DOCUMENT RESUME

ED 163 377 CG 013 151

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TITLE Outcomes in Alcoholism Treatment.
INSTITUTION Rand Corp., Santa Monica, Calif.
REPORT NO Rand-R-5845
PUB DATE Aug 77
NOTE 43p.; Pages 39-43 may not reproduce clearly due to type
AVAILABLE FROM The Rand Corporation, Santa Monica, California 90406 ($3.00)

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Alcoholism; Behavior Change; *Drinking; *Evaluation Criteria; *Objectives; *Social Behavior; State of the Art Reviews; *Theories

ABSTRACT

Alcoholism researchers in the past 35 years have emphasized abstinence as the major criterion of treatment success. In recent years, however, this emphasis has been questioned and from the current debate over treatment goals and outcome measures at least two areas of controversy have emerged. The first, called the "abstention-moderation" controversy, questions whether some alcoholics can return to and maintain normal or controlled drinking, and discusses the implications of this outcome for treatment goals. The second involves the broadening of outcome measures to include a wide spectrum of social and psychological behavior, including attitudes and self-concept, job and marital stability, and earnings or income from employment. Research on various aspects of these two areas has been conducted, but a resolution of the conflicts has not yet emerged. (Author/BP)

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P-5845

$3.00

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*This paper was prepared for the National Institute of Alcohol Abuse and Alcoholism for inclusion in the Third Report to Congress, *Alcohol and Health*, 1977.

THE OUTCOME DEBATE

In recent years, evaluations of alcoholism treatment have become complicated, and to an increasing extent, characterized by concern over definitions of treatment outcomes. The focus of interest has shifted from how well any particular treatment works to the more fundamental question of which dimensions of outcome should serve as valid criteria of assessment.

Given the considerable progress made in the alcoholism field, the issue of outcome definition has arisen rather late. During the past thirty-five years or so, basic research on the nature of alcoholism has advanced, treatment techniques have proliferated, and increasing numbers of individuals have been identified and treated for problems of alcohol abuse and alcoholism. And, over most of that same period, there has been strong emphasis by alcoholism researchers on abstinence as the major criterion of treatment success. In recent years, however, this emphasis has been questioned, and consensus has been replaced by a tangled net of competing definitions of outcomes which in turn are entwined with basic concepts concerning the nature of alcoholism and its proper management.

There are at least two distinct facets to the current debate over treatment goals and outcome measures. The first, concerning drinking behavior per se, has been described in contemporary alcoholism literature as the "abstention-moderation" controversy. The central issues here are whether some alcoholics return to and maintain normal or controlled drinking, and if so, what implication this outcome should have for treatment goals.

The second aspect involves the broadening of outcome measures to include a wide spectrum of social and psychological behavior, including attitudes and self-concept, job and marital stability, earnings or income from employment. From one point of view, these outcome measures

are the ultimate tests of treatment success, since the typical alcoholic seeking treatment is generally suffering from many social and psychological problems which are often perceived as the consequences of alcohol abuse. On the other hand, some have argued that many of these problems are not the direct result of alcoholism in the first place and, whatever their cause, may be beyond the ability of most treatment personnel to solve. From this perspective, treatment success should be judged primarily by changes in drinking behavior and its immediate medical and behavioral consequences.

The purpose of this discussion is not to resolve these differing viewpoints, but rather to present recent conceptual and empirical advances in the assessment of treatment outcomes. A brief review of some of the theoretical issues in alcoholism treatment will set the stage for a subsequent review of outcome research findings.

Drinking Behavior

The standard of abstinence as the major criterion of successful outcome is closely associated with the perspective of Alcoholics Anonymous and with the more formalized disease model of alcoholism as postulated by E.M. Jellinek (1960). Chief among the assumptions of the latter model is that alcoholism is a progressive and irreversible disease process characterized by a chronic "loss of control" over consumption and craving for alcohol. The model holds further that the disease of alcoholism cannot be cured; its course can, however, be successfully arrested but only by total abstinence from all alcoholic beverages. It should be noted that Jellinek was careful to phrase his model as a "working hypothesis" based on clinical experience and retrospective accounts of alcoholics.

The abstinence criterion receives further support from a substantial proportion of clinical practitioners who work in the alcoholism field. Many of these practitioners advocate abstinence on a pragmatic, rather than theoretical, basis, claiming their experience has shown that most truly addicted alcoholic patients try but fail to learn moderation (Fox, 1976).

