a middle-aged housewife with a sedative abuse problem is presented in figure 2. Since the patient lived in a small rural town, her drug abuse problem could be easily controlled by the cooperation of her physician who agreed to no longer issue her prescriptions for sedative drugs. The treatment plan consisted primarily of getting the patient more involved in activities outside the home and in reducing her dependency upon her spouse for mediating other reinforcers.

#### CONTINGENCY CONTRACTING

The contingency contract is a behavioral device used extensively on the ward. The contract is a formalized agreement between a staff person and the patient that specifies the manner in which learning principles are to be applied to the modification of the patient's behavior. Usually the agreement is in the form of a written contract that both parties sign. The contract details the specific behaviors to be changed, how such behaviors are to be monitored, and the contingencies to be placed on the behaviors. Contingencies are arranged to reinforce behavior that is to be increased, or to punish or extinguish behavior that is to be eliminated. Details on writing contingency contracts can be found in a number of sources,

Name:		Treatment Plan Effective:		
Primary Team:				
Problem #	Presenting Behavior	Desired Behavior	Approach	Reinforcement
1	Chronic alcoholism	Abstinence from alcohol use	a) C.D. counseling with Allison b) Ward C.D. group c) Attend AA meetings (Tuesdays) April 11 - escorted with Allison April 18 - unescorted April 25 - unescorted d) Increasing time off unit without alcohol or drug use  <u>Schedule:</u> 4/7 to 4/12: confined to unit 4/12 to 4/21: escorted with staff After 4/21: unescorted (once/day) ½ hour (4/21 - 4/25) 1 hour (4/25 - 5/2) Open (After 5/2)  <u>Requirements:</u> On ward: do ward jobs stay out of bed (8 am to 9 pm) attend 80% of classes Off ward: tell staff where going sign contract and sign out return home on time, sign in take breathalyzer test	a) Negotiate with Allison b) General ward program c) 50 points  d) if meets requirements patient earns privileges for next day. If breathalyzer test is positive (>.01), then violation of parole. Court sends patient to St. Peter or Stillwater.

FIGURE 1. Example of a treatment plan used with a chronic alcoholic

Name:

Treatment Plan Effective:

Primary Team:

Problem #	Presenting Behavior	Desired Behavior	Approach	Reinforcement
1	Staying at home, few outside activities	Plan activities either alone or with others outside of hospital or home	<ul style="list-style-type: none"> <li>a) Make weekly schedule listing at least 3 outside activities by 9/25</li> <li>b) Unescorted two or more hours a day, away from ward</li> </ul>	<ul style="list-style-type: none"> <li>a) 25 points</li> <li>b) 75 points on completion. Loss of 50 points if doesn't leave before 8 pm</li> </ul>
2	No expressed joy in life. Not identifying personal needs.		Make a self-growth list by 9/25. (Follow-up on subsequent treatment plan.)	25 points
3	Overweight	Goal weight of 150 pounds	<ul style="list-style-type: none"> <li>a) Daily weight in the AM before breakfast in pajamas.</li> <li>b) Issue calorie counting guide, discuss dieting with patient.</li> <li>c) Ride exercycle twice a day at minimum of 15 mph.</li> </ul>	<ul style="list-style-type: none"> <li>a) Weight loss: 20 points per ¼ pound. Weight gain: Loss of 10 points per ¼ pound.</li> <li>b) 10 points per 5 min riding time</li> </ul>
4	Overly dependent on others (husband).	Learn to drive car.	Get driver's permit by 9/29. (Follow-up on subsequent treatment plan.)	100 points for passing written exam. Loss of 50 points if she fails exam. Must re-take.

FIGURE 2. Example of a treatment plan used with a chronic sedative drug abuser

including DeRisi and Butz (1975), Homme et al. (1966), Williams and Anandam (1973), and Dardig and Heward (1976).

Contingency contracts have had wide application in psychology, education, and the corrections area. One of the first applications of contingency contracts in the treatment of drug dependence was by Boudin (1972). He employed a contingency contract outside of a residential setting in the treatment of a female amphetamine abuser. The contract required the client to deposit \$500 in the form of ten signed \$50 checks in a joint bank account with a therapist. The contract specified that upon each occurrence of amphetamine abuse by the client, the therapist would endorse one of the checks and send it as a contribution to a political organization especially disliked by the client. At the end of the contract period, the money remaining in the bank account was to be returned to the client. After only one application of the contingency, the procedure was effective in eliminating drug use, which did not recur in the 2-year followup period.

Bigelow et al. (1976) also used a contingency contract to maintain disulfiram (Antabuse) ingestion by alcoholics outside of a residential setting. Clients were asked to deposit money or a valued object with the therapist. If the patient failed to return to the clinic or to ingest disulfiram as scheduled, then a portion of the deposit was sent to a charity. The remainder of the deposit was returned to the client at the end of the contract period. During the time of the contract, 80% of the clients reported longer periods of alcohol abstinence than had occurred during the past 3 years, and 70% of all clients renegotiated for a second contract.

Use of contingency contracts in the treatment of drug dependence has also been reported by Miller (1972), Polakow and Doctor (1973), and Hall et al. (1977). Similar contingency contract procedures have been used in treating drug-dependent clients during the time they are Inpatients in the residential ward program and also after hospital discharge when they return to their home environment. In the residential ward setting, behaviors are easily monitored and consequated by the staff. In the home environment, however, behavior is more difficult to monitor, and individuals other than the staff must participate in consequating the patient's behavior.

In the ward program, the patients' individualized treatment plans are actually contingency contracts, as they identify problem behaviors, specify desired behaviors, establish the approach to be used in the behavioral change, state the contingencies to be employed, and are agreed to and signed by both the patient and staff. Treatment plans may be changed repeatedly while a patient is on the ward, with new problem behaviors being added when found and old problem behaviors eliminated when they no longer occur. Point loss or gain offers a relatively easy way for the staff to consequate a patient's behavior. A patient who said she required drugs to get to sleep at night lost points for being in bed at any time during the day, but gained points for exercise during the day and taking a warm bath and listening to relaxation tapes before going to bed in the evening.

In using contingency contracts on the ward, events other than point loss and gain may also be used to consequate patient behavior. A female patient who was unassertive in relationships with her husband was provided with extra pass time during the coming week contingent on each assertive statement by the patient in family discussions.

An "activity deck" can also be used to consequate behavior on a contingency contract. The activity deck is a deck of 20-30 cards, each describing a different activity the patient is expected to carry out, which is shuffled dally and placed face down on a table near the central nursing desk. The deck is typically used with nonpsychotic patients who occasionally report having disturbing Ideas. In such cases a contingency contract is developed in which the patient is instructed to draw a card from the activity deck upon each occurrence of the disturbing Idea and to carry out the activity described. While it would appear that the purpose of the activity deck is merely to distract the patient from continuing with the disturbing thought, the activity deck actually serves two other purposes as well. The procedure teaches patients how to deal with such ideas in the future. Moreover, since each activity in the deck is a moderately onerous task, carrying out the activity is mildly punishing, so a sound behavioral principle is being used to reduce the frequency of the disturbing Ideas.

Point loss or point gain can be equally powerful as contingencies in behavioral contracts, however. Points have been used as a means for obtaining self-detoxification from sedative drugs in drug-dependent patients. Self-detoxification is markedly different from the detoxification procedure employed in most drug treatment programs, where the physician controls all drug administration and determines not only the starting dally drug dosage but the rate at which the patient is withdrawn. Patients were initially allowed to self-administer pentobarbital until dally Intake stabilized and then were allowed to contract (see figure 3) to take one less drug capsule each day until detoxification was completed. Points were earned by patients for reducing drug intake by one capsule per day and lost if they remained at the same dosage level for more than 2 days or took more capsules than on the previous day or detoxified at a rate greater than one capsule per day.

Figure 4 shows the effects of contingency contracting on the drug Intake of all six subjects employed in one study. All were women with confirmed histories of sedative abuse. The mean level of pentobarbital intake during the self-administration part of the study is shown along the left side of the graph. The subjects self-administered from 400-1000 mg of pentobarbital per day, which is typically associated with physiological dependence. Abrupt cessation of drug use at these dally doses is usually associated with moderate to severe withdrawal symptoms. The variability in drug intake from day to day for each subject was relatively small.

At the start of the detoxification phase, phenobarbital was substituted, and the subjects were allowed to contract for the number of

SELF-DETOXIFICATION CONTRACT

I understand the purpose of this procedure is to allow me control over my own rate of drug detoxification from my original addicted state. I have received a schedule to guide me in undergoing detoxification safely and gradually. I will assume all responsibility for regulating my drug intake, and the credit will be all mine for the accomplishments I make. Today I agree to take \_\_\_\_\_ capsules of medication; The number of capsules I took yesterday was \_\_\_\_\_. I understand that If the number of capsules taken today is one less than the number taken yesterday, I will receive \_\_\_\_\_ points at midnight tonight. If the number of capsules taken today is the same as the number of capsules taken yesterday, I will receive no points. In no case, however, can I remain at the same drug level for more than two successive days without losing points. If I take more drug today than I did yesterday, or if I take less drug today than is recommended on the guide sheet, or if I remain at the same drug level for more than two successive days, I will be required to pay \_\_\_\_\_ points for each capsule over or under the recommended number at midnight tonight. In following the guide sheet, I am also entitled to any bonuses that I have earned.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Patient's Signature

\_\_\_\_\_  
Staff's Signature

FIGURE 3. Example of a self-detoxification contingency contract

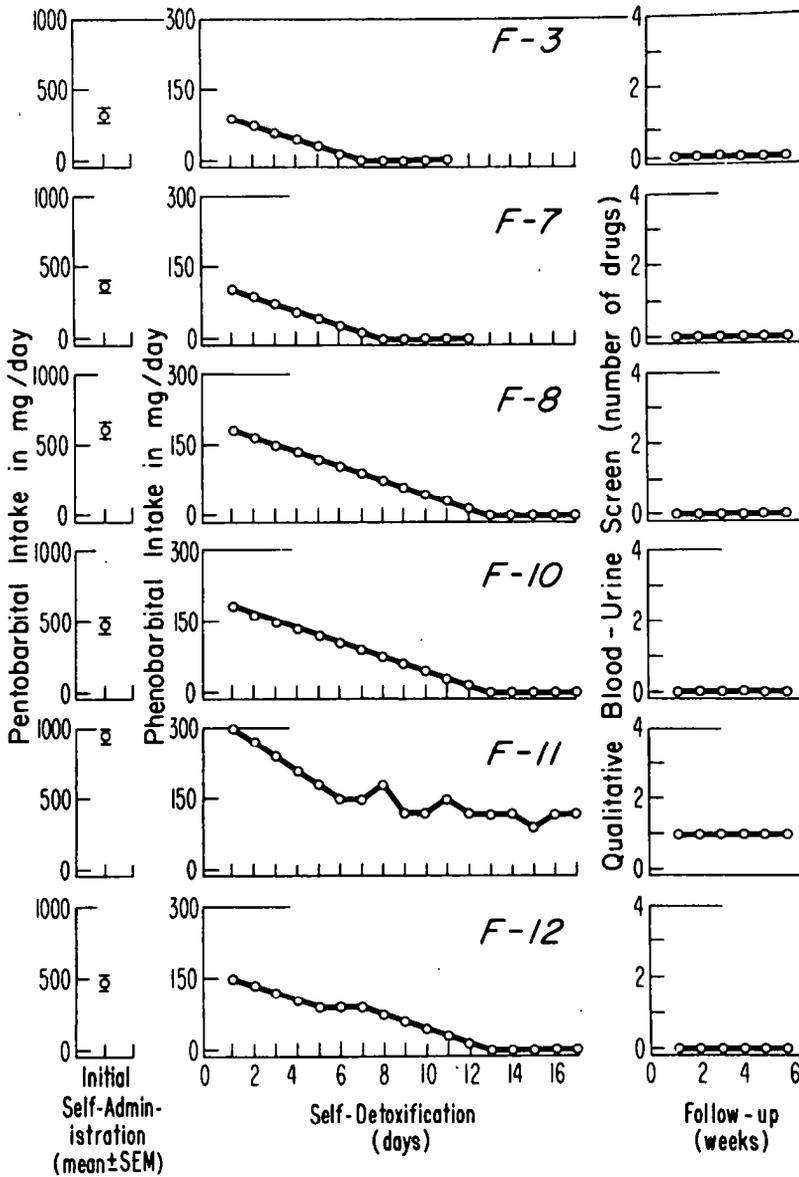


FIGURE 4. Pentobarbital self-detoxification following pentobarbital self-administration

capsules of drug to be taken each day. All subjects showed a reduction in the number of capsules taken each day. Five subjects showed a systematic decrease in capsule intake, eventually reaching and maintaining at least 5 days of abstinence. The sixth subject initially showed a decrease in drug intake but was successful in reducing her intake only to about 40% of self-administration level. Withdrawal of this subject was then completed under medical direction. Followup at 6 weeks after hospital discharge showed no drug use by the patients able to undergo self-detoxification, while drug use was evident in the patient who was unsuccessful at self-detoxification.

When patients self-detoxify with phenobarbital, two distinct patterns of behavior emerge. The patient may show a gradual decrease over time in the number of drug capsules taken throughout the day. The other pattern involves initial decrease in drug capsules taken in the morning, with the capsules taken in the evening remaining relatively unchanged until the final phases of the detoxification process. Data are currently being examined to determine if these two patterns of drug withdrawal reflect the presence or absence of another clinical state, such as depression.

Contingency contracts are also used with patients during the first several weeks after discharge, when they return to their home environment following their hospital stay. The contracts are designed to allow for the implementation of behavioral contingencies in the patient's home environment to reduce the likelihood of a return to drug use. The contracts also make possible a gradual transition between the highly controlled environment of the hospital ward and the less controlled environment of the outside world.

The outpatient contract is similar to the inpatient contract, except that events other than point loss and point gain are used in the contingency. In the case of one patient who was a sedative drug abuser from a small community, a contingency contract was devised before she was discharged from the hospital program to aid her in becoming more involved in community affairs once she had returned home. Working with a counselor in the community's mental health clinic, the patient was to plan at least one activity outside the home each day at the beginning of each week and to mail the schedule of weekly activities to a staff person in the ward program. On the schedule the patient was to include the date and time of each activity, and a telephone number at the site of each activity where she could be contacted. The staff person would randomly call the telephone number listed and verify that the patient was at the activity listed. If the patient attended at least five of seven scheduled activities for the week, she was mailed a check for \$10. If she attended fewer than five activities, she received no money. The patient did not fail to receive a check during the 6 weeks of the contract period, and she became regularly active in a number of community programs as natural reinforcers replaced the monetary rewards involved in the contract.

Other types of contracts have also been used to insure that a patient will remain drug free after treatment. A middle-aged married

woman with sedative dependence required involvement by her husband in managing the contingency. This was done to prevent the husband from sabotaging the patient's efforts to remain drug-free, as he had done on other occasions. Each week for 6 weeks the patient was to return to the ward for have a blood sample analyzed for drug content. If no drug was found, both the patient and her husband benefited by the terms of the contract. The patient was allowed to exercise a personal agreement negotiated with the husband before her hospital discharge, and the husband was given back a portion of a monetary deposit left with the staff 'at the time of the patient's discharge. If drug was found in the patient's blood sample, however, both the patient and her husband lost reinforcers under the terms of the contract. The patient was not allowed to exercise the personal agreement, and the husband had that portion of the money he would have received sent as a contribution to a disliked organization.

While contingency contracts are widely used by the staff in the ward treatment program and by others in other treatment settings, most reports of the clinical effectiveness of contingency contracts' have been in the form of case studies rather than controlled experimental reports. Nevertheless, a small number of scientifically valid studies have been conducted demonstrating the effectiveness of contingency contracts in clinical settings (Stuart and Lott 1972; Winett 1973; Eyberg and Johnson 1974). It is clear that more experimental research should be conducted on the effectiveness of contingency contracts, particularly on the variables in contingency contracting that enhance the effectiveness of this potentially useful procedure in the treatment of drug dependence.

Of the drug-dependent patients treated on our unit at the University of Minnesota Hospitals, all typically have employed contingency contracts as an integral component of inpatient treatment. How the course of their inpatient stay would have progressed had another form of treatment been used is not known, and in most instances, only limited follow-up data are available on durability of the treatment gains. We have learned that approaching treatment design from a broad behavior analytic framework t-as led to emergence of a viable strategy for treating patients who are psychologically and physiologically dependent on alcohol, sedative hypnotics, and other drugs. Viewing the self-administered drug as the nexus of interlocking learned and biological variables has been useful in developing a technology for understanding and arresting the drug dependence process.

#### REFERENCES

- Ayllon, T., and Azrin, N.H. Reinforcement and instruction with mental patients. J Exp Anal Behav, 7:327-331, 1965.
- Bigelow, G.; Strlckler, D.; Liebson, I.; and Griffiths, R. Maintaining disulfiram ingestion among outpatient alcoholics: A security-deposit contingency contracting procedure. Behav Res Ther, 14:378-381, 1976.

Boudin, H.M. Contingency contracting as a therapeutic tool in the reduction of amphetamine use. Behav Ther, 2:604-608, 1972.

Dardig, J.C., and Heward, W.L. Sign Here, a Contracting Book for Children and Their Parents. Kalamazoo: Behaviordelia, Inc., 1976.

DeRisi, W.J., and Butz, G. Writing Behavioral Contracts: A Case Simulation Practice Manual. Champaign, Ill.: Research Press, 1975.

Eyberg, S.M., and Johnson, S.M. Multiple assessment of behavior modification with families: Effects of contingency contracting and order of treated problems. J Consult Clin Psychol, 47 :594-606, 1974.

Hall, S.M.; Cooper, J.L.; Burmaster, S.; and Polk, A. Contingency contracting as a therapeutic tool with methadone maintenance clients: Six single subject studies. Behav Res Ther, 15:438-441, 1977.

Healey, M. L., and Pickens, R. Diazepam dose preference in humans. Pharmacol Blochem Behav, 18:449-456, 1983.

Homme, L. Human motivation and the environment. In N. Haring and R. Whelan, eds., The Learning; Environment: Relationship to Behavior Modification and Implications for Special Education. Lawrence: University of Kansas Press, 1966.

Miller, P.M. The use of behavioral contracting in the treatment of alcoholism: A case report. Behav Ther, 3:593-596, 1972.

Pickens, R. A behavioral program for treatment of drug dependence. In N. Krasnegor, ed. Behavioral Analysis and Treatment of Substance Abuse, NIDA Research Monograph 25, DHEW Pub. No. (ADM) 79-830, Washington, D.C., Supt. of Docs., U.S. Govt. Print. Off., 1979. pp. 44-54.

Pickens, H.; Meisch, R.A.; and Thompson, T. Drug self-administration: An analysis of the reinforcing effects of drugs. In L.L. Iversen; S.D. Iversen; and S.H. Snyder, eds. Handbook of Psychopharmacology Vol. 12. New York: Plenum, 1978.

Pickens, R.; Cunningham, M.R.; Heston, L.L.; Eckert, E.; and Gustafson, L. Dose preference during pentobarbital self-administration by humans. J Pharmacol Exp Ther, 203: 310-318, 1977.

Pickens, R.; Errickson, E.; Thompson, T.; Heston, L.; and Eckert, E. MMPI correlates of performance on a behavior therapy ward. Behav Res Ther, 17: 17-24. 1979.

Polakow, R.L., and Doctor, R.M. Treatment of marijuana and barbiturate dependency by contingency contracting. J Behav Ther Exp Psychiatry, 4: 375-377, 1973.

Stuart, R.B., and Lott, L.A. Behavioral contracting with delinquents: A cautionary note. J Behav Ther Exp Psychiatry, 3: 161-169, 1972.

Thompson, T. Behavioral mechanisms and loci of drug action. In T. Thompson and C.E. Johanson, eds. Behavioral Pharmacology of Human Drug Dependence, NIDA Research Monograph 37. DHHS Pub. No. (ADM) 81-1137. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1981.

Thompson, T., and Pickens, R. Drug self-administration and conditioning. In H. Steinberg, ed. Scientific Basis of Drug Dependence. London: J.A. Churchill, 1969.

Thompson, T., and Unna, K., eds. Predicting Dependence Liability of Stimulant and Depressant Drugs. Baltimore: University Park Press, 1977.

Thompson, T.; Griffiths, R.; and Pickens, R. Behavioral variables influencing drug self-administration by animals: Implications for controlling human drug use. In L. Goldberg and P. Hoffmeister, eds. Psychic Dependence. Berlin: Springer-Verlag, 1973.

Thompson, T.; Labeck, L.; and Zimmermann, R. Nursm staff adjustment as a function of psychiatric treatment modality. J Behav Ther Exp Psychiatry, 11: 200-214, 1980.

Williams, R.L., and Anandam, K.A. Cooperative Classroom Management. Columbus, Ohio: Mart-111, 1973.

Winett, R. Parameters of deposit contracts in modification of smoking. Psychol Rec, 23: 49-60, 1973.

# Contingency Contracting Treatment of Drug-Abusing Physicians, Nurses, and Dentists

Thomas J. Crowley, M.D.

Substance abuse often is characterized by remissions and relapses (Armor et al. 1976; Nurco et al. 1978). Relapse hazards are especially problematic among certain highly responsible professionals, such as physicians, dentists, and nurses. Thus, loss of professional privilege or licensure is a common consequence of drug abuse in these professions.

On the other hand, these drug-abusing professionals know that they have ingested drugs hundreds or thousands of times before without loss of license and that they probably could "get away with just one more" ingestion. Thus, their fear of future loss of licensure may not very effectively induce abstinence today. But if the loss of license could be "rescheduled" to occur with certainty at the very next use of the drug, that predictable, clear punishment might suppress the drug use and permit the initiation of other outpatient treatments while the m-abstinent professional person works and lives at home. Moreover, since the only choices would be "abstain and work, or do not abstain and do not work," the patients of that professional person would be protected, in turn, from the ministrations of an intoxicated doctor or nurse. This is a report of an effort to "reschedule" therapeutically the threatened loss of professional privileges or licensure with a contingency-contracting procedure among 17 drug-abusing physician, nurse, and dentist patients treated in our Halsted Clinic. William Stewart Halsted (1852-1922) was the famous American "Father of Modern Surgery." The Halsted Clinic commemorates his ability to make brilliant contributions despite a severe cocaine dependence (Heuer 1952); the clinic offers outpatient treatment with contingency contracting for drug-dependent health-care professionals.

## PATIENTS AND PROCEDURES

Seventeen consecutive patients were referred for treatment from employers, coworkers, or hospital staff committees (6); from state licensing boards (5); by a friend, family member, or self (4); or by private psychiatrists (2). Hospital boards or licensing authorities had restricted or suspended the professional privileges or licenses of 12 of these 17 patients before their admission to the Halsted Clinic, while three more had been told that such actions would be forthcoming unless they

immediately found effective treatment: for two others licensure was a serious concern but had not yet been threatened directly.

This all-white group of 13 physicians, 3 nurses, and 1 dentist had a mean age of 39 (range 25-65) years, and included 3 women. The primary drug of abuse at admission was cocaine (5 patients), meperidine (Demerol; 4 patients), other opioids (5), mixed and multiple drugs (2), and alcohol (1). The route of administration was intravenous or intramuscular for 9 patients, intranasal cocaine insufflation for 2, cocaine "free-base" smoking for 2, and oral for 4. The mean interval from first clear drug abuse to admission was almost 8 years (95 months; range 5-300). The current episode of abuse had persisted for a mean of 15 months (range 0-95: the zero results from 2 patients who claimed abstinence for several months before admission, saying they were entering treatment only to forestall relapse and to reestablish their professional credibility). Prior to signing contracts, 13 patients reported daily drug use; 2 reported using drugs several times per week, and 2 claimed no use for several months. Five patients obtained their drugs from friends or street sources; self-prescription or diversion of drugs from legal sources supplied 11 patients, and one alcoholic patient obtained his drug in bars and liquor stores.

#### Treatment Procedures

Treatment procedures are specified in the sample treatment contract and also are exemplified in the case history which follows. To protect identities, ages are rounded to nearest decade (e.g., 35-44 is given as 40).

#### Sample Case History

Case 2 (figure 1). A 30-year-old single professional woman had snorted 0.5-3, gm of cocaine almost daily for 3 months, while also using flurazepam, alcohol, and a variety of other drugs. After a car wreck, she began to abstain. Eight days later, fearing the great attractiveness of cocaine, she entered treatment to help assure continued abstinence.

Despite her professional work, her friends were underworld figures. She obtained her cocaine from them, supporting her habit from savings and by dealing in drugs. To help reorganize her chaotic social situation, she requested brief psychiatric hospitalization, but she went to work on pass from the hospital after the first few days. The patient saw loss of her professional license and her job as the probable outcomes of continued use.