While neither the Jellinek nor the less formal clinical models have been subjected to rigorous scientific tests, there is some evidence that has bearing on portions of the models. For example, the loss of control phenomenon has been examined in controlled observation of alcoholics' drinking behavior and in experimental laboratory settings (Merry, 1966; Mello and Mendelson, 1971; Engle and Williams, 1972; Paredes et al., 1973). While it is arguable that such data come from highly artificial settings and may not generalize to natural situations, the results fail to support the notion that alcoholics lose control over consumption after a single drink, or that immediate craving for alcohol is experienced by all alcoholics after drinking small amounts.

In addition, there are numerous studies which raise questions about the permanency and irreversibility of alcoholism symptoms by documenting a return to normal or social drinking without relapse by some alcoholics. The earliest accounts of social drinking are generally attributed to Selzer and Holloway (1957) and Davies (1962). Since those early reports, Pattison (1976) has counted "close to 100" studies which have documented the phenomenon of normal or moderate drinking among previously diagnosed alcoholics. The reports, moreover, have converged from various sources. Pattison (1976) notes that evidence of resumed normal drinking has come from relatively large-scale follow-up studies of samples of alcoholics as well as from single case reports; from treatment settings where moderate drinking was an explicit goal of treatment as well as from abstinence-oriented settings; and from studies of both treated and untreated alcoholics.

These social or controlled drinking results are thought by some to offer support for a psychological learning model as an alternative to the Jellinek disease model. Learning models, from which current behavior modification techniques derive, view excessive alcohol consumption as learned behavior amenable to relearning rather than as symptomatic of an irreversible physiological addiction process. The behavioral approach views abstinence as only a subset of a fuller

range of viable drinking outcome goals (Pattison, 1976). Other outcome measures acknowledged in the behavioral approach include reduced consumption, controlled drinking (achieved through BAC discrimination training procedures) and normal drinking (i.e., drinking in low or moderate amounts without impairment).

Aside from empirical research findings, another aspect of this debate has taken the form of practical arguments either for or against the abstinence standard. Roizen (1977) has recently compiled a list of thirteen reviews which include "practical, utilitarian or therapeutic advantages or disadvantages" for abstention and moderation goals of treatment respectively. According to Roizen's content analysis of the reviews, the most frequently suggested advantage for alternative goals was the possibility of attracting into treatment alcoholics who may have avoided seeking help in the past because of their belief that abstinence would be demanded. It is further argued, in the same vein, that non-abstinence goals may be more appropriate for those relatively less impaired, younger, and "prealcoholic" patients who have remained previously untreated.

On the other hand, Roizen (1977) notes that practical arguments criticizing non-abstinence goals include: (1) discussion of normal or controlled drinking, which may be possible for only a minority of alcoholics; will encourage avoidance of treatment and dangerous experimentation with continued drinking; (2) abandonment of the disease model and its derivative abstinence goal may undercut the long-fought battle for social recognition of alcoholism as a disease; and (3) alternative non-abstinence goals will undermine or destroy the morale of Alcoholics Anonymous which has undoubtedly helped more alcoholics than any other formal organization.

While neither scientific evidence nor pragmatic considerations offer a final answer for treatment goals, there is ample basis for measuring more than abstention when assessing treatment outcomes. Indeed, within the past decade it has become commonplace among alcoholism researchers to measure the amount and patterns of consumption at the start of treatment and again at follow-up for periods when a

former patient is not abstaining. Patients are generally counted as "successes" if abstention has been maintained or if consumption has been reduced substantially and the patient is free of serious problems related to drinking.

With the advent of reduced consumption or controlled drinking as legitimate treatment outcomes it has become increasingly important to measure the direct consequences of drinking in addition to the amount and pattern of drinking. Assessment of these direct consequences, often called "behavioral impairment" to distinguish them from broader social adjustment indicators, is crucial since it is known that some alcoholics lose tolerance for even modest amounts of alcohol. Impairment might include medical complications such as gastro-intestinal problems or cirrhosis; signs of physical dependence such as tremors, sleep disturbance, or drinking on awakening; blackouts or other mental abnormalities; and problem behavior while drinking such as fighting, accidents, skipping meals, and missing work. Alcoholics who have reduced their consumption after treatment generally must not have any of these symptoms to a serious degree if they are to be counted as successful cases.

Broader Outcomes and Socio-psychological Models

Just as the physical disease model has provided substantial underpinnings for abstention goals and outcomes, emphasis on broader social and psychological outcomes reflects other underlying models and assumptions about the nature of alcoholism. To the extent that these assumptions can be stated explicitly, the results of treatment evaluation research can provide at least partial evidence for the validity of models from which treatment practices are derived.

One such model, underlying many psychologically-oriented treatments (especially psychoanalytic or psychodynamic approaches), views excessive alcohol consumption as a manifest symptom of underlying psychopathology. Treatment, therefore, is not aimed solely at drinking behavior but rather seeks to uncover the intrapsychic conflicts and

to achieve an ultimate cure by altering the patient's basic personality structure. According to this model, then, drinking behavior alone does not serve as an adequate measure of treatment outcome. In fact, the model predicts that the attainment of abstinence in the absence of resolving deeper psychological problems that led to excessive drinking in the first place may result in poor functioning in other life areas or alcoholic relapse. Relevant successful outcomes might include changes in basic attitudes and self-concept, changes in personality and affective states, and improvement in general mental health.

Another treatment model approaches alcoholism as symptomatic behavior embedded in a nexus of deteriorated social, economic, and interpersonal characteristics. According to these socio-cultural models, no single criterion measure (e.g., abstinence) is sufficient to assess outcome; multidimensional measures are advocated in order to encompass the full range of rehabilitation goals. Since the association in the literature between improvement in drinking behavior and improvement in other life areas is generally of low magnitude, reliance on singular criterion measures of consumption are viewed as having little predictive utility for estimating changes in overall life adjustment and global well-being. From this perspective, valid outcomes include measures of social adjustment such as job and marital stability and improved financial circumstances.

A final conceptual point requires comment. In the evaluation of alcoholism treatment effectiveness, a distinction should be drawn between outcomes which reflect the achievement of a desired treatment goal and outcomes which reflect positive changes in patient's behavior and functioning. An example will clarify the point. Suppose a given treatment has as its specific goal the training of controlled drinking. Suppose, further, that at a certain follow-up point the majority of clients are abstaining from all alcohol rather than drinking in controlled amounts. While such an outcome may reflect a failure to accomplish the desired treatment goal (i.e., controlled consumption), certainly it would not be properly interpreted as indicating an overall

lack of effectiveness of the treatment with respect to alcoholism-related behavior.

Conversely, an abstinence-oriented treatment approach may count as successful outcomes those individuals who do successfully resume controlled or normal drinking. In the context of measuring overall outcomes, counting the latter group as treatment failures would seem overly restrictive. On the other hand, the fact that some achieve success without abstention should not necessarily lead to the abandonment of the abstention goal. Until further research is available, the abstention goal will continue to be widely used in clinical practice.

ESTABLISHING CRITERIA FOR EVALUATION

In considering the relationship of outcome measures and goals to varying models of treatment, it becomes evident that the definition of outcome criteria has implications far beyond its function as a classifying tool for counting successes and failures. In a real sense, outcome measures imply certain assumptions about how the problem of alcoholism is fundamentally defined, about the etiology of the disorder, as well as about how well a given treatment works. Moreover, the issue of outcome definition is closely related to diagnostic criteria--who should be called an alcoholic. The controlled drinking controversy illustrates the point. If a formerly diagnosed alcoholic is able to resume moderate drinking, some would argue that the person was not a physically-addicted alcoholic in the first place. Notwithstanding the obvious logical problems involved in defining a disorder by relying on its outcomes, the example reveals how outcome measures may enter the realm of diagnostic criteria. Other diagnostic or definitional problems are raised by the current outcome debate. Should alcoholism, for example, be conceived as one end of a drinking continuum or rather as a discontinuous and distinct condition? And further, should alcoholism be viewed as a unitary disorder with a singular outcome criterion (e.g., abstention) or as a multidimensional problem for which multiple outcomes are possible?

This lack of consensus on defining outcome measures greatly complicates a review of treatment efficacy research. Noncomparability in operational definitions of outcome makes cross-study analyses or results problematic. Moreover, the outcome issue raises the global question of what constitutes recovery from alcoholism.