Her therapist recommended a contingency contract to use that fear of license loss as a motivator toward abstinence. She wrote a letter to her State licensing board confessing her drug abuse and surrendering her license: the letter was deposited with her therapist. In a written contract she directed the therapist to obtain urine samples and to mail the letter if any sample contained drugs or if she failed to provide a scheduled sample. This made the somewhat remote (albeit eventually probable) consequence of license loss much more immediate and certain, and the patient signed the contract, aiming to force herself to remain abstinent until she could develop a drug-free pattern of life. With the contract as a powerful motivator toward abstinence, the patient then used therapy sessions to dispose of her extensive drug paraphernalia, to list her drug-using contacts and make plans to end those relationships, to list her non-using friends and make plans to renew those contacts, to improve her work performance, and to develop new strategies for problematic relationships with men and with her parents. She remained free of cocaine and other drugs of abuse (except for alcohol and marijuana), repeatedly renewing the initial 3-month contract for a total of 12 months. By that time she felt that the inherent rewards of her drug-free life outweighed the combined benefits and costs of resuming drug use; while she still thought of cocaine, she said, "it just doesn't seem worth the hassle." She has continued in psychotherapy for 19 more months without urinalyses. She has taken no more cocaine, has completed a course of postgraduate training, and no longer associates with underworld figures.

Patients often use these contracts to regain professional privileges from their hospitals or licensing authorities. For that reason, as well as to sustain their own motivation to remain abstinent, patients readily see the need for a nearly fool-proof drug-detection system. Conversely, the contract protects patients against mailing of the surrender letter as a result of laboratory error by requiring duplicate analyses of urine samples reported to contain drugs.

#### Physician's Sample Treatment Contract

This is an agreement between \_\_\_\_\_ (the patient) and Dr. Thomas Crowley the patient maintain a resolve to remain free of drugs of abuse. By this agreement the patient directs Dr. Crowley to establish a schedule for collecting urine specimens from the patient. The patient initially will provide urine samples each Monday, Wednesday, and Friday for one month. For the next one month Dr. Crowley will

prepare a random schedule giving a 67% chance that the patient will be directed to produce a urine sample on any given Monday, Wednesday, or Friday: after the beginning of the third month there will be a 33% chance each Monday, Wednesday and Friday that the patient will be directed to produce a urine sample. The patient will call Dr. Crowley's office or clinic each Monday, Wednesday, and Friday after the first month to determine whether that is a day for delivering a sample. Dr. Crowley or one of his trained employees will observe the urination. Half of each urine sample will be submitted for analysis and half will be saved at Dr. Crowley's office. Samples, identified only by a code number, will be assayed for a variety of drugs of abuse, specifically including \_\_\_\_\_ . If the first half of any sample is reported to contain a drug, the second half of that sample will be submitted for a separate analysis.

The patient has supplied Dr. Crowley with a letter to the State Board of Medical Examiners. This letter notes that the patient had used drugs previously, had entered the present rigorous program of outpatient drug abuse treatment, but that the patient nevertheless has resumed drug abuse: in the letter the patient surrenders his medical license. By this agreement the patient directs Dr. Crowley to mail the letter at any time that both halves of a urine sample are positive for drugs of abuse, or at any time that the patient fails to produce a scheduled urine sample. Each separate analysis requires 1.5 ounces of urine; if the first portion of a sample is positive for drugs, and if the patient has supplied a quantity of urine insufficient for a second analysis, Dr. Crowley is to mail the letter as described above. If the quantity is insufficient for even one analysis, that shall be considered a failure of the patient to provide a scheduled sample, and Dr. Crowley is hereby directed to mail the letter, as described above.

If the patient travels out of town, he will inform Dr. Crowley in advance of leaving, and the urine collection program will be suspended temporarily during that absence. Dr. Crowley is authorized to verify such absences with \_\_\_\_\_. If the patient is sick enough at some time to require hospitalization, Dr. Crowley will arrange to collect urine in the hospital: if the patient is sick and does not require hospitalization, the patient will arrange to produce scheduled urine specimens in the usual place. On certain major holidays Dr.

Crowley's office and clinic are closed. Dr. Crowley and the patient mutually will agree to altered urine schedules on these occasions.

If the patient needs, for appropriate medical reasons, one of the drugs which sometimes are abused, he will obtain that drug on a legal prescription from another physician or dentist who knows of the patient's drug problems. The patient will supply Dr. Crowley with copies of that prescription, and then the appearance of that drug in the urine will not trigger the mailing of the letter. The patient hereby directs Dr. Crowley to communicate by mail or telephone with that prescribing physician or dentist when Dr. Crowley deems that action to be appropriate.

This agreement shall remain in effect for \_\_\_\_\_ months from the date of signing. If for any reason the patient moves away during the treatment period agreed upon here, and if the patient does not arrange for appropriate followup treatment, Dr. Crowley hereby is directed at his discretion to inform the State Board of Medical Examiners that the patient was in treatment with Dr. Crowley for drug abuse but that the patient prematurely withdrew from that treatment: in this situation Dr. Crowley is not to mail the letter which surrenders the patient's license. During the time of this contract the patient and Dr. Crowley will meet for counseling sessions at a frequency which they will determine.

The patient strongly is encouraged to review with attorneys, family members, or other advisors, this agreement, which may be modified before it is signed.

#### Followup Procedures

For all but one patient, more than 1 year elapsed from initiation of contingency-contracting treatment to followup (mean 20 months, range 10.5-38). Eight patients continued to attend the Halsted Clinic at the end of the follow-up time: for 7 of these the followup data derive from regular clinical contacts and frequent urinalyses: for the eighth (Case 2, figure 1), some data were derived during biweekly therapy sessions without urinalyses. Of the 9 patients who no longer were in treatment in the Halsted Clinic, the author, who treated all 17 patients, made followup contacts by telephone with the patients and/or their spouses. Thus, followup data were available for all patients. Obviously, there was more opportunity for underreporting of relapse with simple, post-treatment phone contacts than there would have been during periods of contingency contracting with frequent treatment sessions and urinalyses.

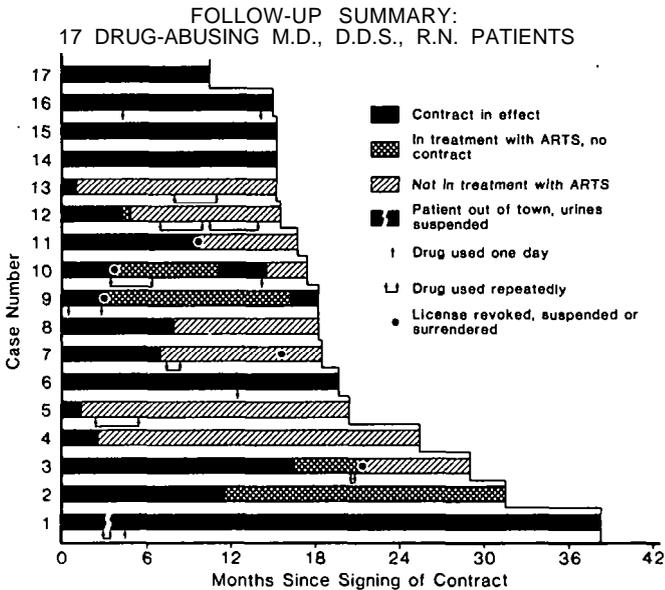
RESULTS

Reduction of Drug Use

During the contract periods, 1004 urine samples were collected from these patients: 8 samples (obtained from 5 patients) were drug positive. Most of these patients had been daily or nearly daily users, and the record of only 0.8 percent positive urines indicates a profound reduction of drug use while contracts were in effect.

Figure 1 shows a time-line for patient outcomes during treatment and followup, while table 1 summarizes outcome categories. As shown in figure 1, 53 percent of patients (Cases 2, 3, 4, 6, 8, 11, 14, 15, 17) remained drug free during the first 12 months after signing a contract, and 7 of these patients (Cases 2, 4, 8, 11, 14, 15, 17) sustained abstinence throughout the followup period.

FIGURE 1



*Followup summary of 17 drug-abusing physicians, dentists, and nurses. ARTS is the Halsted Clinic of the Addiction Research and Treatment Service, University of Colorado School of Medicine.*

Of these seven, six were under a licensure-loss contract for longer than 6 months while one (Case 4) was under a contract for only about 3 months.

Ten subjects used drugs at least once during the treatment or followup periods. Five of these patients (Cases 3, 5, 7, 12, 13) used drugs after, and five (Cases 1, 6, 9, 10, 16) used during, the contract period. In general, relapses appeared to be briefer and outcomes better (figure 1) for those who used drugs while under contract than for those who used after contract termination, whether or not the license was surrendered.

Under the terms of their contracts, two of these patients, Cases 9 and 10, lost their licenses because of drug-positive urines. It can be seen in figure 1, however, that both of these patients subsequently returned to treatment and signed additional contracts. Loss of license need not produce catastrophic consequences; in Case 9 a therapeutically positive outcome ensued. This 50-year-old married male had been self-administering up to 500 mg per day of meperidine intravenously for about 6 months. His hospital had suspended him, and he signed a contingency contract to regain those privileges. But within two weeks his urine again contained meperidine. He immediately entered a residential treatment program. Refraining from practice, he said, was within the spirit of the contract, and he convinced his therapist not to send the license-surrendering letter. The contract was renewed when he returned two months later. But just before restarting his work, he resumed meperidine use, avoiding detection for a few days with a rubber bag-and-tube contraption which allowed him to deliver a false sample even under observation. But then he wrecked his car while intoxicated and pointedly did not produce a required sample. The letter was mailed, and he ceased practicing. With no contract he remained in outpatient treatment (and Alcoholics Anonymous), apparently abstaining, for 13 months. He then regained his license, renewed the contract, and has resumed practice. The facts that the second relapse occurred just before he resumed practice, and that he needlessly delayed reapplication for his license, suggest that license loss may not have been an aversive event for this patient.

Three patients (Cases 1, 6, 16) had drug-positive urines while under contract, but their letters were not mailed because of technicalities in their contracts. For example, after producing drug-free urines for 12 months, one patient (Case 6) gave two successive samples which contained drugs but which were too small for double analysis. The contract in use then required double analyses to mail the license-surrendering letter. The patient then agreed to modify the contract to close this loophole, and remained drug free for an additional seven months. Patient 16 verbally reported two brief relapses; one went undetected in the random urinalysis screens, and the second relapse involved too-rapid self-dosing with a drug obtained for legitimate medical reasons on prescription from another physician. In general, the relapses seen in these three patients while under contract were brief; they did not precipitate sustained drug use or interfere with work performance. Thus, although they did not completely remain

TABLE 1

## OUTCOMES FOR 17 PATIENTS DURING TREATMENT AND FOLLOWUP

Outcome	Percent	Cases*
Totally Abstinent 12 Months After Contract Signed	53	2, 3, 4, 6, 8, 11, 14, 15, 17
Totally Abstinent Throughout Followup	41	2, 4, 8, 11, 14, 15, 17
Drugs Used During Contract	29	
License lost Via Contract	12	9, 10
License Retained Through Contract Technicalities	18	1, 6, 16
Drugs Used After Contract Termination	29	3, 5, 7, 12, 13

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\*Case numbers refer to figure 1.

abstinent, the five patients who relapsed while under contracts may be considered relative treatment successes.

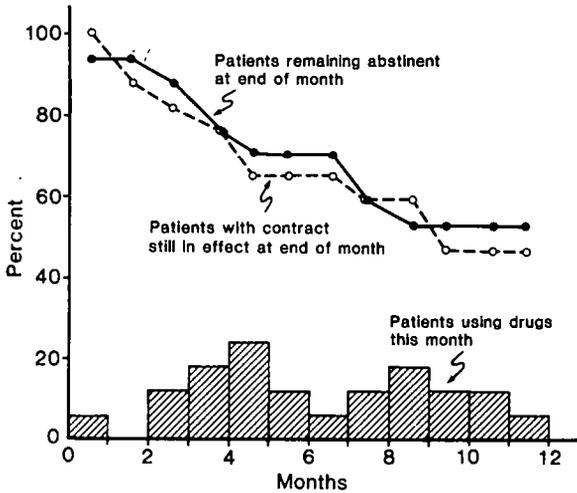
Followup showed that three patients had their licenses revoked or suspended for reasons other than the contract. In one instance (Case 3), this was due to drug use which occurred after termination of the contract; in two other instances (Cases 7 and 11), the revocation was unrelated to drug use.

#### Abstinence On-Contract vs. Off-Contract

Among these patients contract duration ranged from 1 to 38 months (figure 1). Figure 2 shows that about half of those who signed remained in a contingency contract 12 months later. Although the month-by-month decline in percentage of patients remaining abstinent parallels the decline in those still on contract (figure 2), it cannot be concluded that ending the contract necessarily resulted in relapse. Although some patients relapsed shortly after their contracts ended (e.g., Cases 5, 7, 12 in figure 1), others reported no relapse after the contract ended (Case 4, figure 1) and still others continued with a contract despite a brief relapse (Cases 6, 16, figure 1). Considering patients still on contract, together with those now off amtracts, the fifth month after signing was

the peak time (figure 2) for relapses to be occurring, but such relapses actually had a fairly even distribution through the first 12 months.

FIGURE 2

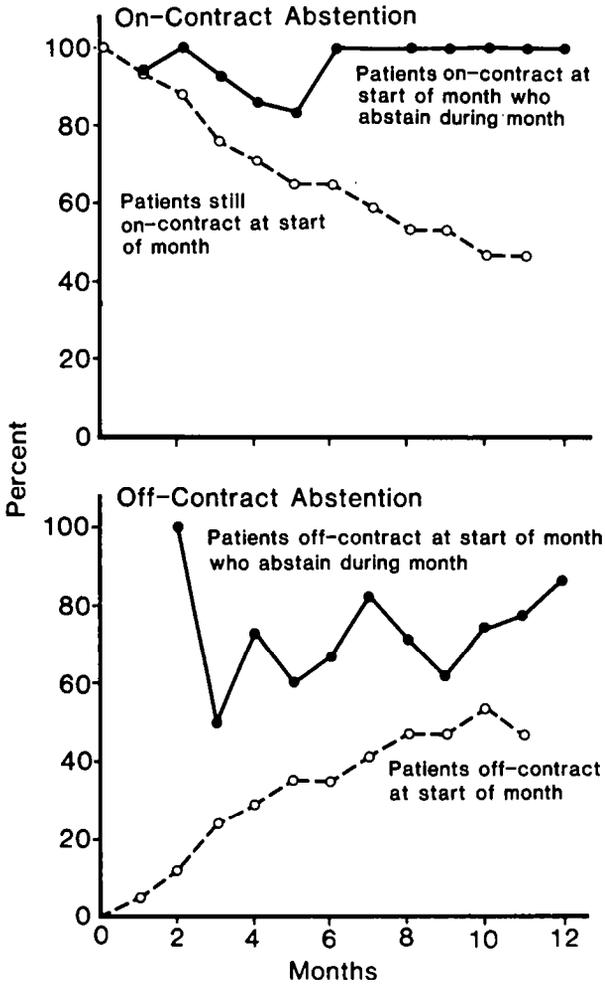


*Abstinence for 17 patients in first year after signing of contract.*

Figure 1 suggests that these patients were more likely to abstain when contracts were in effect than when they were not. Patients abused drugs in 9 of the 187 patient-months when contracts were in effect (4.8 percent), and in 18 of the 147 patient-months when contracts were not in effect (12.2 percent). Moreover, followup calls suggested that relapses without contracts tended to be longer and more continuous than those occurring during contract periods.

Figure 3 also may suggest more abstinence when patients were on contracts. Month-by-month, an average of 96 percent of patients still on contract appeared to abstain; whereas, of those no longer on contract an average of 73 percent reported abstaining each month. Stated differently, in an average month of the year after contract-signing, about 4 percent of those with contracts still in effect used drugs, vs. about 27 percent of those with contracts no longer in effect. However, these estimates may be biased in either direction, considering such factors as a greater motivation to dissimulate during contract periods, or greater ease of concealing relapses during

FIGURE 3



Abstention on- and off-contract. In each panel the dashed line shows the percent of the 17 patients who did, or did not, have contracts in effect. The solid line shows the percent of patients in each condition who abstained each month.

noncontract periods when urine is not examined, or a possible tendency for more strongly motivated patients to bind themselves to longer contracts. It might have been argued further that those patients most prone to drug use quickly would relapse, losing their licenses, terminating their contracts, and loading the off-contract group with poor prognosis patients; however, only two patients lost licenses through the contract mechanism, and one of them (Case 9) apparently remained abstinent thereafter.

## DISCUSSION

Drug-abusing health care professionals require treatment, and their patients must be protected from the consequences of the drug use. Unfortunately, the availability of drugs to these professionals, and their familiarity with drug administration, may pose antecedents of high risk for drug abuse. To protect patients, stern limits have been placed on the practice of drug-abusing professionals; for example, Green et al. (1978) advocate lifetime surrender of a physician's narcotics number, immediate cessation of practice, and a very slow return of responsibility after lengthy evaluation and therapy.

Such Draconian measures, whatever their merit, are not without social cost. A medical or dental practice important to a neighborhood or small community may close abruptly, perhaps never to reopen. A hospital administrator, already critically shortstaffed, may feel obligated to discharge a drug-using nurse. Patients may be under-treated by a non-abstinent physician or dentist who cannot prescribe controlled drugs. And the rehabilitation of the drug-abusing professional may be severely complicated by impaired self-esteem resulting from unemployment or stringent limits on professional practice. Indeed, among one reported group of 40 such probationers, 20 percent committed suicide in one recent year (Crenshaw et al. 1980); the therapist of the present 17 patients assessed a high suicide risk at some point in the treatment of six of them, and one patient did make a serious suicide attempt.

Drug-abusing professionals often are dispatched to remote sanatoria for treatment. But if treatment could proceed with the patients in their own homes, offices, and hospitals, they and their families might better learn every-day decisions and actions to promote continued abstinence. An anesthesiologist who daily must handle fentanyl (Sublimaze), and who was addicted to that drug, may need specific, repeated, on-the-job practice in giving the drug to others and not to himself. And while he does that, his family may need to practice with him new behaviors to support his abstinence and to deal more effectively with future relapses.

Thus, there might be several advantages to treating such drug-abusing professionals as they work in their own offices and hospitals and live at home. But, for the protection of their patients, these professionals must abstain as such treatment proceeds. It is well established that drug-use behavior does change when the reinforcing or punishing contingencies of that behavior change (Cohen et al. 1971a, b; Boudin 1972; Bigelow et al. 1972; Crowley 1972; Miller et al. 1974; Miller 1975; Hall et al. 1977; Stitzer et al. 1979; Havassy et al. 1979).

This paper reports an effort to utilize contingency contracting procedures to secure a period of abstinence among drug-abusing physicians, dentists, and nurses so that they could participate in other abstinence-promoting treatments as they lived and worked at home. Hospital authorities or licensing boards had restricted or suspended the professional privileges or licenses of the majority of these patients before their admission to the Halsted Clinic, and licensure was serious concern to all of the patients. With such a powerful contingency operating naturally among drug-abusing professional patients, they would seem to be excellent candidates for contingency-contracting treatment, but this appears to be the first report of such treatment in this group.

These patients knew, unfortunately, that they could continue' using drugs for some time before final detection, proof, and administrative action could occur. To encourage abstinence, these contracts "rescheduled" the preexisting contingency of license-loss, making it likely to occur very early in a relapse.

#### Advantages and Disadvantages of the Treatment

An immediate effect of the contingency contracts was an abrupt and dramatic reduction in drug use. Additionally, the patients remained at home and at work. The written contract, with its clearly stated contingency for drug use, apparently helped to suppress relapses; drug-free behavior patterns resumed and became prepotent over an extended time, even as the risk that drug use would be detected gradually declined. As that risk fell, the rewards of drug use gradually could be supplanted by the rewards inherent in an abstinent life. Counseling during the contract period aimed at assisting the patient to reestablish behaviors which could regain those reinforcers usually available to nonintoxicated professionals: the contract, an abstinence-securing prerequisite to such counseling, clearly was not by itself the whole treatment. Spouses or other parties in important relationships with the patients often were included in the counseling.

Additional flexibility was gained by renegotiation of contracts upon their termination. Several patients requested random urine testing to support continued abstinence long after termination of the original contract. With relapses appearing to be uncommon after 6 months on a contract (figure 3), Halsted Clinic patients now are encouraged initially to enter 12-month agreements.

This technique offered practical and theoretical advantages, as noted above, and produced results more favorable than those in many recent reports (Johnson and Connally 1981; Dalton and Duncan 1978; Talbott et al. 1977; Green et al. 1976; Murray. 1976). But no reported treatment has eliminated relapse totally. Even with this rigorous treatment a relapsing patient could, prior to urinalysis detection, engage briefly in professional practice while abusing drugs.

#### Privilege to Practice and License LOSS

on first review, these contracts seen only punitive: drug use is punished by loss of license. But 70 percent of these patients had lost their licenses or other privileges to practice before they entered the Halsted Clinic., These patients used the contracts to regain probationary privileges which were unavailable to them immediately before they signed the contract. Thus, for many patients there was an important appetitive, or positively reinforced, aspect to the treatment.

Clearly, however, there also is a punitive, aversive element in the threatened license loss. This raises a serious ethical concern: is the risk of license loss for these patients enhanced or reduced by signing a contract? Conceivably, the risk might be greater because detection of relapses would be more likely with the contract, or the risk might be reduced if relapses were less common while the contracts were in effect. This uncontrolled report cannot finally answer that question, but our preliminary data appear favorable. Twelve patients had lost hospital privileges, licenses, etc., before signing contracts. Later, after all 17 were back at work with contracts, two patients lost licenses through the contract mechanism, and three others lost licenses for other reasons. The contracts apparently resulted in a net gain in licensure and privileges for our patients, while apparently reducing relapses to drug use.

In an interesting contrast, inner-city heroin addicts with no job or family encounter few immediate social rewards for abstinence, and few immediate social punishments for drug use. Most of the patients in the present report used drugs with abandon until very powerful reinforcements or punishments were rigidly scheduled as consequences of, respectively, abstinence or drug use. Street heroin addicts, with very few immediate social consequences differentially attached to abstinence or

drug use, have a notoriously worse prognosis for abstinence during treatment than did patients in the present report.

#### Limitations of this Report

Conclusions from this initial report must be limited due to lack of a control group, some procedural variations among patients' programs, and biases which may arise when the therapist serves as the followup evaluator in a nonblind study. Nevertheless, these preliminary data do suggest that contingency contracting benefitted a number of patients.

#### SUMMARY

Seventeen drug-abusing physicians, dentists, and nurses entered contingency-contracting treatment. They deposited with their therapist letters to their respective licensing boards, confessing renewed drug abuse and surrendering their licenses. Each contract directed the therapist to collect frequent urine samples and to mail the letter if a scheduled sample was not provided, or contained drugs. The followup occurred a mean of 20 months after signing the contracts, which were of varied duration. Drug use dramatically declined for most patients after a contract was signed. Most patients' personal and Professional lives also improved over the followup time. Twelve patients had suspended licenses or professional privileges before signing the contracts. All then worked; two subsequently lost their licenses through the contract mechanism, and three lost their licenses for other reasons. About half of the patients completed a full year with no apparent relapse. Relapses were more common when contracts were not in effect. than when they were.

#### REFERENCES

Armor, D.J.; Polich, J.M.; and Stambul, B.R. Alcoholism and Treatment. Santa Monica: The Rand Corporation, 1976, 216 pp.

Bigelow, G.; Cohen, M.; Liebson, I.; and Faillace, L.A. Abstinence or moderation? Choice by alcoholics. Behav Res Ther, 10:209-214, 1972.

Boudin, H. M. Contingency contracting as a therapeutic tool in the deceleration of amphetamine use. Behav Ther, 3:604-608, 1972.

Cohen, M.; Liebson, I.; Faillace, L.A.; and Speers, W. Alcoholism: controlled drinking and incentives for abstinence. Psychol Rep, 28: 575-580, 1971a.

Cohen, M. ; Liebson, I.A. ; Faillace, L.A.; and Allen, R.P. Moderate drinking by chronic alcoholics. J New Ment Dis, 153: 434-444, 1971b.

Crenshaw, R.; Bruce, J.A.; Eraker, P.L.; Greenbaum, M.; Lindemann, J.E.; and Schmidt, D.E. An epidemic of suicide among physicians on probation. J Amer Med Assn, 243(19): 1915-1917, 1980.

Crowley, T.J. The reinforcers for drug abuse: why people abuse drugs. Compr Psychiat 13: 15-62, 1972.

Dalton, M.S., and Duncan, D.W. Physician heal thyself? Med J Aust, 2(9): 406-407, 1978.

Green, R.C.; Carroll, G.J.; and Buxton, W.D. Drug addiction among physicians: the Virginia experience. J Amer Med Assn, 236: 1372-1375, 1976.

Green, R.C. ; Carroll, G.J.; and Buxton, W.D. The Care and Management of the Sick and Incompetent Physician. Springfield, Ill.: Charles C. Thomas, 1978, 101 pp.

Hall, S.M.; Cooper, J.L.; Burmaster, S.; and Polk, A. Contingency contracting as a therapeutic tool with methadone maintenance clients: Six single subject studies. Behav Res Ther, 15: 438-441, 1977.

Havassy, B.; Hargreaves, W.A.; and DeBarros, L. Self-regulation of dose in methadone maintenance with contingent privileges. Addictive Behaviors, 4: 31-38, 1979.

Heuer, G.W. Dr. Halsted. Bull Johns Hopkins Hosp (Suppl 2), 90: 20-25, 1952.

Johnson, R.P., and Connelly, J.C. Addicted physicians: a closer look. J Amer Med Assn, 245: 253-257, 1981.

Meyer, R.E., and Mirin, S.M. The Heroin Stimulus: Implications for a Theory of Addiction. New York: Plenum, 1979. 254 pp.

Miller, P.M.; Hersen, M.; Eisler, R.M.; and Watts, J.G. Contingent reinforcement of lowered blood-alcohol levels in an outpatient chronic alcoholic. Behav Res Ther, 12: 261-263, 1974.

Miller, P.M. A behavioral intervention program for chronic public drunkenness offenders. Arch Gen Psychiat, 32: 915-918, 1975.

Murray, R.M. Characteristics and prognosis of alcoholic doctors. Brit Med J, 2(6051): 1537-1539, 1976.

Nurco, D.N.; Cisin, I.H.; and Balter, M.D. Types of addict careers. In: (no editor) Problems of Dependence: 1978. Committee on Problems of Drug Dependence, Inc. (no city), 1978.

Stitzer, M.L.; Bigelow, G.E.; and Liebson, I. Reinforcement of drug abstinence: a behavioral approach to drug abuse treatment. In: Krasnegor, N.A., ed. Behavioral Analysis and Treatment of Substance Abuse. National Institute on Drug Abuse Research monograph 25. DHEW Pub. No. (ADM) 79-839. Washington, D.C.: Supt. of Documents, U.S. Gov't. Print. Off., 1979, pp. 68-89.

Talbott, G.D.; Richardson, A.C., and Atkins, E.C. The MAG disabled doctor's program: A two-year review. J Med Assn Georgia, 66: 777-781, 1977.

#### ACKNOWLEDGMENTS

The work was supported in part by Contract C 2972-17 from the Alcohol and Drug Abuse Division of the Colorado Health Department and by Grant DA 02386 from the National Institute on Drug Abuse, USPHS. AM Wislocki and the staff of the Drug Analysis Laboratory, Colorado Department of Health, carefully and thoroughly performed the urine tests. Janice Wagner, R.N., supervised urine collections and recordings.

# Contingency Management of Supplemental Drug Use During Methadone Maintenance Treatment

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Methadone maintenance is a specific pharmacological treatment in which a long-acting orally effective opiate provides a therapeutic substitute for the shorter-acting illicit opiates upon which patients have become dependent. The methadone maintenance regimen frees patients from the necessity of acquiring and using illicit opiate drugs, as has been consistently confirmed by treatment evaluation studies (Bale et al. 1980; Gearing 1974; McGlothlin and Anglin 1981; Newman and Whitehill 1979; Simpson et al. 1979). However, it is also clear from these and other treatment evaluation studies that some supplemental use of illicit opiates continues during methadone maintenance treatment. Furthermore, patients with preexisting histories of illicit use of sedative and tranquilizer drugs as well as histories of excessive alcohol use may continue using these drugs during methadone maintenance treatment, since methadone produces no specific pharmacological attenuation of these drugs' effects. In short, supplemental drug and alcohol use constitutes residual behavioral problems which must be addressed during methadone treatment.

Clinic policies are often designed to influence the behavior of uncooperative patients displaying evidence of continued supplemental drug use. Program privileges such as take-homes are generally available to patients on methadone maintenance who adhere to clinic rules and guidelines, abstain from conspicuous supplemental drug use, and are employed or otherwise socially productive (Baldrige et al. 1974). On the other hand, clinic policies generally impose an escalating sequence of program sanctions, based on evidence of continuing drug use, which includes loss of take-home privileges, probationary status, and ultimately termination from treatment. Such aversive control methods generally have mixed results; some patients terminate their supplemental drug use and others terminate their association with the treatment clinic. Although clinics may differ widely in their tolerance of supplemental drug use among their patients, it is one of the paradoxes of drug abuse treatment that patients are routinely terminated from treatment for exhibiting the behavior

which characterizes the disorder that initially brought them to treatment.

The present paper describes an alternative treatment approach based on contingency management principles of positive reinforcement which has been evaluated for its ability to reduce drug and alcohol use among methadone maintenance patients. The procedures described differ from approaches ordinarily taken at treatment clinics in that privileges and rewards, rather than being available only to patients who are functioning well, are offered to poorly functioning patients contingent upon evidence of improvement. In this way, aversive control methods are minimized as an approach to elimination of behavioral problems.

There are ample precedents for the use of operant behavioral approaches and contingent reinforcement procedures in particular in the treatment of substance abuse disorders. Experimental demonstrations of reinforcement of abstinence have been successful in treatment of alcoholism (Bigelow et al. 1975; Griffiths et al. 1978; Miller 1975; Miller et al. 1974), cigarette smoking (Winett 1973), and drug abuse (Bigelow et al. 1976; Hall et al. 1977; Stitzer et al. 1979a). Furthermore, the outpatient methadone maintenance clinic has characteristics which make it uniquely suitable for implementing behavioral intervention techniques since it provides frequent patient contact, objective measures of recent drug and alcohol use via breath and urinalysis screening, and many potential reinforcers and punishers which can be utilized in contingent arrangements to influence drug use.

The first half of this paper describes a series of studies which focused upon reduction in use of three drugs widely used and abused by methadone maintenance patients: opiates, benzodiazepines, and alcohol. These studies have demonstrated the generality across populations and drugs of the efficacy of behavioral interventions based on positive reinforcement techniques. Consideration will then be given in the second half of the paper to advantages and difficulties associated with the clinical implementation of therapeutic procedures involving contingent reinforcement of reduced supplemental drug use.

#### REDUCTION OF SUPPLEMENTAL OPIATE USE DURING METHADONE MAINTENANCE AND METHADONE DETOXIFICATION

Chronic treatment with methadone provides cross tolerance which functionally reduces the subjective and physiological effects of supplementally ingested opiate drugs (Jones and Prada 1975; McCaul et al. 1983). In spite of this partial pharmacological blockade of the effects of opiate drugs, considerable supplemental opiate use is detected among methadone maintenance patients during routine urinalysis screening. Clinic-wide rates of opiate-positive urine reports during a single screening have ranged from less than 10% (Harford and Kleber 1978; Siassi et al. 1977; Senay et al. 1977) to rates as high as 38% of tests (Baldrige et al.

1974; Goldstein et al. 1977; Havassy and Hargreaves 1981). In analyses of the incidence of drug use, 20% to 40% of patients are commonly reported as showing at least an occasional opiate-positive urine test over a period of several months (Goldstein et al. 1977; Bigelow et al. 1980; Newman and Whitehill 1979; Renault 1973; Stitzer et al. 1980), while incidences of 50% to 85% of clients with at least occasional positive urines are also reported (Goldstein et al. 1977; Ling et al. 1978; Siassi et al. 1977; Woody et al. 1975). Persistent opiate drug use (e.g., more than 10% of urine tests positive over several months of urinalysis screening) has been observed to occur in 20% (Bigelow et al. 1980), 33% (Ling et al. 1978), and 57% (Goldstein et al. 1977) of clients in various reports where this statistic has been provided. Although many factors may contribute to wide discrepancies in estimates of opiate drug use prevalence, it is clear that use of opiate drugs during methadone maintenance treatment occurs to a significant extent.

A number of previous studies have utilized urinalysis results both as an objective measure of use and as a target for contingent reinforcement interventions. In these studies, drug abuse patients have been reinforced for remaining abstinent from drugs and providing drug-free urinalysis samples. Use of an on-site urinalysis testing apparatus allowed for frequent urine testing and immediate feedback and delivery of contingent reinforcers. Several case study reports (Bigelow et al. 1976; Hall et al. 1977; Stitzer et al. 1979a) suggested that such contingent reinforcement procedures could be effective in reducing the rates of supplemental opiate drug use by methadone maintenance patients. Some of these case reports are of interest because they dealt with recalcitrant chronic opiate abusers with whom previous efforts at contingency management therapy had been unsuccessful. Abstinence from supplemental opiate use was eventually achieved by escalating the cost of continued drug use (opiate-positive urines) and/or the payoff for evidence of drug abstinence (opiate-free urines).

Stitzer, Bigelow, and Liebson (1980) conducted a controlled study of the effects of contingent reinforcement for opiate-free urines. Subjects were seven black methadone maintenance patients selected for participation because of persistent positive urinalysis test results. A within-subject reversal design was employed which involved rapid alternation of experimental conditions. This design was possible since opiate drugs such as heroin clear from the body within days of use. Contingent reinforcement for opiate-free urines was available during randomly selected weeks, while during other weeks, no programmed consequences were associated with urinalysis results. If the urine was opiate free during a contingent reinforcement week, the patient could choose one item from a reinforcer menu which included methadone take-home privileges, cash payments, and methadone dosage self-regulation. Contingent reinforcement and nonreinforcement weeks were presented in random order for an extended period of time (3 to 36 weeks) and were followed by a return to baseline condition.

Substantial reductions in opiate-positive urine test results during contingent reinforcement weeks were evident for five of seven participants compared to their own prestudy baseline rates of urine positives (see fig. 1), while in two subjects the intervention had no apparent effect on drug use. Four of the five for whom reduced opiate use occurred during contingent reinforcement weeks also exhibited substantial reductions in opiate-positive tests during the randomly occurring noncontingent study weeks (fig. 2). This appeared to be a generalization of therapeutic effects to weeks when contingent reinforcement was not available. However, generalization was not evident after the contingency was terminated, since drug use returned to baseline levels. Examination of urinalysis results for a variety of drug classes other than opiates revealed no detectable increase in the use of these other drugs during portions of the study when opiate use was reduced.

A logical extension of contingent reinforcement procedures for reduction of opiate drug use would be application to patients enrolled in methadone withdrawal, since this period is one of particularly high risk for supplemental opiate use. Hall et al. (1979) reported that contingent payment for opiate-free urines reduced detected rates of opiate use among 41 narcotic addicts undergoing 16-day outpatient methadone withdrawal. A similar study was conducted by McCaul et al. (in press) which examined the effects of contingent reinforcement for opiate-free urines during a 90-day methadone withdrawal regimen. Twenty eligible patients were randomly assigned to experimental or control conditions which were in effect during weeks 4 through 13 of the 90-day detox program. Dose reduction from 30 mg to 0 mg/day methadone occurred over a 6-week period (study weeks 4 through 9) at a rate of 5 mg/week, and was identical for the experimental and control conditions. Placebo methadone (cherry syrup vehicle) was dispensed during the final study weeks. No experimental consequences were attached to twice-weekly urinalysis test results for control subjects. The consequences attached to urine test results for the experimental group are listed below:

Consequences Attached to Twice-Weekly Urinalysis  
Test Results for Experimental Subjects

<u>Opiate-Negative</u>	<u>Opiate-Positive</u>
1) Receive \$10 cash payment	1) No cash payment
2) Receive a single methadone take-home dose	2) No take-home dose
3) No extra data forms	3) Complete symptom checklist daily
4) No extra counseling	4) Participate in daily directive counseling
5) No extra urines	5) Provide daily urine samples

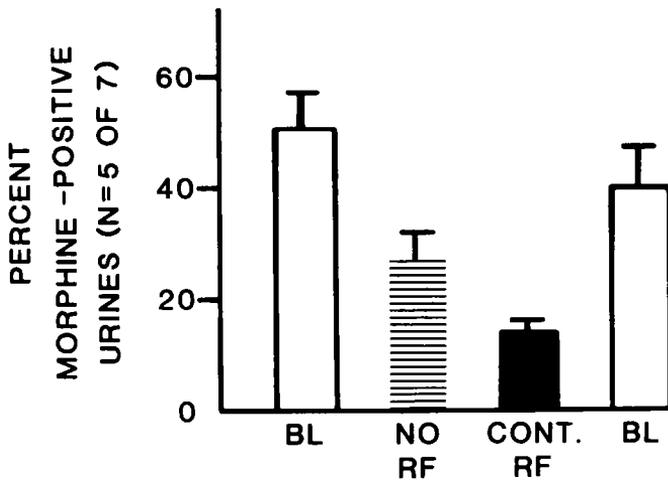


FIGURE 1. Percent morphine-positive urine tests are shown for pre- and post-intervention baseline periods (BL) and for study weeks during which contingent reinforcement was available (CONT RF) or was not available (NO RF) for providing opiate-free urine specimens. Percent of positive tests for five individual subjects was averaged to obtain the data shown. Data for two additional subjects who failed to respond to the intervention are not included. Error bars are  $\pm 1$  SEM.

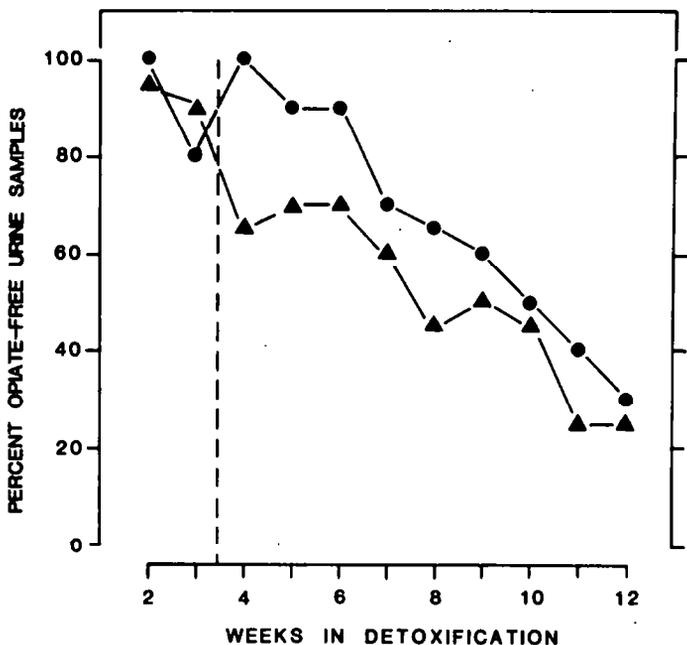


FIGURE 2. Percent opiate-free urine samples is shown during successive weeks of a 90-day methadone detoxification program. Subjects selected for this study had high rates of opiate-free urine tests during the initial three weeks of treatment enrollment, during which dosage was stabilized at 30 mg/day. Methadone dosage reduction occurred during study weeks 4 - 9. Placebo methadone was dispensed for the remainder of the treatment program. Data are shown separately for 10 control subjects (triangles) who received standard clinic treatment and for 10 experimental subjects (circles) who received privileges contingent upon each urine sample which was opiate-free and penalties contingent upon each sample which was opiate-positive. Missing samples were treated as being opiate-positive. Reprinted from McCaul et al., *J Appl Behav Anal* (in press). © Society for the Experimental Analysis of Behavior, Inc.

Reinforcers scheduled for delivery as a 'consequence of opiate-free urines (1 and 2) were delivered immediately upon receipt of the clean urine. Penalties scheduled contingent upon receipt of an opiate-positive urine (3, 4, and 5) were in effect until an opiate-free urine was obtained.

As shown in fig. 2, fewer opiate-positive urines were obtained from experimental than from control subjects during the 6 weeks of dose reduction. The between-group differences resulting from the contingency were particularly apparent during the first 3 weeks of dose reduction (fig. 2), while during the final 3 study weeks shown, when subjects were receiving 0 mg/day of methadone, there was no longer any difference in rates of positive urines between the experimental and control groups. Efficacy of the contingent reinforcement intervention during the early portion of the detoxification protocol was also evident in individual subject data. Half of the experimental subjects remained opiate free during the entire 6-week dose reduction period while none of the control subjects did so.

The studies described above suggest that interventions which include contingent reinforcement for opiate-free urines are effective in reducing opiate drug use among methadone patients during both maintenance and withdrawal treatment. An interaction between methadone dose and positive reinforcement condition is suggested in the opiate withdrawal study since incentive procedures were efficacious while patients continued to receive active doses of methadone and lost their efficacy when the methadone dose reached 0 mg/day.

#### REDUCTION OF SUPPLEMENTAL BENZODIAZEPINE USE DURING METHADONE MAINTENANCE

Benzodiazepine tranquilizers also appear to be frequently used and abused by methadone maintenance patients. Kleber and Gold (1978) noted high rates of benzodiazepine use among their patients while Woody et al. (1975) designated 40% of their methadone maintenance patients as "diazepam users" on the basis of self-reports of liking for the drug and/or recent use of street-purchased drug. Similarly, Bigelow et al. (1980) noted high rates of use based on persistent drug-positive urinalysis tests, and Stitzer et al. (1981) found that 50% to 60% of methadone maintenance patients in two different clinics showed persistent (more than 50% of tests) benzodiazepine-positive urinalysis tests during a single month of screening. Furthermore, self-report data indicate that methadone maintenance patients generally use benzodiazepine drugs such as diazepam in dosages and patterns which suggest abuse rather than therapeutic self-medication (Stitzer et al. 1981). Specifically, patients generally reported ingesting a single relatively large (median = 40 mg) daily dose of benzodiazepines close to the time of day that they ingested their methadone.

Stitzer et al. (1979b) evaluated the ability of contingent clinic privileges to influence benzodiazepine self-administration by methadone maintenance patients who exhibited persistent urinalysis positives for benzodiazepines. Diazepam (20 mg/day) was prescribed by the clinic in order to permit observation of supplemental drug use; patients could request or refuse diazepam daily throughout the study. During contingent reinforcement portions of the study, the patients could receive clinic privileges (either a single methadone take-home dose or a single opportunity to regulate their own methadone dose by  $\pm$  20 mg) twice weekly by refusing available diazepam on the preceding three or four consecutive days. During baseline portions of the study, patients requested 99% of available diazepam doses. When take-home privileges could be obtained by diazepam refusal, only 17.6% of available doses were requested, while when the dosage self-regulation option could be obtained, diazepam was requested on 77.4% of occasions. The results indicate that drug self-administration at the clinic was influenced by offering clinic privileges and that different positive consequences differentially affected drug-taking behavior.

In a subsequent study, contingent reinforcement procedures were applied to the reduction of benzodiazepine drug use in the natural environment (Stitzer et al. 1982a, 1982b). Ten methadone maintenance patients were selected for participation on the basis of persistent benzodiazepine-positive urinalysis results. These subjects reported a typical daily diazepam dose of 72.5 mg diazepam (interquartile range = 25 - 187.5 mg) and reported occasional experience with much higher doses (median highest daily dose = 225 mg).

During the contingent reinforcement study, urine samples were delivered twice weekly (Monday and Friday) and tested for presence of benzodiazepine drugs using an on-site EMIT urinalysis system which provided the opportunity for immediate feedback and consequences. After baseline evaluation, contingent reinforcement for benzodiazepine-free urines was offered for 3 consecutive months. During this period, a benzodiazepine-positive urine had no consequence, while a benzodiazepine-free urine resulted in a choice between methadone take-home privileges, cash payments, and methadone dosage self-regulation. The contingent reinforcement period was followed by a return to baseline conditions. Composite results for the group of study participants are presented in Figure 3. While few benzodiazepine-free urines were obtained during pre- and post-intervention baseline periods, their occurrence increased dramatically during the contingent reinforcement intervention. Five of the ten subjects became benzodiazepine free and remained so, while three additional subjects were temporarily benzodiazepine free but relapsed while the contingent reinforcement intervention was still in effect. No consistent increases in other drug use were noted during periods of time when benzodiazepine use was eliminated. This study demonstrates that procedures which include contingent reinforcement for clean urines can effectively reduce or eliminate ongoing supplemental benzodiazepine use among methadone maintenance patients without precipitating substitute use of drugs from some other class.

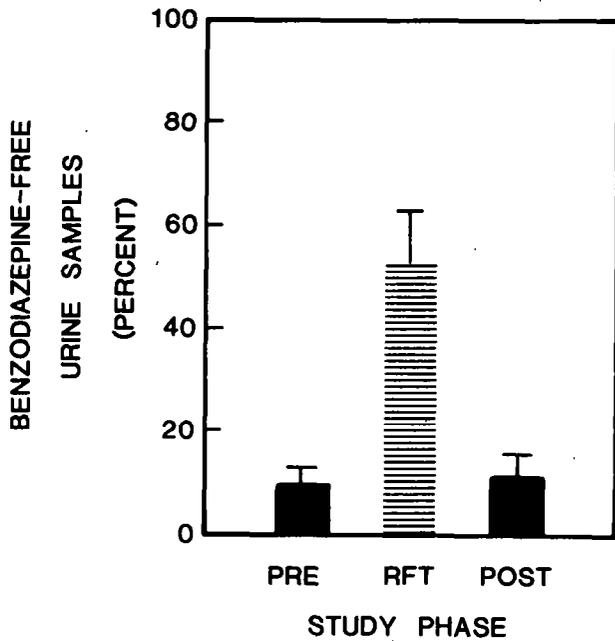


FIGURE 3. Percent benzodiazepine-positive urine tests is shown for pre- and post-intervention baseline periods (filled bars) and for study weeks during which contingent reinforcement was available for providing benzodiazepine-free urine samples (striped bars). Each study period was generally 12 weeks in duration. Percent of positive tests for 10 individual subjects was averaged to obtain the data shown. Error bars are  $\pm 1$  SEM. Reprinted from Stitzer et al., NIDA Research Monograph 41, 1982.

## REDUCTION OF ALCOHOL ABUSE AMONG METHADONE MAINTENANCE PATIENTS

Prevalence estimates of excessive alcohol use among methadone maintenance patients have varied from 10% to 40% of patients (Bihar-i 1974; Maddux and Elliott 1975; Liebson . et al. 1973; Schut et al. 1973) although as noted by Stimmel et al; (1978)) these rates depend on the specific population screened, inquisitiveness of the observer, and the definition of "excessive consumption" employed. Some have suggested that methadone treatment may be a causal factor in the development of alcoholism. Stimmel et al. (1978) question this contention since epidemiological data indicate similar prevalence of heavy drinking patterns among non-drug-abusing populations and methadone maintenance populations with similar socioeconomic profiles. Irrespective of the causality issue, it seems clear that excessive alcohol use is commonly observed in a substantial portion of methadone maintenance patients, that this problem constitutes a barrier to successful rehabilitation and is thus a legitimate and important area for therapeutic intervention.

The inappropriateness of both opiate detoxification and Alcoholics Anonymous as effective treatment strategies for the methadone patient with alcohol problems has been discussed (Stimmel et al. 1978). Methadone detoxification in particular appears to be inappropriate since this treatment may itself be associated with an increased incidence of alcohol abuse (Vaillant 1966; Schut et al. 1973). Prescription of disulfiram can be an effective treatment, but its success depends upon obtaining adequate patient compliance. An elegant study by Liebson et al. (1973, 1978) demonstrated that access to the daily dose of methadone can be utilized as a reinforcer to obtain compliance with disulfiram ingestion. The 25 methadone patient subjects who participated had been or were about to be discharged from other treatment programs as a result of excessive drinking and associated disruptive behavior. After initial alcohol detoxification and 15-day exposure to disulfiram treatment, subjects were randomly assigned to an experimental or control condition. Control subjects received weekly supplies of disulfiram and were instructed to ingest a daily morning dose, while the experimental subjects were required to ingest a disulfiram dose daily which was mixed in with their liquid methadone medication. The study design allowed for transfer of poorly performing control subjects into the experimental treatment condition.

Better treatment retention was achieved during experimental than during control conditions, as shown in figure 4. Eleven of 13 experimental subjects completed the full 6 months of treatment, while this occurred for only one of 10 control subjects. Four control subjects dropped out or were incarcerated, while five were reassigned to the experimental condition following initiation of a drinking episode. The experimental treatment also resulted in less drinking. Subjects spent 21% of their total days

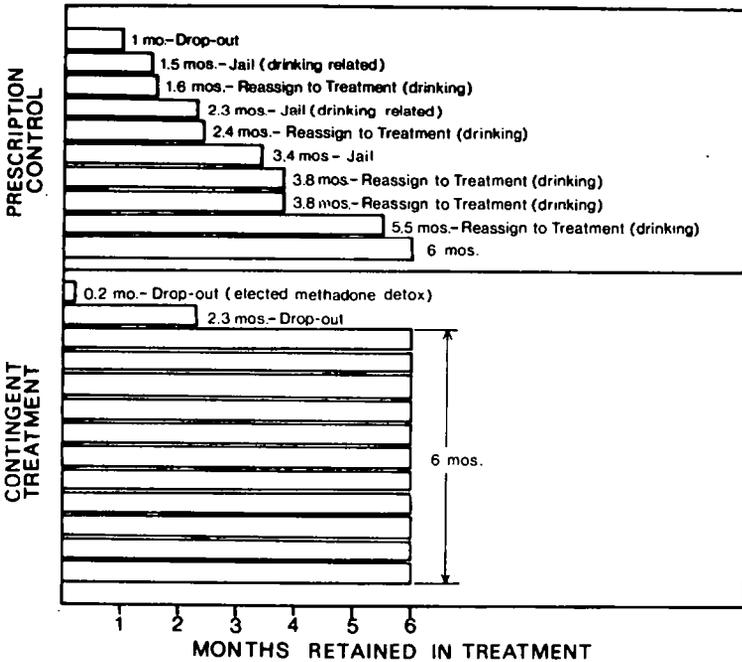


FIGURE 4. Treatment duration and reasons for early dropout are shown for two treatment conditions in which patients dually addicted to opiates and alcohol participated. All patients received methadone maintenance treatment. Patients assigned to the prescription control condition (N=10 treatment episodes) received supplies of disulfiram from the methadone clinic. For patients assigned to the experimental treatment condition (N=13 treatment episodes), receipt of the daily methadone dose was contingent upon observed disulfiram ingestion at the methadone clinic. Subjects who drank excessively during their participation in the control condition were reassigned to the experimental treatment condition. Maximum treatment participation was 6 months in both conditions.

in the program drinking during the control condition as compared with 2% of total days drinking during the experimental condition. These figures actually understate the difference between the two groups since they do not take into account the quantity of alcohol consumed. Prevention of alcohol use did not result in increased use of illicit drugs. Illicit drug use was reported on 9% of days during the treatment intervention and 13% of days during the control condition. Lack of "symptom substitution" is consistent with findings from previous studies in which the use of a specific class of drugs has been reduced by therapeutic interventions without an increase in other drug use.