Even without final definitions, however, an overview of treatment evaluation studies does reveal some agreement on the prominent indicators of post-treatment change. In his comprehensive review of some 265 outcome studies, Emrick (1974) notes that measures of drinking behavior--abstinence, consumption level for nonabstainers, and frequency of drinking--are the most commonly defined indicators of alcoholism treatment outcome. Other prominent indicators include measures of behavioral and medical impairment (related to drinking), employment status and marital status. Attrition (dropout) rate from therapy has also been used as a measure of outcome.

Some writers have advocated multidimensional measurement of treatment outcome (e.g., Foster et al., 1972). This position holds that, although a major purpose of treatment is the modification of the target problem behavior (in this case, excessive consumption of alcohol), the efficacy of a given method of treatment can best be evaluated in terms of its total consequences. In the case of chronic alcoholism, the multiple outcome argument has considerable appeal, since the disorder has profoundly disruptive effects on mental, social, occupational and other areas of functioning.

In emphasizing the value of multiple-outcome criteria, however, some researchers seem to have made the error of discounting the relevance of alcohol consumption criteria. Thus, success has been claimed for some therapies on the basis of inferred psychological changes even though the cessation of excessive drinking may not have been achieved.

An ordering of outcome criteria seems required. While complete social and psychological rehabilitation of clients may be the ideal goal of many treatment programs, the primary objective for most remains the elimination of excessive alcohol consumption and of the gross behavioral consequences associated with it. While social adjustment

criteria (e.g., job, income, marital stability) are obviously important, such indices are less clearly related to the problem of alcohol abuse than are actual drinking and behavioral impairment. In this framework, an alcoholic who stops drinking but does not find a job is a stronger candidate for being considered recovered than is an alcoholic who regains employment but continues excessive drinking--at least if the disorder is alcoholism rather than unemployment.

In the review of treatment outcomes that follows, a multiple-outcome approach will be adopted, with priority placed on those outcomes most clearly related to alcoholic behavior: abstention, level of consumption for nonabstainers, and behavioral impairment resulting directly from alcohol abuse (e.g., withdrawal symptoms, symptomatic drinking). The major social adjustment outcomes will consist of marital stability, job stability, and earnings.

Changes in multiple outcome criteria are useful for comparing the success of one treatment versus another or one type of patient versus another. But such relative comparisons do not establish the absolute rate of success for any given treatment or patient group. While no final consensus exists on global definition of recovery, several studies have proposed tentative global criteria for establishing treatment success.

One of the earliest global definitions of success was used in a multi-center study by Gerard and Saenger (1966). Their definition distinguished abstention, controlled drinking, problem drinking (unchanged), and deteriorated according to drinking behavior assessed for the month preceding a follow-up contact. Controlled drinkers were former patients who still used alcohol but without direct impairment (intoxication, blackouts, accidents, and so forth). Additional distinctions were made for prolonged abstention or controlled drinking for 6 months or more prior to follow-up.

Using outcome data from the NIAAA treatment monitoring system (NIAAA, 1975), Armor, Stambul and Polich (1976) proposed a three-category definition of remission: long-term abstention of 6 months or more,

short-term abstention with drinking two-to-five months before followup, and normal drinking with no serious impairment. All other cases were considered to be non-remissions. The major difference between this and Gerard and Saenger's definitions is the former's use of a quantitative measure of alcohol consumption to establish a cutting point between normal and alcoholic drinking.

Clearly, these definitions are by no means final. As research continues there will undoubtedly be advances and refinements in the definition of recovery from alcoholism. Of considerable interest is the recent discovery of a ratio of plasma amino acids that may form the basis of a more rigorous physical diagnosis of alcoholism (Shaw, Stimmel, and Lieber, 1976). Such a criterion might also be used as a test for remission.

BASIC OUTCOME RESULTS

Thus far, a set of relevant criterion categories for examining alcoholism treatment outcomes has been suggested. Recent treatment outcome research will be reviewed by assessing basic outcome results with respect to each of these outcome measures--alcohol consumption, behavioral impairment, and social adjustment; empirical relationships between these sets of outcome criteria will also be discussed. A brief discussion of some special methodological problems will follow this consideration of basic outcome results.

Alcohol Consumption

Most observers would agree that excessive consumption of alcohol represents the sine qua non of alcoholism or alcohol abuse. It seems logical, therefore, that the consumption variable be treated as a primary measure of outcome and a major component of any remission or recovery definition.