The foregoing study illustrates that specific effective intervention is available for the treatment of methadone maintenance patients exhibiting chronic, severe problems with alcohol. The efficacy of disulfiram treatment depends upon patient compliance and the advantage of the program described by Liebson and coworkers, is that it utilizes frequent contact and the inherent drug reinforcer available in methadone maintenance treatment to achieve this end. The patient group selected for study was eminently suitable due to manifest antisocial behavioral problems associated with their alcoholic drinking. Interestingly, the treatment program was well accepted by the patients studied, although they may have viewed their options as limited since they had recently been or were about to be discharged from other treatment programs for drinking-related behavior problems. The utility of this program for patients with less severe alcohol-related problems remains to be evaluated.

#### CONTINGENCY MANAGEMENT OF SUPPLEMENTAL DRUG USE: ADVANTAGES AND DIFFICULTIES OF CLINICAL APPLICATION

Therapeutic interventions have been described which arrange contingent consequences for evidence of reduced drug and alcohol use among drug-abusing patients. Reductions of supplemental drug use were demonstrated in both methadone maintenance and methadone detoxification patients whose habitual drugs of abuse were opiates such as heroin and among maintenance patients who chronically abused either benzodiazepine tranquilizers or alcohol. The interventions described were effective with a substantial portion of patients exposed to the procedures. It must be remembered that the patients selected for participation in all but the methadone detoxification study showed chronic and persistent use of supplemental drugs during treatment. These were patients, therefore, for whom a potent pharmacological treatment (methadone) combined with standard clinical techniques of verbal persuasion and program sanctions were ineffective in influencing supplemental drug use. It would seem both appropriate and useful to develop effective therapeutic interventions for these patients, and the data suggest that contingency management procedures provide a reasonable approach.

There are both advantages and difficulties associated with implementation of contingent reinforcement procedures designed to

promote reduced supplemental drug and alcohol use in methadone maintenance patients. The following discussion will first explore limitations imposed by the technology currently available to measure drug ingestion as a target behavior. Secondly, the discussion will point out limitations in the generality of therapeutic success which can be expected from this implementation. Then advantages related to the use of contingency contracting procedures in general and positive reinforcement techniques in particular will be discussed, followed by consideration of the therapeutic advantages of reducing supplemental drug and alcohol use.

Since drug ingestion invariably takes place outside the treatment clinic, technologies are needed which provide an accurate objective measure of recent drug and alcohol use. Breath tests are readily available which meet this need by providing a convenient measure of current blood alcohol levels. On-site urinalysis testing systems (EMIT) are also available which detect the presence of many major drugs of abuse. While convenient and reliable, these urinalysis testing systems have several limitations. First, they are expensive to purchase, which limits their availability to treatment clinics. Secondly, they cannot test for all the drugs that patients might be using. This limits the applicability of contingent reinforcement procedures in treatment of multiple drug abusing patients. However, the major supplemental drugs abused by methadone maintenance patients (i.e., opiates and benzodiazepines) can be verified with currently available on-site urine testing equipment. Thirdly, urinalysis testing systems provide basically a dichotomous measure of drug use versus no use. For drugs metabolized within a few days of use (e.g., opiates), therapeutic interventions can focus upon decreasing the frequency of illicit use but cannot address the amount of drug used during a given episode. In the case of drugs such as benzodiazepine tranquilizers, whose metabolites may be detected for several weeks after a single ingestion, even frequency of use is obscured in urinalysis results, and reinforcement can be provided only for prolonged abstinence. It would be desirable to obtain more quantitative information from urinalysis testing as well as information about a broader range of drugs of abuse.

Studies discussed in this paper have demonstrated the efficacy of contingent reinforcement procedures for controlling drug and alcohol use among methadone maintenance and methadone withdrawal patients. However, the successful application of contingent reinforcement procedures may not generalize to all patients with whom they are tried or to all circumstances. Few current guidelines exist, for example, as to how these techniques might be implemented with individual patients simultaneously abusing multiple drugs and/or alcohol. If excessive alcohol use is involved, it seems clear that this could be treated with the contingent disulfiram procedure previously described, independently of illicit drug use. As far as multiple drug use is concerned, the beneficial effects of contingent reinforcement interventions focused on a single target drug may generalize to other drugs

being simultaneously abused by a given patient, but it is likely that specific techniques will be needed for focusing on multiple drugs either sequentially or simultaneously in order to achieve control of multiple use. As previously noted, measurement problems currently hinder such therapeutic efforts.

Even in patients whose supplemental drug use is restricted to compounds which can be readily detected with on-site equipment, a favorable response would not be expected with all patients exposed to a single contingency management intervention. A lack of universal efficacy is perhaps not surprising in view of the difficult patient population being treated and the relatively weak reinforcers which can be offered at the treatment clinic as alternatives to self-administration of potent drug reinforcers. However, this limitation may be overcome by judicious selection of reinforcers. Thus, it has been noted in case study reports that, by escalating the magnitude of reinforcement for drug-free urines and/or the penalties for drug-positive urines, conditions could be found under which individual recalcitrant subjects would respond to contingency management interventions (Bigelow et al. 1976; Stitzer et al. 1979a).

From an experimental point of view, these individual differences in response to a single treatment intervention are intriguing and suggest that individual patient characteristics might be related to treatment response. These characteristics may exist in recent as well as lifetime levels of drug use, history of successful abstinence attempts, levels of sociopathic deviancy, amount and type of social supports available to the individual, and historical response to aversive versus positive reinforcement contingencies. It is possible that patients who have a poor response to positive reinforcement interventions might show a favorable response to aversive control procedures. This notion could be empirically tested and might provide a rationale for more reliably matching patients with appropriate treatment interventions (McLellan et al. 1981).

The apparent impermanence of therapeutic effects following withdrawal of interventions is perhaps the most troublesome limitation of contingency management procedures which provide tangible external reinforcers for behavior change. The observation of a return to drug use during treatment evaluation studies does not necessarily limit clinical applicability, however. In experimental demonstrations, interventions are withdrawn abruptly at an arbitrary point in time and if relapse occurs, this provides strong evidence that the intervention modified behavior while it was in effect. In clinical practice, on the other hand, treatment procedures would not be withdrawn abruptly in the absence of other supports for continued drug abstinence. Additional research is needed to explore possible long-term utility of contingent reinforcement procedures which can be implemented at the methadone maintenance treatment clinic and to delineate the conditions under which these interventions may be withdrawn without precipitating relapse to drug or alcohol use.

Several important advantages may be realized as a result of implementing contingency management procedures with drug abusers. Some of these advantages are characteristic of contingency management procedures in general, which specify in objective terms the behavioral goals of treatment as well as the consequences of alternative behaviors. This provides the basis for feedback to patients about their behavior and circumvents disagreements and conflicts between patients and staff members over therapeutic progress or its lack. Written contracts further reduce sources of ambiguity about therapeutic goals, progress, and consequences of behavior. The resultant clarity and specificity may be especially important in treatment of drug abuse patients who may attempt to manipulate the therapeutic situation in various ways in order to obscure behavioral goals and avoid behavioral change.

Other advantages derive from the use of positive reinforcement as opposed to aversive control to promote therapeutic change. Implementation of these procedures can have few detrimental outcomes for patients or staff members, since patients are essentially presented with a choice between continued drug use and other positive reinforcers. If the patient chooses to give up drug use, the intervention has been effective; if he or she chooses not to give up drug use, nothing has been lost. If the intervention works, patients with a long history of therapeutic failure will experience success and therapists can be supportive for improvement and avoid punitive consequences for failure.

Finally, several advantages of contingent reinforcement procedures derive from the therapeutic outcome of suppressing drug use in patients who are chronic drug abusers. In fact, the advantages of this outcome may be considerable. First, a decrease in disruptive drug-related behaviors may be achieved along with the decrease in drug ingestion. This outcome was particularly notable, for example, in the alcoholic patients studied by Liebson et al. (1978). Secondly, a diminution of drug-seeking behavior may free patients to focus their attention and personal resources on improving other areas of their lives such as employment and interpersonal relations. Any improvements in economic or social stability which can be gained during a drug-free episode would clearly improve long-term prognosis for the patient. Thirdly, contingent reinforcement procedures which suppress drug use can provide an opportunity to initiate additional comprehensive therapies during a period when the patient is exerting some degree of self-control over drug use.

Reduction or elimination of supplemental drug use would appear to be an essential first step in the treatment of drug abuse. Once drug use has been brought under control, two specific approaches should be considered in developing additional therapy interventions. First, in patients who have become abstinent or who have substantially reduced their drug use, and agree that a long-term abstinence goal is desirable, specific relapse pre-

vention training may be useful. It has been reported, for example, in cigarette smokers who had recently quit smoking, that those who used either behavioral or cognitive coping techniques were more successful at maintaining abstinence than were smokers who did not use these techniques (Shiffman 1982).

A second approach which might be useful in the long-term treatment of drug abusers is one which focuses upon developing alternative sources of reinforcement and punishment in the natural environment and then transferring control of drug use to these new sources. Thus, for example, families, or non-drug-using peers, might be utilized as sources of both behavior monitoring and contingency management. Family therapy in particular has recently been shown to improve outcome in the drug using clients (Stanton et al. 1982). Families have numerous reinforcers and punishers available to them and could be taught to influence drug use by more effectively applying contingencies to the drug-related behaviors of the drug-dependent family member.

At the present time, contingent reinforcement interventions warrant application in clinical settings as a means to promote temporary control over drug and alcohol use in patients who chronically abuse these substances. These techniques would appear to have significant advantages over usual clinical practices which include disciplinary action for patients who exhibit the behavior problem characterizing their drug abuse disorder. To the extent that these techniques are successful in reducing supplemental drug and alcohol use, they will free the patient from continual drug-seeking activities and intoxication, allow the patient to focus on other life problems, and facilitate implementation of other more comprehensive therapies designed to promote long-term rehabilitation of drug-dependent patients.

#### REFERENCES

Baldrige, P.; McCormack, M.; Thompson, L.; Zarrow, A.; and Primm, B.J. Providing incentives to successful methadone patients. NY State J Med, 74: 111-114, 1974.

Bale, R.N.; Van Stone, W.W.; Kuldau, J.M.; Engelsing, T.M.J.; Elashoff, R.M.; and Zarcone, V.P. Therapeutic communities vs methadone maintenance. A prospective controlled study of narcotic addiction treatment: Design and one-year follow-up. Arch Gen Psychiatry, 37: 179-193, 1980.

Bigelow, G. ; Griffiths, R.R.; and Liebson, I. Experimental models for the modification of human drug self-administration: Methodological developments in the study of ethanol self-administration by alcoholics. Fed Proc, 34: 1785-1792, 1975.

Bigelow, G.; Lawrence, C.; Stitzer, M.; and Wells, D. Behavioral treatments during outpatient methadone maintenance: A controlled evaluation. Presented at the annual meeting of American Psychological Association, Washington, D.C., 1976.

Bigelow, G.; Stitzer, M.; Lawrence, C.; Krasnegor, N.; D'Lugoff, B.; and Hawthorne, J. Narcotics addiction treatment: Behavioral methods concurrent with methadone maintenance. Int J Addict, 15: 427-437, 1980.

Bihari, B. Alcoholism and methadone maintenance. Am J Drug Alcohol Abuse, 1: 79-89, 1974.

Gearing, F.R. Methadone maintenance treatment five years later -- Where are they now? Am J Public Health Suppl, 64: 44-50, 1974.

Goldstein, A.; Horns, W.H.; and Hansteen, R.W. Is on-site urine testing of therapeutic value in a methadone maintenance treatment program? Int J Addict, 12: 717-728, 1977.

Griffiths, R.R.; Bigelow, G.E.; and Liebson, I. Relationship of social factors to ethanol self-administration in alcoholics. In: Nathan, P.E., Marlatt, G.A., and Loberg, T., eds. Alcoholism: New Directions in Behavioral Research and Treatment. New York: Plenum Press, 1978. pp. 351-379.

Hall, S.M.; Bass, A.; Hargreaves, W.A.; and Loeb, P. Contingency management and information feedback in outpatient heroin detoxification. Behav Ther, 10: 443-451, 1979.

Hall, S.M.; Cooper, J.L.; Burmaster, S.; and Polk, A. Contingency contracting as a therapeutic tool with methadone maintenance clients: Six single subject studies. Behav Res Ther, 15: 438-441, 1977.

Harford, R.J., and Kleber, H.D. Comparative validity of random-interval and fixed-interval urinalysis schedules. Arch Gen Psychiatry, 35: 356-359, 1978.

Havassy, B., and Hargreaves, W.A. Allowing methadone clients control over dosage: A 48-week controlled trial. Addict Behav, 6: 283-288, 1981.

Jones, B.E., and Prada, J.A. Drug-seeking behavior during methadone maintenance. Psychopharmacologia (Berl.), 41: 7-10, 1975.

Kleber, H.D., and Gold, M.S. Use of psychotropic drugs in treatment of methadone maintained narcotic addicts. In: Kissin, B., Lowinson, J.H., and Millman, R.B., eds. Recent Developments in Chemotherapy of Narcotic Addiction. Ann NY Acad Sci, 311: 81-98, 1978.

Liebson, I.; Bigelow, G.; and Flamer, R. Alcoholism among methadone patients: A specific treatment method. Am J Psychiatry, 130: 483-485, 1973.

Liebson, I.A.; Tommasello, A.; and Bigelow, G.E. A behavioral treatment of alcoholic methadone patients. Ann Intern Med. 89: 342-344, 1978.

Ling, W.; Klett, J.; and Gillis, R.D. A cooperative clinical study of methadyl acetate. Arch Gen Psychiatry, 35: 345-353, 1978.

Maddux, J.F., and Elliott, B. Problem drinkers among patients on methadone. Am J Drug Alcohol Abuse, 2: 245-254, 1975.

McCaul, M.E.; Stitzer, M.L.; Bigelow, G.E.; and Liebson, I. Contingency management 'interventions: Effects on treatment outcome during methadone detoxification. J Appl Behav Anal (in press).

McCaul, M.E.; Stitzer, M. L.; Bigelow, G.E.; and Liebson, I .A. Intravenous hydromorphone: Effects in opiate-free and methadone maintenance subjects. In: Harris, L.S.. ed. Problem of Drug Dependence, 1982. Proceedings of the 44th Annual Scientific Meeting, The Committee on Problems of Drug Dependency, Inc. National Institute on Drug Abuse Monograph 43. DHHS Publications No. (ADM) 83-1264. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1983. pp. 238-244.

McGlothlin, W.H., and Anglin, M.D. Shutting off methadone: Costs and benefits. Arch Gen Psychiatry, 38: 885-892, 1981.

McLellan, A.T. ; O'Brien, C.P. ; Luborsky, L.; Druley, K.A.; and Woody, G.E. Certain types of substance abuse patients do better in certain kinds of treatments: Evidence for patient-program matching. In: Harris, L.S., ed. Problems of Drug Dependence, 1980. National Institute on Drug Abuse Research Monograph 34. DHHS Publication No. (ADM) 81-1058. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1981. pp. 123-130.

Miller, P.M. A behavioral intervention program for chronic public drunkenness offenders. Arch Gen Psychiatry, 32: 915-918, 1975.

Miller, P.M.; Hersen. M.; Eisler, R.M.; and Watts, J.G. Contingent reinforcement of lowered blood/alcohol levels in an out-patient chronic alcoholic.. Behav Res Ther, 12: 261-263, 1974.

Newman, R.G., and Whitehill, W.B. Double-blind comparison of methadone and placebo maintenance treatments of narcotic addicts in Hong Kong. Lancet, September 8, 485-488, 1979.

Renault, P.F. Methadone maintenance: The effect of knowledge of dosage. Int J Addict, 8: 41-47, 1973.

Schut, J.; File, K. ; and Wohlmuth. T. Alcohol use by narcotic addicts in methadone maintenance treatment. Quart J Stud Alc, 34: 1356-1359, 1973.

Senay, E.C.; Dorus, W.; Goldberg, F.; and Thornton, W. Withdrawal from methadone maintenance. Rate of withdrawal and expectation. Arch Gen Psychiatry, 34: 301-367, 1977.

Shiffman, S. Relapse following smoking cessation: A situational analysis. J Consult Clin Psychol, 50: 71-86, 1982.

Siassi, I.; Angle, B.P.; and Alston, D.C. Maintenance dosage as a critical factor in methadone maintenance treatment. Br J Addict, 72: 261-268, 1977.

Simpson, D.D.; Savage, L.J.; and Lloyd, M.R. Follow-up evaluation of treatment of drug abuse during 1969 to 1972. Arch Gen Psychiatry, 36: 772-780, 1979.

Stanton, M.D.; Todd, T.C.; Steier, F.; Van Deusen, J.M.; and Cook, L. Treatment outcome. In: Stanton, M.D., Todd, T.C., and Associates, eds. The Family Therapy of Drug Abuse and Addiction. New York: Guilford Press, 1982. pp. 403-421.

Stimmel, B.; Cohen, M.; and Hanbury, R. Alcoholism and polydrug abuse in persons on methadone maintenance. In: Kissin, B., Lowinson, J.H., and Millman, R.B., eds. Recent Developments in Chemotherapy of Narcotic Addiction. Ann NY Acad Sci, 311: 99-109, 1978.

Stitzer, M.; Bigelow, G.; and Liebson, I. Reinforcement of drug abstinence : A behavioral approach to drug abuse treatment. In: Krasnegor, N., ed. Behavioral Approaches to Analysis and Treatment of Substance Abuse. National Institute on Drug Abuse Research Monograph 25. DHEW Publication No. (ADM) 79-839. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1979a. pp. 68-90.

Stitzer, M.L.; Bigelow, G.E.; and Liebson, I. Reducing benzodiazepine self-administration with contingent reinforcement. Addict Behav, 4: 245-252. 1979b.

Stitzer, M.L.; Bigelow, G.E.; and Liebson, I. Reducing drug use among methadone maintenance clients : Contingent reinforcement for morphine-free urines. Addict Behav, 5: 333-340, 1980.

Stitzer, M.; Bigelow, G.; and Liebson, I. Contingent reinforcement of benzodiazepine-free urines from methadone maintenance patients. In: Harris, L.S., ed. Problems of Drug Dependence, 1981. Proceedings of the 43rd Annual Scientific Meeting, The Committee on Problems of Drug Dependence, Inc. National Institute on Drug Abuse Research Monograph 41. National Technical Information Service No. (TD) 82-190760, 1982a. pp. 282-287.

Stitzer, M. L.; Griffiths, R.R.; McLellan, A.T.; Grabowski, J.; and Hawthorne, J.W. Diazepam use among methadone maintenance patients: Patterns and dosages. Drug Alcohol Depend, 8: 189-199, 1981.

Stitzer, M.L.; Bigelow, G.E.; Liebson, I.A.; and Hawthorne, J.W. Contingent reinforcement for benzodiazepine-free urines: Evaluation of a drug abuse treatment intervention. J Appl Behav Anal, 15: 493-503, 1982b.

Vaillant, G.E. A twelve year follow-up of New York narcotic addicts IV: Some characteristics and determinants of abstinence. Am J Psychiatry, 123: 573-585, 1966.

Winett, R.A. Parameters of deposit contracts in the modification of smoking. Psychol Rec, 23: 49-60, 1973.

Woody, C.E.; Mintz, J.; O'Hare, K.; O'Brien, C.P.; Greenstein, R.A.; and Hargrove, E. Diazepam use by patients in a methadone program -- how serious a problem? J Psychedelic Drugs, 7: 373-379, 1975.

#### ACKNOWLEDGMENT

This research was supported by National Institute on Drug Abuse grants 5 R01 DA-01472, 2 K02 DA-0050, and T32 DA-07209.

# A Contingency Analysis of Family Treatment and Drug Abuse

Thomas C. Todd, Ph.D.

Historically, there has been relatively little interchange between family therapists and behavior analysts or therapists, although there are subareas with greater overlap, including teaching parents to use operant approaches with their children (Patterson 1971; Patterson et al. 1973; Mash et al. 1976), and teaching couples behavioral skills and communication and problem-solving (Jacobson and Martin 1976; Stuart 1969, 1980; Margolin and Christensen 1981). The aim of this chapter is to demonstrate that there is a family treatment approach to drug abuse (Stanton and Todd 1979; Stanton et al. 1982) that is based on sound behavioral principles and to articulate these principles so that they can be applied to any treatment program wishing to increase family involvement.

The chapter will deal with three major topics: (1) evidence of the power of the family to influence treatment outcome; (2) engagement of the family in treatment; (3) development of a treatment plan which includes the family.

Much of the material presented relates to the process of initial engagement of the family in treatment and the broad contingencies affecting the degree of family participation. Specific principles will be presented which can dramatically increase the degree of family participation in treatment. Less emphasis is placed upon specific family therapy techniques which have been discussed in detail by Stanton et al. (1982). This differential emphasis is based on the rationale that a finegrained analysis of specific therapeutic techniques is premature until a program develops effective methods of involving the family in the program initially and maintaining family involvement.

## THE FAMILY AS A DETERMINANT OF CURRENT BEHAVIOR

Even when the drug user is a young adult, it is highly probable that the family of origin continues to be a powerful determinant of his current behavior. The validity of this statement may not be immediately obvious, since many drug clients are in their 30s, and

are often married and have children. Even with married clients, however, the family of origin rather than the family of procreation tends to have primary importance. There is an increasing body of evidence documenting high rates of contact between patients and their families. Vaillant (1966) found that 90% of patients surveyed lived with their parents at age 22 and that this percentage was still 59% at age 30. Similarly, Stanton et al. (1978) found that 82% of young adult male patients in a Veterans Administration program had at least weekly contact with their mothers. Overall, it is clear that efforts to stabilize the patient's marriage without first involving his parents are likely to fail (Stanton et al. 1982, p. 121).

#### Potential Detrimental Effects of the Family on Treatment Outcome

Unless it is influenced by the treatment system, the family is likely inadvertently to reinforce drug taking and undermine any treatment program. Virtually any treatment program, regardless of approach, has an extensive anecdotal "folklore" about ways in which family members have subverted treatment. Family members often behave in ways that overtly or covertly encourage drug taking (the "enabling" role is similar to that described in the alcoholism literature). Family members also will frequently undercut the treatment program, especially at a stage when the client is beginning to show progress (Haley 1980).

These observations are not surprising when one sees that substance abuse can have powerful adaptive consequences in maintaining the stability of the family system. The work of Steinglass and Davis (Steinglass et al. 1977; Davis et al. 1974) has shown this particularly clearly for alcohol. In their work, each family member typically experiences a positive change in the pattern of marital or family interaction at the moment alcohol is introduced into the system. This may take a variety of forms, such as decreased conflict and tension, increased intimacy or frequency of interaction, or increased emotional expression.

For those unfamiliar with the family therapy literature, it is important to point out that the reactions of family members may often be viewed as maintaining drug-taking behavior whether or not they served a predisposing causal role in the initiation of drug-taking behavior. The family is seen as a relatively stable system which tends to resist change, even those changes which might seem desirable in the long run. Although some families exhibit this "resistive" behavior more dramatically than others, some change-resistant behavior should be expected in any family in which the drug abuse has occurred on a chronic basis for several years.

It is also suspected that family factors may play an important role in the etiology of drug abuse, particularly in determining whether a young person will move from drug experimentation to a pattern of chronic abuse and dependence. In particular, the behavior of the drug abuser may help the family to avoid difficulties in negotiating transitions in the family life cycle, especially the stage of "leaving home" (Stanton et al. 1982; Haley 1980).

## Potential Positive Effects of the Family on Treatment Outcome

Family members can also exert an important positive effect on treatment outcome, even in the absence of specific efforts to involve the family in treatment. Evidence for this conclusion comes from several retrospective surveys. Eldred and Washington (1976) interviewed 158 heroin clients and asked who had been most helpful in their efforts to get off of drugs. The rank order of responses was (1) family of origin, (2) opposite sex partner, (3)

Similarly, MACRO Systems researchers interviewed 462 clients and found that the family was seen as second only to treatment (70.9% vs. 79.6%) as an important influence in change (NIDA 1975). Levy (1972), in a 5-year followup of 50 narcotic clients, found that those whose treatment is successful typically have family support.

It is worth noting that similar conclusions have been drawn for alcoholism, although with alcohol it is typically the spouse, not the parents, who is most important. Regardless of the mode of treatment used to deal with alcoholism (AA, inpatient treatment, disulfiram, etc.), family and spouse involvement adds significantly to the probability of success (Jacobson 1981).

## ENGAGING THE FAMILY IN TREATMENT

Perhaps a more appropriate title for this section would be "active recruiting" of families into treatment because, as will be noted, considerable effort is required to succeed in involving families in treatment. Family recruitment became one of the most important aspects of our project, although we had initially underemphasized its importance and difficulty. Space does not permit a full elaboration of the principles and techniques of effective engagement; the interested reader is referred to publications on this topic. (Van Deusen et al. 1980; Stanton and Todd 1981; Stanton et al. 1982, pp. 39-106).

## Use of Contingent Reinforcement to Engage Families in Treatment

Without specific attention to the contingencies affecting the behavior of both the client and the family, it is extremely unlikely that the client will give permission to contact family members or that family members will agree to participate in treatment. This results from a combination of factors, all of which need to be specifically addressed.

First, the family therapist initially has few, if any, positive reinforcers under his control. Certainly the "opportunity" to participate in family therapy is not seen as a reward. This is particularly important in the context of a methadone maintenance program, where the most important reinforcers relate to medication. Several steps may be taken to offset this initial difficulty. In the program described here, the family therapist assumed the role of "drug counselor" to increase his salience and

thereby become associated with methadone dispensation, which is a powerful positive reinforcer for opiate-dependent clients.

Next, efforts were made to increase the primacy of contact with the family therapist, so that the client contacted the family therapist early in the chain of treaters and overall treatment process. Finally, we attempted to have the family therapist placed in charge of the overall treatment, including all important treatment decisions. With respect to this final point, we learned that it was important not to pretend to have control over contingencies that would not actually be invoked, such as transferring the client to another program.

A second major factor is the need for the client to receive positive reinforcement from the family therapist before the therapist broaches the subject of family involvement. This usually means paying considerable attention initially to the client's physical discomfort and to his requests for methadone or other medications, since these issues are paramount from his viewpoint.

A third major factor is that the therapist must act to decrease the client's anticipation of possible negative outcomes of family involvement. The therapist must convey an attitude about the family that indicates that no one will be blamed. It is crucial to resist the temptation to create an alliance with the patient by implying that his problems may be the fault of the parents. It is also useful for the therapist to agree to "take the rap" for involvement of the family and its outcome. Concretely, this means asking the client for permission to contact the family directly, removing the addict from the awkward position of having to persuade the family that their participation in treatment would be helpful.

#### Neutralizing the Negative Connotation of Treatment

Initial contact with the family must be conducted with the knowledge that the idea of becoming involved in treatment is likely to have strong negative connotations. Such an attitude on the part of family members is not surprising. It is likely that they have been repeatedly disappointed through a long history of having hopes aroused only to be shattered. Thus, they have ample justification for the assumption that they may be blamed. Particular effort must be made to decrease the atmosphere of blame and to emphasize the potential helpfulness of the parents and other family members. (See Stanton et al. 1982, pp. 124-127, on "Noble Ascriptions" and avoiding blame.) It is also helpful for the therapist to elicit the goals of the parents in some detail and then to propose a treatment plan that will address these goals. For example, some parents will emphasize employment, while others may emphasize breaking away from undesirable friends and associations. As in all behavioral intervention approaches, effective family therapy using these techniques benefits from individualized determination of steps, goals, and reinforcers in treatment.

In general it is clear that conducting recruitment efforts according to these principles can be quite effective. In a sample

of 95 adult male heroin clients, 71% of all eligible families were successfully engaged in treatment. The most frequent barrier was the client's refusal to allow contact with the family. Of the families for whom permission was obtained, 88% were successfully recruited.

#### EFFICACY OF CONTINGENT PAYMENT FOR ATTENDANCE

A recent study (Stanton et al. 1982) has demonstrated that payment for attendance improves treatment retention and the attendance of family members at sessions. The subject families were lower income and working class families who had a son, the index patient (or "IP"), enrolled in a VA methadone program. The IP had to be opiate dependent for at least 2 years and in regular contact with parents or parent surrogates. The mean age of the IP's was 25.3 and 25% were married. Each family was randomly assigned to one of three treatment conditions which were adjuncts to the methadone program. These included Paid Family Therapy, Paid Family Movies, and Unpaid Family Therapy. (The family movie group served as a control for the effects of payment and of family involvement.) Ten sessions were scheduled, and in the paid groups every family member age 12 or over received \$5 at each session attended. In addition, there were other contingencies, discussed below.

Once families were engaged in treatment, remarkably high rates of treatment compliance were achieved. In the paid family therapy group, all families attended a minimum of four sessions. Equally striking was the finding that 81% attended ten or more sessions as specified by the initial treatment contract.

Comparable figures for unpaid family therapy showed a clear payment effect, although attendance was still much better than might have been expected for such a difficult population. Eight per cent dropped out before treatment began, and 40% attended only one to three sessions. Fifty-two per cent completed at least four sessions, and 40% completed ten or more.

Although payment did influence attendance, it did not significantly influence treatment outcome, above the contribution of attendance alone. (See Stanton et al. 1979 for statistical analysis of the comparative contributions of payment and family therapy.)

Interestingly, many family members went to considerable lengths to emphasize that the money was not important. These statements do not necessarily imply that payment did not influence their behavior. It does appear likely that considerable cognitive dissonance was created by the possibility that their behavior was motivated by money, especially since life-and-death issues were often at stake. Even if payment is not a realistic possibility, either legal or program pressure may be brought to bear to increase family involvement, as long as effective treatment can be conducted when the family does attend. Clearly, whenever possible, an effort should be made to establish contingencies which rely on positive reinforcement and minimize the aversiveness of the treatment setting for the client and family.

## DEVELOPING A COMPREHENSIVE TREATMENT PLAN WHICH INCLUDES THE FAMILY

The focus of the treatment efforts described is, of course, the interaction between the client and his family. While this would typically be labelled "family therapy," the designation of "family therapy" often creates unnecessary resistance, since it implies that the family has the problem, not the addict. For this reason, we emphasize the helping role of the family and avoid labelling this as family therapy.

Whether or not formal family treatment is involved, and regardless of the other components in the treatment plan, the family can almost always play a positive role. For example, the family can help to increase compliance with treatment involving a narcotic antagonist or can help to insure attendance and treatment compliance in an outpatient methadone program. Conversely, it is almost invariably a mistake to keep family members in the dark about treatment or to set up covert competition about who can be most helpful to the client. Again it should be noted that general procedural rules are helpful but it is always necessary to individualize the approach and maximize positive reinforcement.

The beginning stages of treatment should be designed to create an initial experience of success. In this regard there are many specific things that the therapist should do. The therapist should create an overall favorable climate and maximize the opportunities for positive reinforcement. The treatment should be time-limited and goal-directed, especially directed toward goals identified by the family. In the present program, an attempt was made to develop explicit goals in three areas, including: drug abuse itself, employment and other productive use of time, and living/social situation. Tasks addressing and directed towards achieving these goals were delineated in small steps, with success a high probability.

There are also issues and problems that the therapist should definitely avoid. These include leaving treatment open-ended and vague, with only marginal relevance to the drug problem. It is particularly important to avoid conflict between the parents, and it is equally important to discourage a "catharsis" of negative emotions. While many drug-dependent clients have come to expect unpleasant encounters as part of treatment, such an emphasis makes therapy extremely aversive for one or more family members, and the treatment will almost certainly fail.

The parents (often, in these families, the father) should be given a major advisory and decisionmaking role in all important aspects of the treatment program. In the family treatment program described herein, parents have been encouraged to become involved intimately in the overall treatment program. Naturally, in order to do this effectively, the parents need education, support, and guidance from the therapist. Typical areas in which parents are asked to become involved in discussion and decisionmaking include take-home privileges, decisions about hospitalization, readiness to

decrease dosage or terminate methadone, and the credibility of urine reports intended to screen for drug use.

There are several important reasons for involving the parents in spite of the complexities involved. First, explicit involvement of the parents minimizes the client's opportunities to play the therapist and parents, or parents themselves, against each other. For example, without family involvement, the client is likely to complain to the parents about aspects of the treatment and enlist their support, while concurrently complaining to the therapist about the parents. Second, the participation of the parents in treatment decisions enhances the power of the parents, which enables them to be more helpful. Finally, such participation has a major effect on the degree of commitment and investment that the parents have in the long-range success of the treatment, which helps to ensure that gains made during the program are maintained afterwards.

It has been particularly evident that a behaviorally oriented treatment approach can be useful in keeping treatment focused. Although the treatment program described here is not primarily behavioral in orientation, it successfully incorporates several behavioral elements.

First, in all of the family treatment cases, the therapist provides systematic feedback about current drug use to the parents, based on the result of the latest urine tests. This feedback is very important because it maintains the focus of the treatment on hard data. It is also extremely important that the therapist be present to guide the family in evaluating the feedback in the light of the patient's overall pattern of success and failure and to help shape the family's response to this feedback. These data permit the therapist to keep the family focused on what they will actually do, rather than remaining at the level of vague generalities. The therapist may allow the family to accept-the-client's initial excuses but at the same time point out problems which may arise in the future concerning falsification of urine test reporting and the like.

In the research project, the effects of contingent payment for clean urines in combination with program attendance have been examined. Using this procedure, both the client and the other family members have a financial stake in having everyone attend and having the client maintain abstinence, as reflected by uncontaminated urine samples. (For details of the complex contingencies involved, see Stanton et al. 1979, pp. 14-15.) As mentioned earlier, contingent payment has a clear effect on attendance and encourages the family to be present so that treatment can work. There is modest evidence that offering contingent payments to the family as a whole for the success of the client at providing clean urine samples and hence being "drug free" has a positive effect on treatment outcome, although payment alone is consistently less powerful than family therapy.

A promising new approach for changing the consequences to the family of the client's relapse to drug taking has been the development of a "home detoxification" procedure. The idea of having the addict detoxify at home grew naturally out of work with the clients and their families and was also heavily influenced by Haley (1980). It is clear that admission of an addicted family member to the hospital for withdrawal is generally a "nonevent" for most families and produces little emotional involvement in its success or failure. In fact, for many families, hospitalization is positively reinforcing, since it relieves stress and reduces anxiety and guilt. It is a socially acceptable means of demonstrating that the problem is being addressed and that it is out of the family's hands. Given these contingencies, it is not surprising that the typical result is a cycle of repeated hospitalizations and unsuccessful attempts to terminate administration of methadone or other opiates.

Home drug withdrawal attempts to keep the family focused on the therapeutic realities and has aversive components that the family is not eager to repeat. Several principles should be kept in mind when implementing a home drug withdrawal effort: (1) The conditions for the eventual home drug withdrawal must be carefully worked out. (2) It is important to build on the strengths of the family and upon success experiences earlier in therapy. (3) The family must not be allowed to escape from the home detoxification through initial failure. Instead, the possibility of failure must be anticipated and a backup plan developed. (4) While the conditions for success should be carefully managed, it is nevertheless important that the home detoxification experience should require a high level of family involvement. They will therefore experience success as more meaningful and, as noted, will also not care to repeat the experience (Stanton et al. 1982).

#### ENDING THERAPY

One of the major advantages of involving the family in treatment comes at the end of treatment. If family treatment has been successful, the formerly drug dependent client is left with an important natural support system that will continue after treatment is over. This is in marked contrast to other treatment approaches. For example, a frequent problem with methadone maintenance and therapeutic community programs is that successful treatment leads to loss of the reinforcers in the therapeutic support system. That is, success results in diminished contact with all phases of treatment ranging from the conversations with other clients, the dispensing pharmacist, and the drug counsellor to contacts with various medical and mental health professionals.

Although the problem is diminished in family treatment, loss of support or decreased availability of reinforcers may still be a significant issue for the family when therapy ends, since the family loses the therapist as an important source of support. The therapist can utilize three techniques to minimize the disruption of ending therapy. First, throughout therapy, it should be

emphasized that credit for success belongs to the family and the drug-dependent client, not the therapist. This will be most meaningful if the therapist clearly identifies how the success was achieved and how the family could handle similar issues in the future. Second, the therapist should promote a model of episodic involvement in treatment. That is, the family should not feel that they have failed if they need to return for a "booster" of a few additional sessions. Indeed, planned followup sessions are often helpful. Third, it is especially important to avoid a dichotomous success-failure perspective that is extremely likely to lead to relapse. The therapist should assist the family in anticipating potential problems and should discourage the notion that the future will be problem free. It is often useful to rehearse strategies for solving problems that may occur.

#### EVIDENCE OF EFFECTIVENESS

Despite reported widespread use of family therapy in drug abuse treatment agencies (Coleman and Davis 1978), unfortunately there are few controlled outcome studies. Recently evidence has been obtained from a controlled treatment outcome study that a family treatment therapy program can have a significant impact on heroin abuse. In addition to the initial outcome data (Stanton et al. 1979, 1982), which were highly positive, there is accumulating evidence that the results are well maintained in a 2- to 3-year followup period. The home drug withdrawal approach is currently being tested and appears to be relatively successful when it is implemented, but it is not always readily initiated.

Results have been obtained for several outcome variables and will only be briefly summarized here. For the best treatment condition (paid family therapy), 67% of the cases showed a successful outcome in abstinence from use of illegal opiates. Successful outcome was defined as free from use of illegal opiates for at least 80% of one time interval. This contrasts with 33% in the non-family treatment condition and 39% in the control condition. Results for legal opiates (including detoxification from methadone) were similar: paid family therapy, 62% success; non-family treatment, 27% success; control, 28% success. The results for unpaid family therapy were less dramatic, but the differences between paid and unpaid family therapy were not statistically significant. Finally, a dramatic finding was related to the difference in death rates between clients in the family and non-family treatment groups. For non-family treatment clients, there was a 10% death rate, compared to 2% for clients whose families were involved in treatment. This is not only highly significant statistically, but is also of obvious social significance.

In conclusion, it should be evident that behaviorally based family treatment requires both skill and effort in implementation. It should be equally clear that there is no implication that similar results can be obtained with "garden-variety" family therapy. Treatment was highly structured and systematic, although it should be reemphasized that these results were obtained with only 10

sessions. There is little doubt that, given ample training and administrative support, this approach can be implemented in other settings with positive results.

## REFERENCES

- Coleman, S.B., and Davis, D.I. Family therapy and drug abuse: A national survey. Family Process, 17:21-29, 1978.
- Davis, D.I.; Berenson, D.; Steinglass, P.; and Davis, S. The adaptive consequences of drinking. Psychiatry, 37:209-215, 1974.
- Eldred, C.A., and Washington, M.N. Interpersonal relationships in heroin use by men and women and their role in treatment outcome. Int J Addict, 11:117-130, 1976.
- Haley, J. Leaving Home: Therapy with Disturbed Young People. New York, McGraw Hill 1980.
- Jacobson, N.S. A review of the research on the effectiveness of marital therapy. In Paolino, T.J., and McCrady B.S., eds., Marriage and Marital Therapy: Psychoanalytic, Behavioral and Systems Theory Perspectives. New York, Brunner/Mazel., 1981.
- Jacobson, N.S., and Martin, B. Behavioral marriage therapy: Current status. Psychological Bulletin, 83:540-556, 1976.
- Levy, B. Five years after: A follow-up of 50 narcotic addicts. American Journal of Psychiatry, 7:102-106, 1972.
- Margolin, G., and Christensen, A. The treatment of marital problems. In Bautzman, R., ed. Clinical Behavior Therapy and Behavior Modification. New York: Garland, 1981.
- Mash, E.J.; Handy, L.C.; and Hamerlynck, L.A., eds. Behavior Modification Approaches to Parenting. New York: Brunner/Mazel, 1976.
- National Institute on Drug Abuse. Three-year Follow-up Study of Clients Enrolled in Treatment Programs in New York City: Phase III-Final Report. Report submitted to NIDA by MACRO System, Inc., June 1975.
- Patterson, G. Families: Application of Social Learning to Family Life. Champaign, IL.: Research Press, 1971.
- Patterson, G.; Cobb, J.A.; and Ray, R.S. A social-engineering technology for retraining the families of aggressive boys. In Adams, H.E., and Unikel, I.P., eds. Issues and Trends in Behavioral Therapy. Springfield, IL.: CC Thomas, 1973.
- Stanton, M.D., and Todd, T.C. Engaging "resistant" families in treatment: II. Principles and techniques in recruitment. Family Process, 20:261-280, 1981.
- Stanton, M.D., and Todd, T. Structural family therapy with drug addicts. In Kaufman, E., and Kaufmann, P., eds. Family Therapy of Drug and Alcohol Abuse. New York: Gardner Press, 1979.
- Stanton, M.D., and Todd, T.C., and Associates. The Family Therapy of Drug Abuse and Addiction. New York: Guilford Press, 1982.
- Stanton, M.D., Todd T.C.; Heard, D.B.; Kirschner, S.; Kleiman, J.I.; Mowatt, D.T.; Riley, P.; Scott, S.M.; and VanDeusen, J.M. Heroin addiction as a family phenomenon: A new conceptual model. A J Drug Alc Abuse, 5:125-150, 1978.

- Stanton, M.D.; Todd, T.C.; Steir, F.; VanDeusen, J.M.; Marder, L.R.; Rosoff, R.J.; Seaman, S.F.; and Skibinski, E. Family Characteristics and Family Therapy of Heroin Addicts: Final Report, 1974-1978. Report to the National Institute on Drug Abuse (Grant No. R01 DA 01119), 1979.
- Steinglass, P.; Davis, D.I.; and Berenson, D. Observations of conjointly hospitalized "alcoholic couples" during sobriety and intoxication: Implications for theory and-therapy. Family Process, 16:1-16, 1977.
- Stuart, R. Helping Couples Change: A Social Learning Approach to Marital Therapy. New York: Guilford, 1980.
- Stuart, R. Operant-Interpersonal treatment of marital discord, J Consult Clin Psycho, 33:675-682, 1969.
- Vaillant, G.E. A 12-year follow-up of New York narcotic addicts: III. Some social and psychiatric characteristics. Arch Gen Psychiatry, 15:599-609, 1966.
- Vanbeusen, J.M.; Stanton, M.D.; Scott, S.M.; and Todd, T.C. Engaging "resistant" families in treatment: I. Getting the drug addict to recruit his family members. Int J Addict, 15:1069-1089, 1980.

# The Job Seekers' Workshop: A Skill Training Program for Drug Treatment Clients

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and Tim Allen

The Job Seekers' Workshop is a behaviorally based skill training program designed to assist exheroin addicts to increase job interviewing and job finding skills. It is one example of the way in which behavioral skill training can be used in drug treatment.

Some of the impetus for the workshop came from data gathered on the need for specific ancillary services in methadone maintenance, completed in San Francisco by another University of California, San Francisco faculty member (Hargreaves 1980). Three methadone programs in the San Francisco area were included. The programs varied in size from 128 to 270 active clients but were similar in that systematic ancillary services were not well developed in any of them.

All clients in the three programs were asked to complete a brief questionnaire. Approximately forty-one percent (269/661) completed a 19-item inventory of interests in ancillary services. The 19 activities on the questionnaire are shown in rank order of preference in table 1. Rank preference was computed from a mean preference score where raw scores ranged from 1 for "Never want to do that" to 4, "Want to do that very much." In the second column is the proportion of responders who indicated a strong interest in that particular activity (a score of 4). Of the 'five top areas of interest, three have to do with vocational activities, including either job help, educational services, or job experience. Job experience, job help, legal problems, and educational services form what Dr. Hargreaves called an "adult role functioning" factor. The factor structure of the questionnaire is shown in table 2. The services making up this factor have not been addressed in the literature in systematic studies to any great extent, except the supported work studies of the last decade (Friedman 1978; Bass and Woodward 1978; Dickenson and Maynard 1981). Despite their high ranking, they are also services most clinics do not provide (Hubbard and Harwood 1981).

TABLE 1

Expressed Interest in 19 Activities  
by Methadone Maintenance Clients

(N=259 respondents out of 661 total clients)

ACTIVITIES IN RANK ORDER	PERCENT EXPRESSING STRONG INTEREST
LEGAL PROBLEMS	56
JOB HELP	54
EDUCATIONAL SERVICES	52
JOB EXPERIENCE	52
CLIENT COUNCIL	48
HOW MY BODY WORKS	41
RELAXATION TECHNIQUES	42
PEOPLE'S GUIDE TO THE CITY	37
INDIVIDUAL COUNSELING	38
"PSYCHOLOGY TODAY"	37
FUN AND GAMES	31
SPORTS PROGRAM	32
COUPLES COUNSELING	29
A LOOK AT THE "STRAIGHT LIFE"	23
GROUP THERAPY	24
PROBLEMS OF PARENTS	25
HOMEMAKING SKILLS	22
FAMILY COUNSELING	20
WEIGHT CONTROL	22

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methadone maintenance. © J Psychedelic Drugs, 12:  
47-52, 1980.

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TABLE 2

Rotated Factor Loadings for 19 Interest Items<sup>1</sup>

Activity	Factor I	Factor II	Factor III
Job Experience	74	12	2
Job Help	68	10	9
Legal Problems	32	3	6
Educational Services	26	14	8
"Psychology Today"	8	79	7
How My Body Works	21	66	17
A Look at the "Straight Life"	7	33	27
Relaxation Techniques	7	29	17
Individual Counseling	6	17	71
Group Therapy	10	13	44
Family Counseling	7	3	27
Client Council	18	3	27
Couples Counseling	11	5	20
Homemaking Skills	8	21	5
Fun and Games	6	15	10
Weight Control	10	9	14
People's Guide to the City	7	26	15
Problems of Parents	6	15	16
Sports Program	13	16	9
Mean Interest Rating (x 100)	123	83	72
Mean Percent Expressing Strong Interest	54	36	33
Mean Estimated Percent Total Interest	21	14	13

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1. Factor I is focused on practical help with adult role functioning; Factor II relates to psychological education; Factor III relates to personal counseling and psychotherapy approaches.

Dr. Hargreaves' data, combined with our interest in behavioral skill training techniques, resulted in a series of three studies, all focused on evaluating the Job Seekers' Workshop, an intervention designed to provide drug treatment clients with the skills necessary to find jobs in both the public and private sector.

The activities included in the Workshop were based on our observations of the problem behaviors drug treatment clients showed in interview situations, as well as in their general job-seeking strategies. These included 1) poor work histories, especially few jobs or many short-lived jobs, long gaps in work history, or repeated firings; 2) criminal records; 3) ignorance of effective behaviors in an interview situation, including ineffective masochistic honesty or poorly formulated lies, use of addict slang, distracting mannerisms, or inappropriate dress; 4) ignorance of informal job-seeking resources, such as telephone books, Friends, and interviewers.

The initial project (Hall et al. 1977) had three specific aims: 1) to determine whether the experimental workshop would be attractive to drug treatment clients; 2) to test the hypothesis that experimental subjects would be superior to controls on ratings of employability or training acceptability, and 3) to test the hypothesis that experimental subjects would be more likely than controls to find vocational placement.

The subjects were 49 methadone maintenance clients referred to the project from four clinics. Only subjects who were psychotic, illiterate, or who anticipated serving jail time within three months were ruled out. We accepted subjects from two placement categories. Fifteen subjects indicated their interest in a competitive skill training program, and the remaining 34 subjects were seeking jobs. A competitive skill training program was a publicly-supported work or training program that demanded an application procedure and an admission interview and only accepted a certain percentage of applicants. The sample is described in table 3. Most of the subjects were Caucasian, although almost half were black or of Latin descent; 34 subjects were male, and 15 were female. The mean number of months in treatment at the current treatment clinic was slightly under 11.