In Emrick's (1974) review of 265 studies on psychologically-oriented alcoholism, the great majority--80 percent--used alcohol consumption indices as the sole or principal outcome measure. Using a uniform

classification system for categorizing consumption outcomes, Emrick reported on the outcomes of nearly 14,000 patients included in these studies. About one-third were abstinent, one-third were improved (reduced consumption or abstaining with periods of excessive drinking), of which about 6 percent were controlled drinkers, and one-third were unimproved or worse. On the basis of his analysis, Emrick concluded that, following psychologically-oriented treatment, "the vast majority (about two-thirds) are improved or abstinent, indicating that once an alcoholic decides to do something about his drinking and accepts help, he stands a good chance of improving." (p. 534)

One difficulty in comparing different treatment studies is the lack of standardized definitions and measures of various outcomes, especially drinking behavior. This problem is overcome to some extent in the NIAAA monitoring system used in several treatment programs--each consisting of numerous treatment centers--sponsored by NIAAA. Using standardized and quantified outcome measures, the monitoring system allows an assessment of changes between intake and 6 months following intake when most clients or patients have completed treatment (NIAAA, 1975).

Table 1 presents changes in alcohol consumption indices for four of the larger programs during 1976 (NIAAA, 1976). Results for these different programs are quite similar at follow-up with about half of the treated subjects abstaining and a reduction in average drinking days from every other day to about one day a week. The change in consumption itself appears at first glance to be quite different, but the reason is that the starting levels are different. If the changes are converted to a relative basis we find that average consumption is reduced by about 70 to 80 percent in each of the programs. It seems clear, once initial differences are taken into account, that rates of improvement are quite substantial for these programs at 6 months after intake.

Since alcoholism is known to be a disorder with a high likelihood of relapse, a 6-month follow-up may be too early for a true picture of

Table 1

CHANGES IN ALCOHOL CONSUMPTION IN FOUR NIAAA PROGRAMS DURING 1976*

	Drinking behavior during past 30 days:						
	Percent Abstaining		Average Absolute alcohol consumed per day (oz.)		Average No. of drinking days		No. of Cases
Program	Intake	6 mos.	Intake	6 mos.	Intake	6 mos.	
ATC (Comprehensive) Program	12%	53%	5.8	1.6	15	6	(4280)
Drinking Driver Program	8%	44%	2.5	.8	12	5	(1551)
Occupational Program	11%	64%	2.8	.6	16	4	(254)
Public Inebriate Program	9%	58%	10.8	3.4	18	6	(384)
Average Across Programs	10%	55%	4.4	1.6	15	5	

*All changes are statistically significant at or better than $p < .05$

successful outcomes. Accordingly, NIAAA commissioned a special 18-month follow-up study of treatment effectiveness in 8 representative centers in the ATC program. The results of this study were reported in Ruggels et al. (1975).

Changes in key drinking behaviors at 18 months are shown for these ATCs in Table 2, separately for male non-DWI*, female non-DWI, and male DWI patients.

Changes for the male non-DWI group, representing the bulk of ATC patients, are on the same order as those shown at 6 months. Notice, however, that while average consumption has been reduced considerably, only 24 percent of this group is abstaining for prolonged periods of 6 months or more.

Relative rates of changes are similar for the female non-DWI clients, although a higher percentage (39%) have engaged in prolonged abstention. Male DWI patients show much lower rates of abstention and reduced consumption but it must be stressed that their level of consumption at intake (along with other characteristics) suggests this group is not chronically alcoholic (Ruggels et al., 1975).

The results of these comprehensive reviews and national follow-up studies provide convincing evidence that treatment for alcoholism has a substantial and long-term effect on alcohol consumption. But it also appears that the effect produces reduced consumption as well as total abstention.

*DWI denotes patients submitted to treatment following a Driving-While-Intoxicated incident.

Table 2

Changes in Alcohol Consumption

For NIAAA ATC Programs at 18 Month Followups

	Abstained Last Month		Abstained Last 6 mos.	Absolute Alcohol Consumed per day (oz)		No. of Cases
Group	Intake	18 mos.	18 mos.	Intake	18 mos.	
Male non-DWI*	8%	46%**	24%	8.3	2.5**	(600)
Female non-DWI*	13%	56%**	39%	4.5	1.3**	(158)
Male DWI*	22%	29%	18%	1.7	.9	(162)

*DWI denotes an intake in connection with a Driving-While-Intoxicated incident; there were only 13 female DWI intakes in the study.