Subjects were randomly assigned to experimental or minimal contact control conditions. Five two-week workshops were held over a six-month period. Each consisted of three to six individuals. During each week of the workshop subjects met on two days for approximately five hours and one each for three hours. Both experimental and control subjects attended an initial meeting during which the director of Vocational Rehabilitation services for the four clinics provided all subjects with information about places and training programs and resources open to them. The assessment interview was explained to subjects and they were then told of their condition assign-

TABLE 3

Composition of Control and Experimental Job-Seeking and Training-Seeking Groups by Age, Sex, Level of Education and Job History Variables

	CONTROL		EXPERIMENTAL		Overall (N=42)
	Job- Seeking (N=15)	Training- Seeking (N=8)	Job- Seeking (N=12)	Training- Seeking (N=7)	
MEAN AGE (Yr)	31.50	30.62	29.17	31.14	30.48
LEVEL OF EDUCATION:					
High School Graduate or GED	6	5	6	5	22
High School, GED not completed	9	3	6	2	20
MEAN NUMBER OF JOBS IN PAST 5 YEARS	1.54	2.21	2.27	1.86	1.92
MONTHS WORKED IN PAST 5 YEARS	21.60	18.13	30.77	15.57	24.14
MEAN SES STATUS <sub>1</sub> OF PAST JOBS	5.65	5.63	5.80	6.00	5.78

<sub>1</sub>The scale ranges from 1 to 7, with 1 indicating professional positions, and 7 indicating unskilled labor.

ment. Control subjects were dismissed at that point. They were scheduled for an assessment interview at the same time as the experimental subjects. Experimental subjects then reconvened for an afternoon session where the format of the workshop was outlined. At this point, the content of the workshop included a discussion of vocational aspirations followed by a brief relaxation training session. Subjects used active coping relaxation to relax before the interview. Subjects then role-played short segments of the initial interview and the final component of the interview. At the end of the second day, difficulties involving completing job application forms were discussed. Subjects were given a form to complete before the next session. They also formulated a "next step" in the placement process which they were to have completed in the free day that followed. Following the "free day," subjects met for a half-day session. They discussed the difficulties encountered and ways of handling these difficulties.

The remainder of the session was devoted to written application forms. The rest of the workshop was concerned with the complete interviews. Subjects had opportunities to role-play interviews in progressively more difficult situations; that is, the interviewer acted cold, hostile, or distracted. Subjects also took the interviewer role with other subjects, and proved to be difficult interviewers, indeed, usually by drawing from their own experiences.

At the end of the workshop, all subjects participated in a simulated interview. A single interviewer, blind to experimental condition, rated subjects on a global scale tapping employability/acceptability as a trainee. Three months after the end of the assessment interview, subjects were contacted and asked to indicate whether they had found a job, the date of the placement, and the number of interviews attended since the end of the workshop. The place of employment and date of placement were verified by checking with the subjects' counselor.

The results from this initial study were promising. Only 17%, or four of the experimental subjects, dropped out (three of the control subjects "dropped out" also; that is, they did not appear for this final interview). Participation in the experimental condition resulted in significant increases in vocational placement. As figure 1 indicates, at follow-up, 50% of the experimental subjects had been placed as compared with 14% of the controls. Experimental subjects were rated also superior to controls on both interview performance and written applications.

This study led to two companion studies. In both of these studies, the effect of the Job Seekers' Workshop on job finding only was examined. We did not accept potential subjects attempting to find placement in a competitive training program as we had in the original study, mostly because of design considerations.

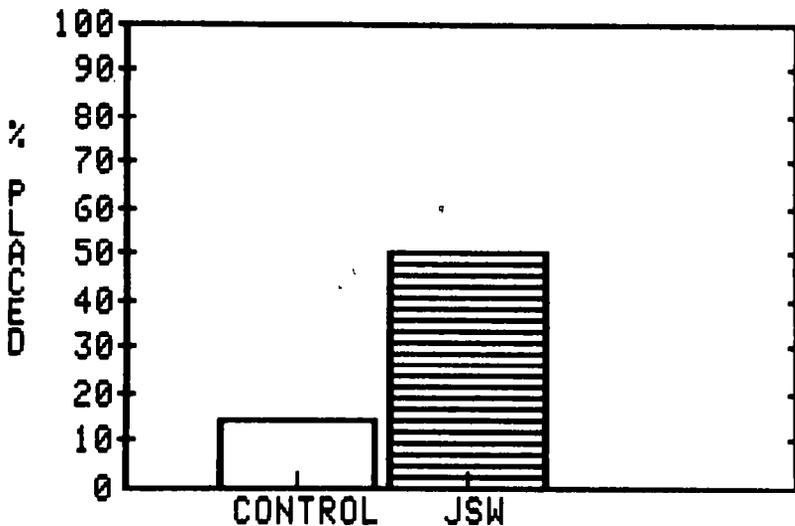


FIGURE 1

*Percent of Subjects in Job Seekers' Workshop and Control Conditions Placed by Three-Month Follow-up*

In the first of these, a revised version of the Job Seekers' Workshop with exheroin addicts drawn from the criminal justice system was evaluated (Hall et al. 1981a). In the second, the Workshop was cross validated in a methadone maintenance sample (Hall et al. 1981b). The criminal justice sample provides an interesting contrast with the methadone samples.

In the criminal justice study, subjects were 55 parolees or probationers who had documented histories of heroin abuse who were referred to the project from either county probation officers or State parole officers.

Agency personnel were blind to experimental conditions and assignments. Again, we ruled out only subjects who were psychotic, illiterate, or who anticipated serving jail time within three months. The characteristics of the sample are shown in table 4. The majority of the subjects were black. A sizeable

TABLE 4

## Characteristics of Criminal Justice Sample

		<u>Experimental</u>	<u>Control</u>	<u>Entire</u>
		( N = 3 0 )	(N=25)	(N=55)
AGE	MEAN	34.41	33.24	33.87
NUMBER OF JOBS, PAST FIVE YEARS	MEAN	1.28	1.67	1.46
MONTHS SINCE LAST JOB	MEAN	27.44	30.22	28.65
MONTHS WORKED PAST FIVE YEARS	MEAN	12.21	15.58	13.74
SEX	MALE	24	23	47
	FEMALE	6	2	8
EDUCATIONAL LEVEL; HIGH SCHOOL DIPLOMA/GED	YES	18	10	28
	NO	12	15	27
CRIMINAL JUSTICE STATUS	PAROLE	15	18	33
	PROBATION	7	5	12
	BOTH	4	5	9

minority were Caucasian. There was a greater proportion of male subjects than in our previous study. The two samples did not seem to differ markedly in educational level or job indicators. However, the job data are not meaningful, since many subjects had spent significant amounts of time within the last five years in jail or the penitentiary.

A treatment/no-treatment design was used again. Treatment content was streamlined to three components: 1) job interview training; 2) instruction in completion of application forms; 3) job search procedures. The components of each are shown in tables 5. Emphasis placed on job interview training and on

T A B L E 5

Three Components of the Job Seekers' Workshop

1. JOB INTERVIEW TWINING
  - A. Video desensitization
  - B. Desirable entrance and exit behaviors
  - C. Eliminate distracting behaviors
  - D. Positive presentation of self
  - E. Video and verbal feedback
  - F. Gradually increasing "difficulty" of interview
  
2. COMPLETION OF APPLICATION FORMS
  - A. Know crucial personal information
  - B. Handling difficult items, especially drug histories and arrests
  - C. Emphasizing positive aspects of job history
  
3. JOB SEARCH PROCEDURES
  - A. Sharing job leads
  - B. Using friends and relatives as resources
  - C. Unexpected resources--job interviewer, the telephone and telephone books and the newspaper

completion of application forms was increased. The job search procedures were largely modeled after the work of Azrin and his colleagues (Azrin et al. 1975'; Azrin and Philips 1979). They included sharing of job leads and learning how to obtain them from friends, relatives, job interviewers, newspapers, and telephone books. Subjects also practiced making telephone calls with coaching and suggestions by the leaders.

In this study, as in the subsequent one, the "free day" activity and relaxation training were omitted. The "free day" activity was omitted because subjects in the initial study failed to follow through with these activities, viewing them as unimportant, 'make work" tasks. Relaxation training was omitted because anxiety wasn't a problem for many subjects. Also, for those for whom it was a problem, knowledge of interviewing skills seemed to be more potent in reducing anxiety than relaxation training. A more sophisticated assessment device, a factor-based instrument called the Interview Rating Survey was used. It included two scales, the items of which are shown in table 6. The first might best be characterized as a general, primarily verbal, competency factor. The second consists mostly of specific nonverbal behaviors.

At a mock assessment interview, subjects were rated on this scale by two interviewers who were blind to treatment conditions, and blind to the content of the experimental intervention. Following treatment, subjects were contacted once a month for three months and information about the day of their hiring and the amount earned obtained. Again, we verified employment whenever possible. Results of this study are shown in figure 2. These data represent a Life Table Analysis (Fleiss et al. 1976; Cutler and Ederer 1958). At the end of three months, this analysis indicates approximately 86% of the experimental subjects had found employment as compared to 54% of the controls. The differences, between the conditions were apparent as early as one week posttreatment. The difference at this point is significant, and remains so throughout the three-month period.

Resides having higher placement rates, the experimental condition differed significantly from the control condition on the second IRS scale--the one measuring specific, nonverbal behaviors.

We were surprised at the high general rate of employment in both experimental and control conditions in this study. We had selected this population for replication because we thought they would provide a more stringent test of the effectiveness of the intervention since they had both recent prison histories and a history of heroin abuse. There are several factors that might explain the reason for the differences between this condition and the methadone sample,' including prevailing employment rates, differences in leaders, and differences in subjects' abilities and degree of addiction. Our hypothesis was that

TABLE 6

## Interview Rating Scale

FACTOR 1	FACTOR 2
1. Level of information provided about job skills	1. Posture
2. Level of information about past jobs	2. Tension level
3. Responses to interviewer questions	3. Absence of distracting mannerisms
4. Possesses relevant job skills	4. Appearance
5. Absence of self-disparaging statements	5. Eye contact
6. Ability to explain problem areas	6. Courtesy
7. Positive presentation of self	7. Appropriate exit and entrance
8. Likelihood of hiring, if position available	8. Use of an assertive closing
	9. Manner of speaking

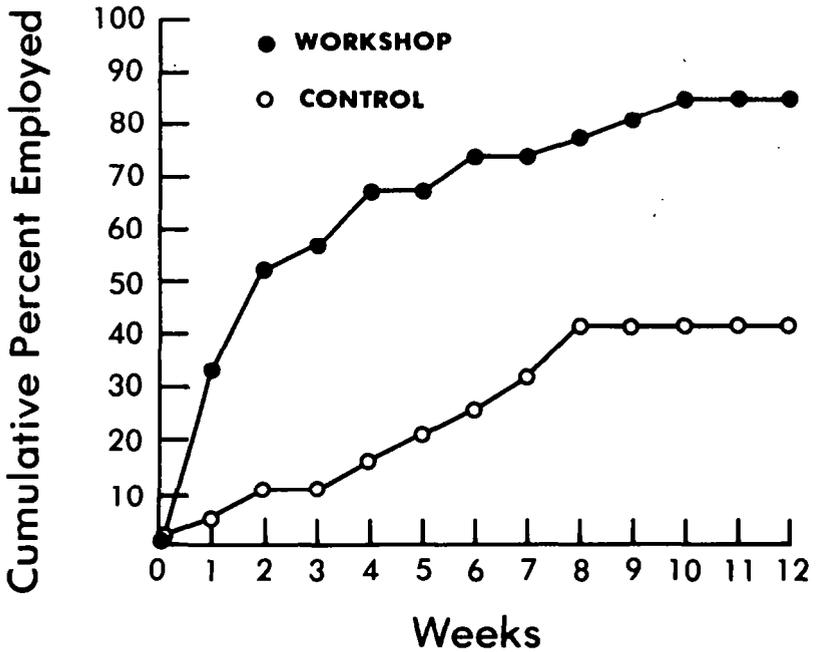


FIGURE 2

these differences were the results of a potent contingency. That is, many of these subjects faced a return to prison if they did not find jobs.

In the final study we returned to methadone maintenance clinics. Sixty job-seeking methadone maintenance clients were assigned to either the Job Seekers' Workshop or to the information-only condition. The sample for this study is described in table 7. In this study, the program was presented over four days with the assessment interview on the final, fifth day. However, the content was the same as that used with the criminal justice sample. The outcome, which was again percentage of subjects employed at each week, is shown in figure 3, which is also based on a Life Table analysis. A comparison for all experimental subjects with controls indicated differences which narrowly failed to reach conventional levels of statistical significance, although they were in the expected direction. Of the experimental subjects, 52% were employed, as compared with 30% of the controls. Four experimental subjects left immediately

TABLE 7

## Characteristics of Second Methadone Maintenance Sample

		<u>Experimental</u>	<u>Control</u>	<u>Entire</u> <u>Sample</u>
		(N=30)	(N=30)	(N=60)
AGE	MEAN	30.14	30.83	30.52
NUMBER OF JOBS, PAST FIVE YEARS	MEAN	1.43	.96	1.37
MONTHS SINCE LAST JOB	MEAN	33.12	49.76	36.94
MONTHS WORKED PAST FIVE YEARS	MEAN	10.71	8.00	9.25
SEX	MALE	16	19	35
	FEMALE	14	11	25
EDUCATIONAL LEVEL: HIGH	YES	14	19	33
SCHOOL DIPLOMA/GED	NO	16	11	27
CRIMINAL JUSTICE STATUS	PAROLE	5	3	8
	PROBATION	9	8	17
	NEITHER	16	19	35

following the information presentation and therefore never received the experimental treatment. If they are excluded, along with their matched controls, differences in employment are significant. In interview behaviors, as rated by blind interviewers, we found that participation in the workshop increased scores on the general competency scale of the IRS but not on the specific behavior scale.

These data indicate that the Job Seekers' Workshop is effective in helping drug treatment clients find employment. However, demonstrating effectiveness is one thing. Motivating programs to implement treatment techniques of demonstrated effectiveness

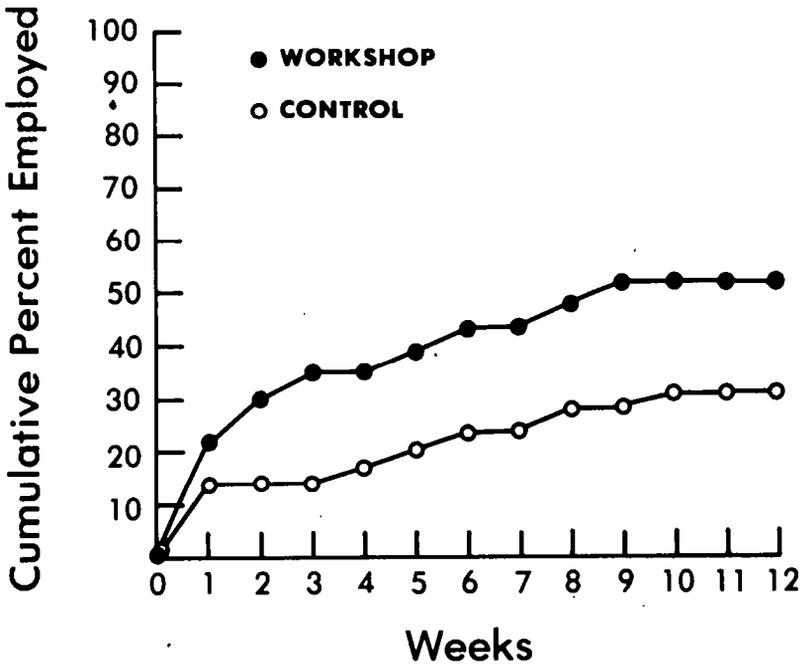


FIGURE 3

may be another. This is the dissemination problem: once an approach has been shown to be of value, what methods effectively motivate service providers to adopt it?

To answer this question, a study is currently being conducted through the Human Interaction Research Institute (HIRI) in Los Angeles in collaboration with our group. The participating investigators are Drs. Edward Glaser (Principal Investigator) and Paul Greenberg of HIRI, Dr. James Sorensen, and the authors from University of California, San Francisco.

This project has two goals: 1) to disseminate the Job Seekers' Workshop to drug treatment programs in the western United States, and 2) to evaluate the effectiveness of three different strategies for encouraging programs to adopt the approach.

One hundred and ninety drug treatment programs will be recruited over the next year. Participating programs are stratified by modality (outpatient drug free, methadone maintenance, and residential) and randomly assigned from within these blocks to one of four conditions:

Printed Information Only. These 65 programs receive a 20-page booklet. The booklet describes the Workshop, summarizes the research, and discusses issues of appropriate clients, staffing, and equipment. They also receive a 52-page Leaders' Manual, which is a step-by-step "cookbook" for conducting the research. The contents of the Manual include discussions of recruitment and screening of clients, equipment and materials needed, and detailed descriptions of Workshop activities, including suggested comments for the leader and anecdotal material about issues that arise.

Site Visit. The 30 programs in this condition receive the printed information plus a one-day site visit from a project staff member. The site visit includes a one-hour videotape of an actual workshop, brief training in role-play interviews and videotape feedback, and development of specific plans to implement a Job Seekers' Workshop in the program. Programs are called one week after the site visit to review implementation plans, and to remind them that project staff are available for telephone consultation. Programs can receive as much telephone consultation as they wish.

Training Conference. These 30 programs receive the printed material, and are invited to attend a two-day training conference in San Francisco. Approximately eight programs participate in any one conference, which includes intensive experience in role-playing and videotape feedback, discussion of implementation, and interaction with the entire project staff. Followup consultation is available as in the site visit condition.

Control. The 65 programs in the, control condition receive printed information after the study period is completed.

All programs are followed at three and nine months after condition assignment. They are assessed by mailed questionnaires and telephone to determine adoption rates, and other ways in which the intervention has influenced the provision of vocational services by the program.

The first wave of recruitment is underway. Recruitment letters have been sent to a total of 127 programs in two separate mailings. About 50% of the eligible programs have agreed to participate. Programs agreeing to participate have indicated interest and enthusiasm and commented on the relevance of the Job Seekers' Workshop to their clients' needs. Programs declining have most frequently given lack of sufficient staff as their reason for declining. No additional data are available at this time. The projected completion date for data collection is May, 1984.

## ACKNOWLEDGMENT

Preparation of this manuscript and research described in it funded in part by Grants Number 5 K02 00065, IH8 DA01978, and 1 R81 DA03058, from the National Institute on Drug Abuse.

## REFERENCES

- Azrin, N.H., Flores, T., and Kaplan, S.J. Job-finding club: A group-assisted program for obtaining employment. Behav Res Ther, 13:17-27, 1975.
- Azrin, N.H., and Philips, R.A. The job club method for the handicapped: A comparative outcome study. Rehab Counsel Bull, 23:144-155, 1979.
- Bass, U.F., and Woodward, J.A. Skills Training and Employment for Exaddicts in Washington, D.C.: A Report on Treatment. National Institute on Drug Abuse Services Research Report, DHEW Pub. No. (ADM) 76-694 Rockville, MD: The Institute, 1978.
- Cutler, S. J. , and Ederer? P. Maximum utilization of the life table method in analyzing survival. J Chron Dis, 8:699-712, 1958.
- Dickenson, K. , and Maynard, R. The Impact of Supported Work on Exaddicts. New York: Manpower Demonstration Research Corpora-Text tion, 1981.
- Fleiss, J.L.; Dunner, D.L. ; Stallone, F. ; and Fieve, R.R. The life table; A method for analyzing longitudinal studies. Arch Gen Psychaiatry, 33:107-110, 1976.
- Friedman, N. The Wildcat Experiment: An Early Test of Supported Work in Drug Abuse Rehabilitation. National Institute on Drug Abuse Services Research Monograph. DHEW Pub. No. (ADM) 79-782: Rockville, MD: The Institute, 1978.
- Hall, S.M. ; Loeb, P. ; Norton, J.W. ; and Yang, R. Improving vocational placement in drug treatment clients: A pilot study. Addict Behav, 15:438-441, 1977.
- Hall S.M.; Loeb, P.; Coyne, K.; and Cooper, J. Increasing employment in ex-heroin addicts I: Criminal justice sample. Behav Ther, 12:443-452, 1981a.
- Hall, Loeb, D.; Levois, M.; and Cooper, J. Increasing employment in ex-heroin addicts II: Methadone maintenance sample, Behav Ther 12:453-460 1981b.
- Hargreaves, Interest in ancillary services in methadone maintenance. J Psychedelic Drugs, 12:47-52, 1980.
- HUbbard, R.L., and Harwood, H.J. Employment Related Services in Drug Treatment Programs. National Institute on Drug Abuse Treatment Research Report, DHHS Pub. No. (ADM) 81-144. Rockville, MD: The Institute, 1981.

# Brokerage Model Rehabilitation System for Opiate Dependence: A Behavioral Analysis

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## INTRODUCTION

Clinicians and policy tacticians have attempted to determine whether refinements in the existing methadone treatment system might lead to improvements in treatment. Thus, for example, specific aspects of methadone administration (e.g., dosage and duration) have been reviewed (e.g., Cooper et al., 1983) and overviews of the prevailing system have been provided (Dole and Nyswander 1983). The suggested resolution to problems depends in part on the theoretical perspective of the observer. Indeed, Dole and Nyswander (1983) have observed that "priorities in treatment have been complicated by ideological arguments, competition for public funds and deeply felt issues of morality." In a similar vein, Pickens and Thompson (this volume) have noted that differing theoretical perspectives have resulted in different interpretations and approaches to treating drug-dependent patients. Inroads have been made in developing effective therapeutic strategies, but it is clear that some of the problems in treatment will not be resolved through further refinement of the current system. The time may be appropriate to examine the systems within which drug dependence treatment services are provided and, if necessary, to make appropriate modifications. This may be particularly true with respect to treatment services provided for heroin use.

Discussions of heroin dependence are usually based on two assumptions: (1) The individuals have an underlying biological or psychological abnormality, which, if rectified, will make them well again, and (2) Specific treatments exist, or can be discovered, which will eradicate the disorder suffered by the heroin user. Based on these assumptions or variants of them, practitioners attack the putative illness of the opiate-dependent person. Treating activities are designed to eliminate, or at least modulate, the underlying disorder, which it is believed is heroin dependence. Treating, in this sense, becomes an activity equated primarily with process rather than effect. Depending on the practitioner's theoretical orientation, the focus of treatment could be methadone maintenance, group therapy, individual counseling, or biofeedback training. Aspects of the client's life

not central to the primary "treating" activities of the practitioner are typically viewed as adjunctive services to which attention may or may not be directed in a systematic fashion. Considerable variability exists from facility to facility in terms of these services.

The line of reasoning on which much treatment is based is flawed in several respects. The analysis of what it is to be a stereotypic heroin-dependent individual is inaccurate. First, heroin dependence is not an illness per se or a thing, akin to a diseased appendix which can be extirpated to render a sick patient well. Rather, heroin dependence is a behavioral state, defined by the nexus of environmental and pharmacological factors which has impinged on the individual, and interacts with the current environmental conditions to engender the characteristic pattern of deviant behavior. Second, although numerous individual procedures exist which effectively alter one or another of the deviant behaviors or deficiencies characterizing the lives of heroin users, they are seldom applied in concert in an organized way. Combinations of technologies, addressed to the array of variables characterizing heroin dependence processes, are required for meaningful rehabilitation. Moreover, no procedures can be effective if they are irregularly or improperly administered, alone or in combination. Overall it is apparent that no single treatment or technology can be applied which will cure or ameliorate the problems of the heroin-dependent individual. As should be evident in succeeding pages, an alternative policy and associated technology may prove more effective than the current dominant forms.

#### BASIC MECHANISMS INVOLVED IN HEROIN DEPENDENCE

The prevailing scientific opinion until the early 1960s was that opiate use and dependence were synonymous with physical dependence. In the early 1960s several studies were conducted with rats and monkeys suggesting compulsive opiate self-administration was a special case of operant behavior in which the dependence-producing drug serves as a rewarding event (Deneau et al. 1969; Schuster and Thompson 1962; Thompson and Schuster 1964; Weeks 1962) maintaining drug-seeking behavior. While physical dependence could serve an important role, as a setting condition for further self-administration, it was not essential to the drug dependence process. Growing out of this early work has been an extensive literature with opiates, alcohol, and other drugs of abuse corroborating the generality of this model (cf. Schuster and Thompson 1969; Thompson and Pickens 1969; Meisch 1982; Griffiths et al. 1980; Spealman and Goldberg 1978; Johanson and Schuster 1981; Pickens et al. 1978; Thompson and Johanson 1981). This literature has pointed to the importance of interactions between behavioral, environmental, and pharmacological variables as determinants of drug use. Conceptualizing drug dependence in this way has led to new treatment technologies which have successfully reduced the control drugs exercise over the behavior of the user under specific circumstances. Broader implications of a behavioral analysis of drug dependence processes have been limited. Behavioral practitioners attempting to treat heroin-dependent individuals in

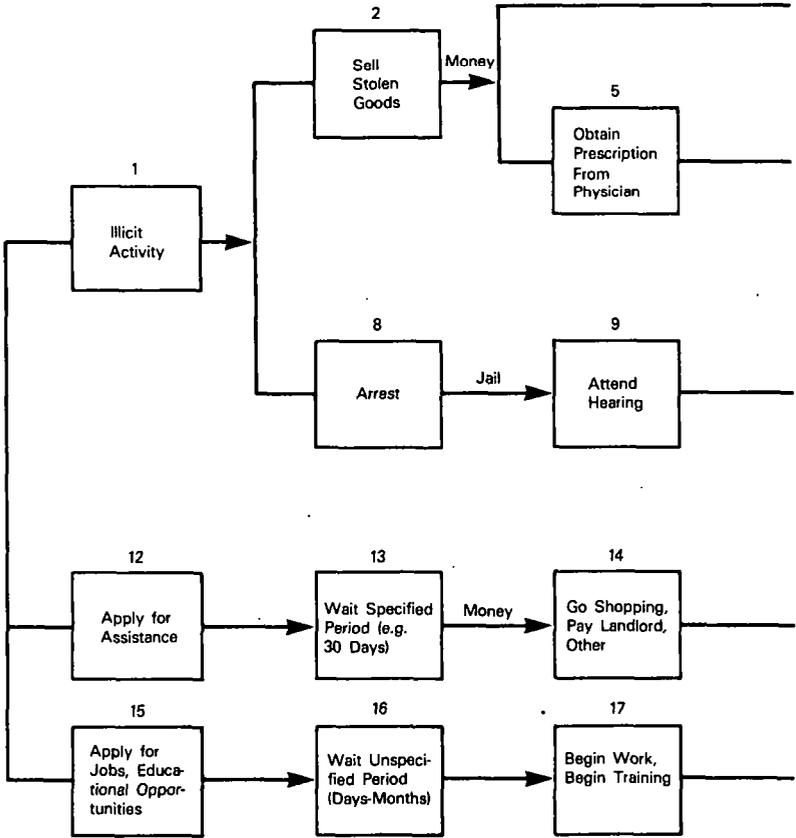
the natural environment have often believed that while they could identify major variables requiring attention, they could not gain the control over Family, vocational, educational, or drug resources that is necessary to engender enduring behavioral change. The solution has typically been to focus on one or two factors which have been accessible, and to deemphasize or ignore the remainder. This is an understandable practical response to a frustrating problem, but, as with other approaches, has diminished the effectiveness of otherwise very effective procedures. Thus problems may reemerge to original proportions as treatment is removed. It should be noted that one consequence of the behavioral treatment perspective, i.e., its attention to data and documentation, has resulted in acknowledgment of its failures as well as its successes. Nevertheless, an analysis of the behavioral repertoire and environment of a typical urban heroin user reveals that such modest efforts with primarily a single focus cannot be expected to bring about more than modest results.

#### ANALYSIS OF HEROIN USERS' OPTIONS

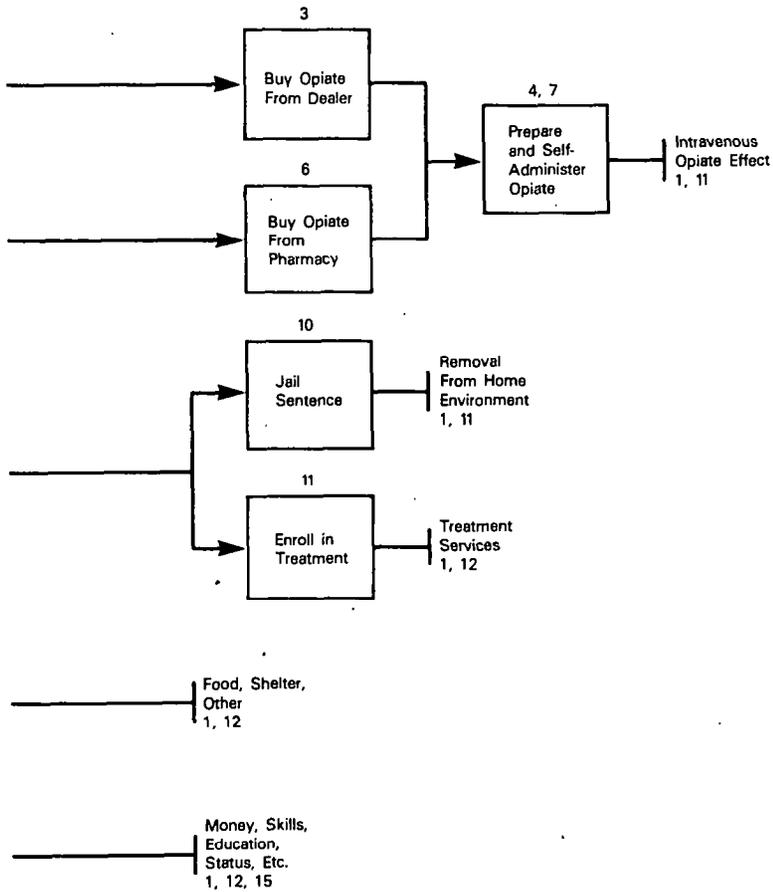
Three groups of options may be identified as available to a prototypic urban heroin user: (1) a licit life style; (2) a treatment/rehabilitative life style; and (3) an illicit life style. A method of analysis developed by Findley (1962, 1966) and pursued by others is helpful in elucidating relevant variables and understanding complex multioperant behavioral repertoires. Using this analytic technique, major components of behavior are identified and systematically examined. Findley proposed a useful system for schematic presentation of the elements of a behavioral system and repertoire, and this has been used here to delineate major components of the heroin user's behavioral choices, or options.

As has been discussed in the context of specific examples by other authors in this volume, the options can be compared on numerous dimensions, two of which are (1) positive reinforcement parameters and (2) punishment parameters. Presented in Figure 1 is an analysis of what might be termed the behavioral space of an urban heroin user. While it is clear that the complete array of possible detailed analyses for all categories of heroin users, or even urban users, is not represented, one can obtain a sense of the necessary form of analysis by the example presented. In this case the first sequence of behaviors (or operant 1), illicit activity, would typically involve theft or burglary, leading to selling the stolen goods (operant 2). The heroin user would then buy drug, most likely from a dealer (operant 3), which would be self-administered (operant 4). The likelihood of a given act of theft or burglary being detected by the police (operant 8) is extremely low; hence the punishment branch of the multioperant schedule is rarely experienced. Concurrently, the individual may apply for public assistance and then wait for money (a generalized conditioned reinforcer) (operants 12, 13) to be delivered without regard to events in the other branch of the schedule (operants 2-7). That is, the several different layers of the system reinforce deviant behaviors, and the contingencies of one are counterproductive for

FIGURE 1



Overview diagram of options available to a stereotypic opiate using client. The sequence starting with 1 has the most consistently reliable consequence in the form of drug use with occasional interaction with police.



The sequence beginning with 12 is fairly reliable, but benefits are remote and can occur concurrently with drug use. The sequence beginning with 15 is the most difficult and has the greatest delay of reinforcement.

the requirements of another. In this case providing assistance, even though it is clearly needed, may undercut other aspects of rehabilitation, not because it is provided but because of the manner in which it is provided. The schedule of illicit behavior itself is also under strong stimulus control, with several daily intravenous heroin reinforcements sustaining the overall repertoire.

Consider a rehabilitative alternative: a weaker delayed opiate reinforcer is self-administered once daily (oral methadone) at a clinic (operant 11). A relatively minor response requirement, that of appearing at the clinic, is placed on the client. Successful engagement in such other activities as academic or vocational training (operants 15-17) is highly improbable. Typical adolescent or young adult heroin users may have such deficient academic skills that the reinforcers available in most educational settings have little possibility of being effective (e.g., approval, satisfaction, praise, high grades). Those reinforcers which are available are infrequent, delayed, and not very powerful. However, punishment for inappropriate academic behavior is immediate and frequently provided by school personnel (e.g., verbal disapproval or threats). The result is that most heroin users drop out of educational programs. The situation for job training is virtually identical. In both instances they are then further removed from the licit system of reinforcers which would lead to a more adaptive lifestyle.

A brief examination of the licit lifestyle reveals that this option would probably be sustained by only a limited number of typical young heroin users. Jobs are very difficult to obtain, and only 15 percent of potential employers say they would ever hire an "addict" or "ex-addict," while only 33 percent of the individuals have ever held a job (Gildenberg 1972). If they do obtain work, the rate of pay is typically very low and the delay of reinforcement is long (a minimum of 1 week and often 2 weeks). Since their experience with obtaining monetary reinforcement, i.e., time to receiving a paycheck, is in the main characterized by immediate payoff for illicit activity, delay in obtaining money, a feature which characterizes most jobs, is not acceptable. This is a skill which must be acquired. In addition, these individuals are unlikely to find social support initially from fellow workers and hence will be exposed to very few conditioned reinforcers to sustain work-related performance over the period between paychecks. Absenteeism, tardiness, or poor work skills, all of which are likely in unskilled, inexperienced workers, will be punished by supervisors, thereby tending to weaken overall work-oriented behavior and will lead to dismissal if repeated. Most of the other skills and environmental supports for sustaining an abstinent and licit lifestyle are typically lacking. A further impediment to success under the normal licit contingencies for an individual with the history described is that existing neighborhood social and leisure time stimuli set the occasion for illicit behavior, including drug taking. An appraisal of the behavioral options makes it clear why most heroin users alternate between illicit and rehabilitative life styles, rarely engaging in sustained licit performance. Overall,

the prevailing contingencies in combination with the drug user's experience are such that the reinforcers for maintaining an illicit life style are considerably more powerful than those which would be necessary to produce change in the direction of maintenance of the diverse behavioral repertoire of a licit lifestyle.

#### BEHAVIORAL TECHNOLOGICAL SOLUTIONS

The foregoing analysis suggests attention must be directed to a number of critical loci in the lives of heroin-dependent individuals if diverse forms of interaction are to be rehabilitative. Table 1 presents seven loci of client behavior, the site(s) in which these actions take place, and the objectives of rehabilitation in each of these sites. An overall rehabilitative program must attend to all of these variables if it is to effectively develop and maintain necessary behaviors. While many current treatment programs provide methadone in a controlled clinical setting and/or group counseling at a clinic, they have only limited resources or control to alter other conditions and are often restricted to making referrals and advising the patient to change his/her behavior.

Numerous agencies and sites must be involved in a heroin dependence rehabilitation program. In many instances, technologies already exist which can be applied in such settings (e.g., public schools, job training, methadone clinics) and in other cases (e.g., residential, health care) technologies can be modified from those designed for other clinic populations (e.g., juvenile delinquent, mentally ill, mentally retarded (cf. Phillips 1968; Thompson and Carey 1980). Thus, it is not necessary to build new behavioral intervention systems, but, rather, use can be made of extant approaches. Perhaps the most important issue is that the problems are not so much in designing individual rehabilitative programs within a given site (e.g., a school), but rather in engendering coordinated rehabilitative services and contingencies concurrently across all sites. Coordination must emanate from overall public policy and funding mechanisms. It is clear that coordination will not arise spontaneously and that instead a systematic integrative effort must be made to organize the various components of the rehabilitative services. Current policy emphasizes treatment delivered at specific sites (e.g., a clinic) and provides few incentives for coordination across facilities. Indeed, funding mechanisms may hinder cooperative effort. Thus, for example, funding is generally contingent on the number of client slots filled, i.e., the number of people being provided service rather than number of cases treated successfully. This constitutes a disincentive for graduating, or discharging, clients. It should be apparent that no treatment group is attempting to preclude advances by patients. Instead, the prevailing system of contingencies is contrary to the goals that staff members are attempting to achieve. It is not surprising that some clients remain in treatment for years without appreciable change of status.

A superficial analysis might lead to the proposal that a "fee-for-service" model would be a preferable alternative to the

TABLE 1

## LOCI OF DRUG ABUSE CLIENT BEHAVIORS AND SERVICES

<u>LOCUS of</u>	<u>Sites</u>	<u>Therapeutic Objective</u>
Residential	Public housing	Remove discriminative and reinforcing stimuli associated with heroin
Educational	Public schools	Increase basic academic skills; math and writing related to job Skills
Vocational	Vocational schools; on-the-job training	Train job skills; increase tolerance for delays of reinforcement
Opiate management	Clinics	Decrease reinforcing properties of opiates; reinforce clean urines, punish dirty urines
Health	Health providers; HMOs; pharmacies	Extinguish health providers as discriminative stimuli for drug seeking
Relational	Individuals; therapist; support groups	Increase responsible social relationships
Leisure time	Support groups; service organizations; community organizations	Increase leisure activities outside drug culture

current system. Several problems suggest this is an unsuitable alternative in and of itself. Without coordination, service might be duplicated or delivered unnecessarily and reimbursement of the redundant providers would be required. Moreover, other critical services might never be provided, since administratively these activities are often funded under auspices of different public agencies (e.g., vocational or educational versus medical). Finally, since the current system reinforces "treating" activities in the main independently of outcome, ineffective treatment will be reimbursed at the same rate as effective treatment. This is obviously dysfunctional in two respects. It may deprive the client of effective rehabilitation procedures, and more generally, may perpetuate ineffective procedures.

The process of modifying the environment within which a service is provided to shape organizational behavior to meet the needs of clients is called formative management (Budde 1979). The notion that management of human service systems should be based on performance measures of system components is not new. However, problems have typically arisen in that financial resource allocations are often made with minimal regard to the degree to which services meet client needs. This is especially troublesome in the human service industry, where specification of goals and success may be difficult. The questions are not whether regulation of rehabilitative services to heroin-dependent clients is necessary, but which data are necessary, to whom they should be provided, and what consequences flow from such performance evaluation.

Alternatives to extant service delivery and performance evaluation systems have been employed in other areas of human service and rehabilitation. An interesting and instructive example derives from the efforts of a group of families of mentally retarded people in Victoria, British Columbia, who were faced with the problem of devising an adequate service-delivery system for their handicapped family members. This need resulted from the closing of institutions which had previously provided residential care, a situation even more difficult than that provided by patients who already have necessary skills for living in the community. They formed a nonprofit organization (the Community Living Board) which established a brokerage system for services to their family members, ranging from where the people lived to who provided medical, dental, and other health care services, and which recreational services were purchased. The Province of British Columbia provided a per diem for each client to the broker, and it was the broker's responsibility to purchase the most appropriate and effective services for each client (Rioux and Crawford 1982).

The brokerage model may have numerous advantages. The broker selects providers, which in the case of treatment for heroin dependence represent seven classes of services (see table 1). Service selection must be based on client needs, cost, and data concerning effectiveness of services previously provided by a given vendor. The broker's fees, in turn, are based on objective measures of client outcome. Centralization of services in

specialized centers, as exemplified by "methadone clinics," unnecessarily segregates these patient/clients. These facilities arose because of a need and serve a valuable function. But like State hospitals serving mentally ill and mentally retarded people, they are, in many respects, not an optimum service model. The clinics do serve to monitor urines for illicit drugs and prescribe and administer methadone. They also provide ongoing monitoring of general health and referrals to appropriate medical services, counseling, and referrals for other services. However, as noted in other chapters in this volume, methadone clinics are likely to experience problems with loitering, vandalism, muggings, and related criminal activity in the vicinity. These are precisely the behaviors one would expect at a site where a major reinforcer is reliably administered every day to individuals whose repertoires include these illicit or antisocial behaviors and for whom other activities (e.g., work, educational opportunities) are not readily available. Parallel behavior patterns can be demonstrated in laboratory experiments, clinical settings, and the natural environment. Notable recent social examples of difficulties which arise in crowds around dispensers of reinforcers are the disagreements in gas lines during shortages or similar "scuffles" in groups waiting to obtain concert tickets or enter a variety of large entertainment events. The added fact that in this case the group encouraged to congregate has an extensive repertoire of illicit or socially difficult behaviors increases the probability that problems may emerge. The contingencies of the methadone clinic encourage regular attendance, segregate drug users in one area, assure daily interactions, and set the occasion and provide reinforcers for drug-related deviant behavior. In brief, the clinic inadvertently creates an "addictive institution" within the community which assures that difficulties are most likely in the vicinity. It is essential to note that it is not the dispensation of methadone per se which establishes this "institution" but rather the contingencies and conditions governing its dispensation and provision of other services. Overall, it is remarkable that many clinics have been as effective as they have at minimizing the problems which emerge.

The need for central clinics has become less evident as a strong human services system has evolved. In general, all of the services provided by most specialized drug treatment clinics could be provided by vendors integrated in the community. Private physicians or public clinics could prescribe methadone and monitor urines as well as monitor their patients' health. To the extent that medical supervision and care were widely distributed among doctors throughout a community, problems with loitering or other related deviant behaviors would be minimized. Similarly, housing, family counselors, and recreational services are available throughout a community, not only in the poorest neighborhoods with the highest crime rates. By dispersing these individuals widely throughout a community, many of the problems with deviant behaviors which exist in the current clinic system would be diminished.

A single broker would be unable to monitor all seven service domains for each client (table 1) and maintain an adequate client

load. A proposed administrative arrangement might involve a single broker, 8 case managers, and 96 clients. Case managers would collect data and serve as liaison consultants to service providers. While brokers would be technically knowledgeable, their primary job would involve performance evaluation. Case managers could be baccalaureate-level behavioral science technicians trained to collect data and provide technical expertise to vendors. The question which arises is what assures that each of the major participants in this process will, contribute effectively to its success. Table 2 shows the incentives for the client, the brokers, and vendors for participating in the program and for performance evaluation. Each participant has a good reason to cooperate with program activities and work toward program goals.

Estimates of costs of drug abuse must be viewed with caution. They may, however, give a general sense of the relative magnitude of the problem. Such estimates for heroin use in New York City in 1978 provide an example. It was calculated that a heroin user in the city, untreated, cost society about \$25,000 a year in criminal activity. Imprisonment, at the time, cost about \$15,000 per year. A methadone maintenance treatment slot was considered to cost approximately \$1,800 annually, while a drug treatment slot including services in excess of methadone was estimated to cost \$2,700 per year. Of the approximately 290,000 narcotics abusers in New York State, about 77 percent (or 223,000) lived in New York City (U.S. Congress 1978). Given these figures for the city, if no treatment services were available, the cost to society in criminal activity would be \$5.575 billion per year. Since some portion of the individuals were in treatment (about 50,000), the figure might be reduced to \$4.325 billion per year. Exclusion of some portion of the population of users because they pay for drugs through licit income would still result in costs of substantial proportions. Any treatment program that led to better client health and adjustment and reduced costs would be considered successful. If it were only possible to reduce the number of individuals engaged in the illicit life style by 10%, it would represent a large savings in New York City alone, and monumental annual savings nationwide.

An obvious question is whether the cost of a brokerage program would be less than or equivalent to costs for the extant system. It is likely that the proposed approach, or a similar one, with clear contingencies for client improvement, would cost no more, and it is clear that the benefits of such a program would be considerable.

The system would consist of a token economy, along the lines of that described by Ayllon and Azrin (1968). A program would be designed for each client in accord with his or her needs. A bookkeeping system with specified monetary equivalents would be maintained to provide a ledger of reinforcement for patient successes. Acknowledgment of success would be tangible, immediate, and consistent. Money earned would be credited to the patient and would be in excess of the subsistence provided for food and shelter. The token system would not only provide reinforcement for remaining in treatment but would explicitly provide positive

TABLE 2

INCENTIVES FOR PARTICIPATING IN THE BROKERAGE REHABILITATION SYSTEM

<u>Locus of Client Action</u>	<u>What's In It For the Addict</u>	<u>Why Provider Should Cooperate</u>	<u>Broker's Responsibility</u>
Residential	Decent place to live, free rent for 6 months	Rent for 6 months; guaranteed clientele	Monitor living environment
Educational	Money	Tuition paid to school	Provide money administered by school staff
Vocational	Money; prospect of job	Tuition to school; free workers	Provide money administered by staff; supervise point system
Opiate management	(1) No worry about withdrawal (2) Methadone (3) Money	Fee for service (physician and pharmacist)	Provide money for clean urines
Health	Free health care	Fee for service (physician)	Followup
Relational	(1) Improved family relationships (2) Money-	Fee for service (therapist)	Provide money for responsible family life
Leisure time	(1) More enjoyable (2) Money	Voluntary Voluntary	Provide money for time in nondrug culture activities

consequences for successful responses. Specific requirements would be adjusted as needed for the duration of treatment with the tokens exchangeable for money throughout. There would, of course, be continuing examination and updating of goals based on progress. The proportion of the total of tokens which could be earned each week would vary across the seven docu of client activity over the period of involvement with the rehabilitation program. The relative availability of tokens for each activity would assure systematic "economic pressures" to emphasize certain activities, and the values would shift as a function of progress, thereby moving behavior in the direction required.

The government would serve the important role of determining the accuracy of brokers' reporting practices and providing financial support for the system. The performance evaluation would be done on a random sampling basis to verify brokers' evaluations of client outcomes. Sampling similar to that done with income tax returns by the Internal Revenue Service could be used to assess reliability of brokers' reports. The brokers themselves would require only relatively small numbers of data points per client per week to effectively monitor progress, and for any given broker the data could be maintained on currently available small business computers. Summary outcome data (e.g., quarterly change scores) would be used to determine funding levels to vendors. By providing vendors with timely information concerning client progress or its absence it would be possible to assist service providers in making appropriate changes in their programs. The contingencies for broker and client alike would, within this system, be directed to progress and change.

Inevitable questions arise concerning fee structure and client characteristics. Similarity in fees for all clients would encourage vendors to serve only those clients with the least serious problems, as is inherent in the current system, but this problem could be readily circumvented, since, again, equivalent models exist for other services. At present, insurance companies make decisions based on actuarial data concerning risk; for example, clients with high health risk may pay more for health or life insurance. Development of a parallel system of adjusted fees permitting translation of client characteristics into differential service-delivery costs based on our knowledge of treatment outcome with similar clients would be an essential component of the system. This would minimize the incentive for vendors to deal only with the easiest cases. Numerous problems, some of which could not be anticipated, would evolve and require resolution but should not deter the formulation of a workable system.

The disincentives to change which may in some cases be produced by public assistance must be considered. There are divided views on the issue of whether any contingencies may ever be attached to availability of public funds for food, clothing, and housing for the needy. This is clearly a legitimate and reasonable area of concern and must be examined with caution. It appears that, in the case of some heroin users, availability of noncontingent financial support contributes to sustaining an illicit life style. Since the

life style of a heroin user is often characterized by isolation from the culture at large and the absence of dignity, providing funds without concern or attention to the consequences of doing so is irresponsible. Noncontingent funds not only produce food and shelter, they also maintain an addictive lifestyle, and Society cannot be absolved of this responsibility. Appropriate contingent provision of money, housing, and food can generate behavioral change for the benefit of the client. It may be reasonable, therefore, to link multiple drug-related legal encounters to further access to public assistance based on participation in a meaningful rehabilitative program. Some portion of the public assistance (e.g., housing and food) might be provided with minimal requirements, while all funds above and beyond these amounts would be provided only in the context of rehabilitation.

Overall, the various aspects of the system discussed would provide a reasonable mix of government and private endeavor. The brokers and case managers would be employees of licensed nonprofit organizations that would compete for contracts to deliver services for which they would be reimbursed. Oversight and sampling of the accuracy of the brokerage reporting and administration of funding would entail a neutral government agency. The design of this system is a reasonable outgrowth of experience in the provision of diverse health care services with a focus on the desired outcome.

#### CONCLUSION

The problems in treatment of drug use are numerous and arise from pharmacological, behavioral, and environmental determinants. In the case of the typical heroin-dependent individual who enters methadone treatment, it is clear that multiple social and economic problems exist concurrently. Skillful scientists and clinicians have investigated and addressed various aspects of these problems and in many cases have generated impressive solutions. It is becoming increasingly clear, however, that specific treatment of one or another component will not provide resolution to a multifaceted problem. This is true because heroin dependence does not involve a predominantly biological illness amenable to treatment in the conventional sense. In addition, despite efforts to broaden the scope of treatment, an applied behavioral systems analysis of the contingencies governing provision of treatment suggests that even if the component strategies were optimal, considerable difficulty would emerge in their application.

Models from other human services domains suggest an objective accountability-oriented system of services coordinated and administered by skilled brokers may be an excellent alternative. Such a system assures that decisions concerning financial incentives to service providers are based on objective measures of progress. It further assures that from the perspective of the client the rewards resemble those which are required for maintaining a licit life style. While some difficult decisions are demanded of communities, the resultant rehabilitation strategy is one incorporating all the resources of the community rather than relying heavily on that portion least able to provide support of a

licit behavioral repertoire. Furthermore, inherent in the system is the fact that clients learn under supervised conditions how to live in the broader community rather than spending time loitering or consorting with former peers and heroin-using cohorts. Conceptually and practically it is clear that a procedure based on contingencies and reinforcers anchored in progress and emphasizing outcome rather than process could offer significant advantages for drug abuse treatment and rehabilitation.

#### FOOTNOTE

1. "Operant," shorthand for "operant behavior," or behavior which operates on the environment, denotes a behavioral unit defined at a level appropriate for purposes of analysis. Self-injection of the opiate could be the operant of interest, reinforced by drug effect, in a microanalysis of self-administration behavior. Alternatively, drug-seeking through drug-taking behavior could be viewed as an operant of interest in analysis of a more global character. In the present case, large behavioral chains are being defined as behavioral units for purposes of exposition.

#### REFERENCES

- Ayllon, T., and Azrin, N. The Token Economy: A Motivational System for Therapy and Rehabilitation. New York: Appleton-Century-Crofts, 1968
- Bjorkland, P. B.; Schooley, F. A.; Byrd, W.; and Borgeson, N. S. A Survey of Drug Abuse Treatment Cost. Menlo Park CA: Stanford Research Institute, 1975
- Budde, J. F. Measuring Performance in Human Service Systems. AMACOM, New York, 1979
- Cooper, J. R.; Altman, F.; Brown, B. S.; and Czechowicz, D., eds. Research on the Treatment of Narcotic Addiction: State of the Art. National Institute On Drug Abuse. DHHS Pub. No. (ADM) 83-1281. Rockville, MD: The Institute, 1983.
- Deneau, G.; Yanagita, T.; and SeEVERS, M. H. Self-administration of psychoactive substances by the monkey. Psychopharmacologia (Berl.), 16: 30-48, 1969.
- Dole, V. P., and Nyswander, M. E. Behavioral pharmacology and treatment of human drug abuse - Methadone maintenance of narcotic addicts. In Smith, J. E., and Lane, J. D., eds. The Neurobiology of Opiate Reward Processes. Amsterdam: Elsevier Biomedical, 1983.
- Findley, J. D. An experimental outline for building and exploring multioperant behavior repertoires. J Exp Anal Behav. 5(supp.): 112-166, 1962.
- Findley, J. D. Programmed environments for the experimental analysis of human behavior. In Honig, W. K., ed. Operant Behavior: Areas of Research and Application. New York: Appleton-Century-Crofts. 1966. pp. 827-848.
- Goldenberg, I. Employment and Addiction: Perspective on Existing Business and Treatment Practices. Arlington, Va.: National Technical Information Services, 1972.

- Griffiths, R.R.; Bigelow, G.E.; and Henningfield, J.E. Similarities in animal and human drug-taking behavior. In Mello, N.K., ed. Advances in Substance Abuse: Behavioral and Biological Research. Vol. 1. Greenwich, CT: JAI Press, 1980. pp. 1-90.
- Johanson, C.E., and Schuster, C.R. Animal models of drug self-administration In Mello, N.K., ed. Advances in Substance Abuse: Behavioral and Biological Research. Vol. 2. Greenwich, CT: JAI Press, 1981. pp. 219-297
- Meisch, R. Animal studies of alcohol intake. Brit J Psychiatry, 141:113-120, 1982.
- Phillips, E.L. Achievement Place: Token reinforcement procedure in a home-style rehabilitation setting for "predelinquent" boys. J Applied Beh Anal, 1:213-223, 1968.
- Pickens, R.; Meisch, R.A.; and Thompson, T. Drug self-administration: An analysis of the reinforcing effects of drugs. In Iversen, L.L.; Iversen, S.D.; and Snyder, S.H., eds. Handbook of Psychopharmacology, Vol. 12. New York, Plenum, 1978. 1-37.
- Rioux, M., and Crawford, C. Community Living Society: New Methods of Responding to the Individual With a Handicap. Vancouver, B. C.: Community Living Society, 1982.
- Schuster, C.R., and Thompson, T. Self-administration of morphine in physically dependent Rhesus monkeys. Lab Psychopharmacol Tech Rept No. 62-29. Univ of Maryland, 1962.
- Schuster, C.R., and Thompson, T. Self-administration of and behavioral dependence on drugs. Ann Rev Pharmacol, 9:483-502, 1969.
- Spealman, R.D., and Goldberg, S.R. Drug self-administration by laboratory animals. Control by schedules of reinforcement. Ann Rev Pharmacol Toxicol, 18:313-339, 1978.
- Thompson, T., and A. Structured normalization: Intellectual and adaptive behavior change in a residential setting. J Mental Retardation, 18:193-197, 1980.
- Thompson, T., and Johanson, C.E., eds. Behavioral Pharmacology of Human Drug Dependence. National Institute on Drug Abuse Research Monograph 37. DHHS Pub. No. (ADM)81-1137. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1981.
- Thompson, T., and Pickens, R. Drug self-administration and conditioning. In Steinburg, H., ed. Scientific Basis of Drug Dependence. London: A. and A. Churchill, Ltd., 1969. pp. 177-198.
- Thompson, T., and Schuster, C.R. Morphine self-administration and food-reinforced and avoidance behaviors in rhesus monkeys. Psychopharmacologia (Berl.), 5:87-94, 1964.
- U.S. Congress. House. Select Committee on Narcotics Abuse and Control. Methadone Diversion. 95th Cong., 2d Sess., Rept. SCNAC-95-2-17 1978.
- Weeks, J.R. Experimental morphine addiction: Method for automatic intravenous injections in unrestrained rats. Science, 138:143, 1962.

# Behavioral Intervention Techniques in Drug Abuse Treatment: Summary of Discussion

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A lengthy discussion concluded the technical review at which the papers in this monograph were presented. The meeting participants considered both general and specific advantages that might accrue to making fundamental changes in the extant treatment delivery system. Specific suggestions arose from that discussion on how to improve the delivery of treatment services to drug-dependent persons. While there was not complete agreement among all participants, there was striking unanimity on many issues.

The comments that follow are divided into four major categories in an attempt to reflect the tenor and emphasis of the discussion without providing a verbatim reconstruction. The discussion points include consideration of (1) improving treatment for specific drug abuse problems, (2) improving delivery of ancillary treatment services to drug abusers, (3) strengthening nondrug reinforcers, and (4) establishing a long-term prophylactic environment for drug users. Since some pharmacological treatments such as methadone maintenance offer unique opportunities for behavioral management interventions, much of the discussion centered on suggestions specifically applicable to improving this treatment modality; many innovations discussed can, however, be more generally applied to treatments involving other pharmacological adjuncts as well as to nonpharmacological treatment approaches.

## IMPROVING TREATMENT FOR SPECIFIC DRUG ABUSE PROBLEMS

Reduction of illicit drug use is the first goal of drug abuse treatment. One model for achieving this goal is exemplified by chronic methadone administration, which is currently the best available treatment for accomplishing this goal for opiate drug dependence. In particular, this treatment modality dramatically reduces the ongoing use of illicit opiate drugs and is assumed concomitantly to reduce the criminal activity associated with obtaining funds to support illicit drug purchases. In terms of this model it is desirable to attract as many opiate users as possible, into treatment so as to maximize the beneficial effects of treatment not only for the clients but also for the community.

Although methadone is used primarily as a pharmacological adjunct for treatment of chronic opiate use and dependence, an important property from a behavioral point of view is that it is a reinforcer which can be used to establish and maintain treatment-oriented behavior. In the initial stage of treatment, when methadone is established as a reinforcer for heroin users, improvement in treatment enrollment and retention might be established by more effective introduction of the drug to patients.

One specific strategy suggested for improving the introduction of methadone to opiate users was to begin treatment by pairing methadone with intravenous administration of an opiate drug. In this model, clients would initially be given both oral methadone and intravenous opiate drugs at the clinic in an attempt to enhance the reinforcing potency of the oral maintenance drug through repeated pairings. Although it is unlikely that opiate abusers would ever prefer oral methadone to intravenous opiate drugs, more opiate users might find oral methadone an acceptable substitute for street drugs under an improved system of introduction.

Aside from this specific introduction strategy, it is also probable that higher rather than lower maintenance doses of methadone, as well as a nonpunitive attitude on the part of the staff, are likely to bring dependent individuals more effectively into treatment and to maintain treatment participation. It should be apparent as well that in those cases where other agents with a degree of reinforcing effectiveness are used as adjuncts (e.g., benzodiazepines, methylphenidate), contingencies governing their dispensing can be established.

Methadone treatment does not eliminate all concurrent drug use, and a considerable amount of supplementation with both opiate and nonopiate drugs is observed among maintenance patients. Once oral methadone is serving as a reinforcer to maintain treatment participation, its reinforcing properties can be utilized to influence ongoing supplemental drug use by judicious manipulation of contingencies for daily methadone dose delivery based on the results of onsite urine testing. For example, dose delivery hours might be utilized. Patients who provide a drug-free specimen in the morning might receive their daily dose immediately, while those whose urines indicate recent drug use would be required to return in the afternoon for their methadone dose.

Additionally, the frequency of required attendance at the drug clinic can be manipulated. Clinics generally grant take-home privileges to patients who adhere to rules and consistently deliver drug-free urines. Take-home privileges can be used explicitly to produce marked improvement in poor performers when delivered contingent on drug-free urinalysis results. The privilege of take-home doses as well as the total number of such doses could be made contingent on adherence with clinic requirements.

Finally, dosage level can be utilized in contingent arrangements: dosage could be decreased for patients who provide drug-positive

samples, while those delivering drug-free samples receive dosage increases or have the option of changing dose. In one procedure based on this approach, patients using illicit opiates are offered the chance to choose an increased methadone dose each day they deliver a urine sample that is free of illicit opiates, while they receive only their regular dose if an opiate-positive sample is delivered. This is effective because it offers the pharmacological benefits of an increased methadone dose while utilizing the reinforcing potential of extra methadone to motivate discontinuation of illicit drug use. Contingent delivery of other therapeutic medications, when their prescription is clinically indicated, should also be considered.

The foregoing examples are based on the concept of a two-stage treatment process in which methadone is first established as a reinforcer and then its reinforcing power utilized to effect behavioral change. The important point is that drugs commonly used for treatment of behavioral disorders do have reinforcing effects which can be used in contingent arrangements to influence concurrent drug use as well as other therapeutically important behaviors. Clinics often have rules which mimic clear contingencies for reinforcement of adaptive behavior, but these may be vaguely and unsystematically formulated and applied. It is evident that explicit development of precisely defined contingencies may better serve both the overall program and individual patients. It is essential that the contingencies applied to drug delivery not be so aversive or punitive as to interfere with patient retention in treatment and should, in fact, be couched in the terms of a positive reinforcement approach.

There has been considerable discussion over the years concerning optimal techniques for dispensing drugs such as methadone. The present system in which drug abuse patients receive all treatment services in a segregated treatment system may appear to have advantages from society's point of view; however, it also has clear disadvantages' from a treatment or rehabilitation viewpoint. Segregated treatment tends to isolate patients, to maintain the social stigma which surrounds them, and to perpetuate friendships, associations, and activities based on drug use. In addition, the present methadone distribution system promotes loitering and related behaviors which are the antithesis of desirable treatment outcomes. Finally, the use of take-home medication for well-behaved clients results in some illicit drug diversion. One method suggested for improving this situation was to disperse medication delivery more widely in the community, for example by dispensing prescribed drugs at local pharmacies or mental health centers.

While several practical problems would be raised with such a system, it is likely that they could be minimized or circumvented. For example, some drug abuse patients would attempt to secure multiple prescriptions at different dispensing sites. This could be prevented if medication dispensing were coordinated with telephone or computer verification (Via a computerized prescription

file) of patients' status and prescription. Interestingly, computer-linked pharmacies are being developed for economic advantage and the prescription "tracking" is one consequence. The resistance of physicians and pharmacists in the community concerning illicit activity would have to be overcome through effective information programs, and satisfactory measures to meet their objections would be essential. With community dispensing, it would also be necessary to rely more consistently on reinforcers other than methadone itself, since it might be difficult to arrange contingencies between dose delivery and behavior or to arrange convenient contact between patients and counselors offering ancillary treatment services. Many of the problems could be overcome or be precluded if appropriate preliminary efforts were made in development of the "new" distribution system.

Agreement exists that community dispensing could at minimum replace take-home privileges for a subgroup of well-adjusted patients who do not need continual drug abuse surveillance and ancillary treatment services, and this would have a positive impact on drug diversion. For the pharmacists' purposes it would, of course, be critical that drug dosage decisions be made elsewhere than at the dispensing site, as is typically the case with all other prescription drugs.

Drug clinic and community dispensing might profitably be combined in a sequential approach. Thus, treatment could begin at a central drug abuse clinic where intravenous as well as oral methadone was available. Patients who continued to show illicit drug supplementation, would be retained at this clinic and put under a contingency management program based on methadone availability. Other patients who showed little or no illicit drug use could be recommended as candidates for convenient community dispensary sites, a privilege which would depend upon continuing to provide drug-free urine specimens. It would also be important to give clinics credit for successfully graduating their patients into community dispensary programs, since prevailing funding policies tend to promote long-term retention of well-adjusted patients in treatment at the drug abuse clinic. All patients would, of course, be referred to other agencies for appropriate services.

#### IMPROVING DELIVERY OF ANCILLARY TREATMENT SERVICES

While the initial goal of drug abuse treatment is the reduction or elimination of illicit drug use, it is also generally agreed that a specific focus on drug use is often *not* sufficient, since many drug abuse patients exhibit a variety of psychiatric, behavioral, and psychosocial deficits in addition to drug abuse. Although there is disagreement as to the relationship between drug use and the other behavioral disorders that drug abusers may exhibit, the most reasonable approach is to advocate treatment interventions in all appropriate areas based on assessment of individual needs. Several suggestions were discussed for improving delivery of ancillary treatment services to drug-using patients and for utilizing behavioral principles to improve treatment outcome in areas other than drug use.

The ancillary problems presented by patients often are not adequately addressed at the drug abuse clinic. In part the fact that services are limited occurs because the skills and resources of the paraprofessional counselors are limited when it comes to providing treatment for ancillary problems and correlated disorders. Yet there exist in the community expert providers of services such as vocational training and psychological counseling, from which many drug-dependent patients could greatly benefit. It was suggested that treatment of patients' ancillary problems could be addressed more effectively by reintegrating the treatment of drug abuse patients into the existing network of mental health and vocational training services, utilizing either drug abuse counselors or a group of independent treatment brokers to arrange for provision of services by appropriate professionals.

Numerous objections to this strategy may exist, but clear advantages could emerge. Some may argue that since the population in need of treatment is concentrated in urban settings, it may overwhelm existing resources. However, redirection of drug treatment resources would benefit all users of the communities' resources and eliminate multiple administrative systems. It may be feasible for some patients to move their residence to other localities where more services are available. Indeed this step could be encouraged by offering benefits or subsidies, thereby further diminishing the problems which evolve from the concentrations of patients at sites such as methadone clinics. Alternatively, if available treatment services are inadequate to deal with the demand, then money should be spent to develop more services by well-trained professionals in specific areas of need rather than simply providing a subsistence level of treatment services by paraprofessional counselors who have not been trained in these ancillary problem areas.

In addition to ensuring that adequate treatment resources exist, a better system is needed for encouraging utilization of appropriate ancillary treatment services by drug abusers. In theory, drug abuse patients have all existing community resources at their disposal, but, in fact, these resources are virtually never utilized since these patients may be referred by these agencies to special "drug abuse treatment clinics." This can be attributed in part to the lack of appropriate contingencies within the existing treatment system. To take better advantage of existing services and to improve delivery of ancillary treatment services, providers must be motivated to deliver treatment to drug abuse patients, who must in turn have incentives to take advantage of treatment services from which they could benefit.

A brokerage system proposed at this meeting [see Thompson et al., this volume] would incorporate motivational features for both the drug user and service providers. Each patient would be monitored by a broker who would act as an intermediary or liaison between the patient and community service providers. Brokers would use monetary incentives to encourage appropriate behavior both on the part of the drug user and on the part of treatment providers. For

example, the drug treatment broker might establish a contract with the county vocational training institute to accept a specified number of urban drug abuse patients per year, pay the institute for training the patients, and pay the patients for attendance and success. Brokers might receive the money they need to perform their service directly from drug abuse clinic treatment funds. Alternatively, they might work by contract with employers of persons with drug dependency problems, or with social welfare agencies or medical insurance companies that are interested in securing an effective range of treatment services for drug-dependent clients. Quality control is also built into this system, since experienced brokers would become selective in their utilization of referral sources based on the effectiveness of those treatment facilities. Thus, a job training program that did not consistently produce employable clients would find its enrollment falling off as brokers took their business elsewhere.

Money is a universal reinforcer which can be used in contingent arrangements to promote utilization of ancillary treatment services within the context of the existing system as well as any improved system that may be developed. As discussed in connection with the brokerage system, patients can be paid explicitly for attending job training workshops or psychological counseling sessions. Another approach, which could be coordinated by either a broker or drug abuse counselor, is to offer access to preferred activities as a contingent reinforcer for engaging in some specified therapeutic activity. A survey can be used to determine the kinds of activities that individual patients would find desirable. These may be, for example, specific educational opportunities such as child care classes, recreational or social activities, access to legal services, or altered levels of participation in the existing treatment program. Social reinforcers available at the treatment clinic can also be utilized as contingent reinforcers. For example, the job-seeking client can be granted an interview with the counselor only when he or she provides specific evidence of job-seeking activities. Care must be taken, however, to preclude the clinic's becoming the primary source of reinforcers for patients.

Whether or not benefits would derive from any proposed new system is an empirical question. Both short- and long-term cost-benefit analysis would be essential for evaluating procedures which attempt to better utilize community services for drug abusers. Possible secondary benefits, such as improvement in services for persons other than drug abusers, would have to be factored into the analysis, as would any potential risks. Small-scale efforts in a single geographic area or city would provide an opportunity to further evaluate the brokerage system. An alternative approach to improving delivery of ancillary services might be to bring additional expertise to the drug abuse clinic and focus on motivating patients to take advantage of services offered, although this perpetuates the problem of segregation of one category of behavioral disorder, i.e., drug use. In addition, this sort of "patch up" approach leaves intact all of the difficulties inherent

in the current system. It appears that due to current fiscal and social issues this may be a propitious time to modify the treatment system.

#### STRENGTHENING NONDRUG REINFORCERS

The dominant positive reinforcers for the chronic user of illicit-illegal drugs are typically closely linked to acquisition of drugs, interaction with dealers and others engaged in peripheral illegal activities, and, of course, interaction with other drug users. In some cases, drug-using patients have jobs and families which can provide a source of external motivation for initial behavioral change and continued good performance. Drug-using health professionals, for example, may be motivated to seek and continue treatment by the threat of losing their jobs or professional licensure. Frequently, however, these external motivators are absent or weak in drug abuse patients of lower socioeconomic status. Since work and social relations are perhaps the two most important sources of nondrug reinforcement available, it is important to take steps which build these sources of reinforcement into patients' lives whenever possible. Professional job training and psychological services may be needed to accomplish these goals.

In addition to establishing employment and social relationships as potential sources of reinforcement for drug abuse patients, it might be desirable also to establish more complex nondrug activities such as sports, hobbies, or cultural events as reinforcers. In contrast to drugs and money, which can serve as powerful reinforcers in the absence of complex learned behavioral repertoires, these other nondrug activities generally can function as reinforcers only after prolonged exposure and after some competence has been developed in performing the activity. Some drug abuse patients have never been particularly competent in socially acceptable areas of activity unrelated to obtaining drugs, and may, therefore, have few alternative reinforcers available to them. In this situation, a technique called reinforcer priming can be utilized which consists of exposing people to new activities and continuing exposure for a sufficient time for them to gain interest and some competence.

New activities might profitably be introduced at the methadone clinic to take advantage of pairing with an existing reinforcer. Alternatively, methadone delivery might be made specifically contingent upon engaging in new activities. For example, it may be considered therapeutically beneficial to help patients to routinize a daily schedule of activities which are more socially adaptive than those in which they normally engage. Divided ingestion of the methadone dose at intervals throughout the day following the completion of specified activities might be arranged. A similar system could be set up using token reinforcers rather than methadone dose, if dosage fractionation proved impractical. Alternatively, patients might be required to engage in one new activity per week from a list provided in order to continue

treatment participation with full privileges. Presumably, if patients continue to sample new activities, some will be established as reinforcers and will continue independently of contingencies at the clinic related to drug dispensing.

Overall it should be recognized that the approach of strengthening nondrug reinforcers is one component (albeit an important one) of a more thorough behavioral intervention program. It clearly serves as an important feature in the more general approach of structuring or restructuring environmental conditions which will maintain adaptive behavior.

#### ESTABLISHING A PROPHYLACTIC ENVIRONMENT

The success of behavior therapy depends greatly on the number and effectiveness of reinforcers which the therapist can control for use in contingent arrangements to promote behavior change. In the previous section, consideration was given to development of new nondrug reinforcers for drug-dependent patients. Once a repertoire of reinforcing activities and social relationships has been established, the next step in therapy would be to transfer behavioral control from the treatment clinic to the nonclinic environment. The optimal administrative system would permit the broker or therapist to build a prophylactic environment for the patient which would contain appropriate contingencies to discourage reinitiation of drug use. In addition, the optimal program, unlike a traditional "drug clinic," would provide an environment and structuring of contingencies which would preclude evolution of a new maladaptive repertoire.

A recurrent theme in the discussion was that drug 'abuse treatment is necessarily a long-term rather than a short-term undertaking although this is clearly related to the experience of the individual patient and pattern of use. For some patients, return to drug use may occur months or even years after an apparently successful treatment episode. Because return to use may be a critical feature of substance abuse, the time frame for drug abuse treatment should be reevaluated to assure the continuing dominance of nondrug reinforcers. Instead of short-term interventions, attention should be devoted to treatment commitments lasting for several years, during which a prophylactic environment is built for the dependent patient. Urine monitoring on at least an occasional basis should continue to be a part of treatment for an extended period of time, since this provides an objective source of information about drug use as well as a target for prophylactic contingencies.

Family, employers, and agents of the legal system should be considered to be the best sources of natural environment control for former drug abuse patients. A number of years ago Vaillant (1966), while studying the long-term outcomes of drug abusers incarcerated at the Public Health Service Hospital in Lexington, Kentucky, noted that enforced abstinence during incarceration was insufficient. Rather, it was observed that long-term legal

supervision in the community was associated with the best outcome for narcotic-dependent individuals. It is particularly important to emphasize that incarceration itself has no apparent value as a treatment mode; rather, it is the continued natural environment intervention which increases probability of success. Contingencies which require active participation in drug abuse and ancillary treatment services can be built into legal supervision systems when appropriate. Effective contingency programs can be utilized with drug abuse probationers, and specific contingencies can also be based on evidence of good performance in a drug treatment program. For example, specified periods of probation time (e.g., 1 week) may be subtracted for each treatment week in which drug-free urines are provided.

Employers can also be an excellent source of longer-term prophylactic supervision, although this issue of exposing an individual's problem to public view must be approached cautiously for obvious ethical reasons. Many employers are becoming increasingly aware of the financial benefits to be gained from reducing drug and alcohol use among their employees. It might be particularly useful if contingencies, such as loss of wages and mandatory reenrollment in treatment, were attached to any detected drug use episodes of former drug abusers and bonuses were associated with drug-free periods. At the same time caution to assure protection of civil rights and the individual's integrity is essential. Although it is unlikely that the existing welfare system will be dramatically changed, creative contingencies could be attached to the receipt of welfare payments to promote improved functioning among indigent drug abuse patients.

Finally, the family should be considered as an important source of natural environment contingencies. Families have control over many reinforcers, both social and material, which they routinely dispense to the drug-using family member. The family would be an important source of behavioral control, especially if they could be taught to dispense these reinforcers more effectively contingent upon desirable rather than disruptive behaviors. Surrogate families could serve a comparable function for drug abusers who lack contact with their own families. Given the recent reports of success with family therapy treatment of drug addicts, referral to an experienced family therapist should be considered as an important step in drug abuse treatment for some patients.

Hunt and Azrin (1973), working with chronic alcoholics in a rural Illinois community, showed that it is possible to improve outcomes for chronic alcoholics dramatically by establishing a prophylactic environment in which access to jobs, social relations, and social activities is contingent upon sobriety. Jobs were found for the alcoholics, but they would lose wages if they came to work drunk. Marital therapy was offered and spouses were taught special techniques and skills for dealing with both specific behavioral events and long-term behavioral goals. In addition, a nonalcoholic social club was established, admission to which depended on sobriety. These efforts, along with others, demonstrated the

effectiveness of behavioral intervention techniques. There can be little doubt that contingencies appropriately arranged in the environment can have a large impact on substance abuse behavior. A cost-benefit analysis would be needed to determine whether individualized behavioral interventions with drug abuse patients would have a sufficient payoff in improved outcomes to warrant investment in such an approach.

## CONCLUSION

Consideration has been given to four general areas where the existing treatment of drug abuse patients might benefit from changes based on behavioral analysis and behavioral management approaches: (1) improving treatment for specific drug abuse problems, (2) improving delivery of ancillary treatment services to drug users, (3) strengthening nondrug reinforcers, and (4) establishing a long-term prophylactic environment for drug users. Major changes and specific approaches that might be desirable in each of these areas were discussed. The overall point to be made, however, is that a behavioral approach may offer advantages both for assessing problems within the existing treatment delivery system and for suggesting changes which might lead to more effective treatment delivery systems for drug abusers. One of the main advantages of behaviorally oriented treatment approaches is that they specify objective therapeutic goals and evaluate the outcome of treatment empirically. Further, behavioral techniques are compatible with many other approaches such as family therapy or worksite interventions.

Actual implementation of any changes in existing treatment services would best be achieved by a gradual rather than a dramatic shift and should be subject to cost-benefit analysis on a small scale before large scale implementation is considered. It is hoped that this monograph and discussion will encourage treatment planners and evaluators to adopt a flexible approach in considering the application of behavioral technology to the treatment of drug abuse patients.

## REFERENCES

- Hunt, G.M., and Azrin, N.H. A community-reinforcement approach to alcoholism. Behavior Research and Theory, 11:91-104, 1973.
- Vaillant, G.E. A 12 year follow-up of New York narcotic addicts: The relation of treatment to outcome. Am J Psychiatry, 122:727-737, 1966.

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