**Changes are statistically significant at or better than $p < .05$.

Adapted from Table 42 in Ruggels et al. (1975).

Behavioral Impairment

In most working definitions and diagnostic guidelines for alcoholism, consumption level alone is rarely a sufficient condition for labeling an individual alcoholic--unless the amount is extremely large such as a fifth of hard liquor per day. In addition to consumption, most definitions also include evidence of physical and/or psychological dependence on alcohol as well as social, mental, or physical harm caused by alcohol abuse (Armor et al., 1976; Davies, 1976; National Council on Alcoholism, 1972).

In Emrick's (1974) review, outcome measures of criteria other than consumption level were sorted into content clusters; changes on indices of behavioral and social impairment were then examined for their relationship with drinking behavior outcomes. That analysis indicated that, in general, when treatment resulted in improvement with respect to drinking outcome, positive changes were also reported in the domains of affective-cognitive functioning, work situation, interpersonal relationships in the home, physical condition, arrests and other legal problems, and Alcoholics Anonymous attendance. Pattison (1968) also reported "related but not parallel" changes in improved social, vocational and psychological adaptation with improvement in drinking.

These reports provide global evidence that behavioral impairment related to drinking does show some overall change after treatment. However, the measures employed by most of the studies summarized are too general to allow statements about outcome with respect to specific behavioral symptoms. In the Ruggels et al. study of NIAAA centers, data was collected at the 18-month follow-up points on the frequency of occurrence of twelve specific signs of behavioral impairment or dependence on alcohol. The twelve signs included tremors, blackouts, missing meals due to drinking, morning drinking, being drunk, and missing work due to drinking. These twelve items were combined into an overall impairment index.

The changes in behavioral impairment between intake and follow-up were on the same order of magnitude as those observed for the consumption index. While 81 percent of the male non-DWI sample showed substantial levels of impairment at intake, only 28 percent, respectively,

were substantially impaired at follow-up. This represents a relative improvement rate of about 65 percent. Substantial improvements were also observed for the female and DWI groups.

In addition, the 6-month follow-up studies on special NIAAA programs (e.g., Drinking Driver, Occupation, Public Inebriate) also indicate substantial improvement on behavioral impairment criteria, although not always to the same degree (NIAAA, 1976). Taken together, the NIAAA follow-up data indicates that, after treatment, positive change does occur on outcome measures of behavioral impairment.

Social Adjustment

As noted earlier, both Emrick (1974) and Pattison (1968) have reviewed the outcome literature and reported that, at least in some samples, changes in overall social adjustment measures are associated with improvement in drinking behavior. In most cases, however, the associations are not strong and do not support the conclusion that alcoholics who stop or moderate their drinking necessarily improve in other areas of life functioning, especially vocational and marital adjustment.

The NIAAA-ATC clients, analyzed in the Ruggels et al. study, indicate rather substantial social impairment at intake, particularly with respect to instability in both job and marital status. As a group, these clients are much more likely to be divorced or separated and unemployed than the general population, with unemployment at over 50 percent and broken marriages at nearly 40 percent for male and female non-DWI patients. There are, of course, the inevitable difficulties in establishing whether such social impairment was a result of excessive drinking or, conversely, whether social difficulties preceded and perhaps played a causal role in the development of alcoholic behavior.

In spite of the rather dramatic changes in drinking behavior observed among the patients studied by Ruggels et al., almost no change occurred in marital status from intake to followup. Thus, successful

reduction of consumption and behavioral impairment does not appear contingent upon, nor does it directly affect, restoration of a successful marital relationship, at least within the 18-month period covered by the follow-up study.

In contrast to marital stability, the indicators for job stability do show positive overall change following treatment. While unemployment still remained relatively high at follow-up, there was a decline from 56 percent to 37 percent for the 18-month follow-up sample of male non-DWI patients, representing a relative improvement rate of 25 percent.

In another recent study, the relationship of alcohol treatment to earnings was systematically explored by Cicchinelli et al. (1977). These authors posited that an outcome measure of productivity in earnings "can be a key element in the evaluation of [an alcoholism treatment] program." Earnings of 9448 patients admitted for treatment to a Colorado alcoholism treatment program were compiled over a fifteen-year period. Earnings for all clients studied showed a decline during pre-treatment years reflecting their alcoholic impairment. The largest post-treatment gain in income was observed for the female, non-readmitted group (i.e., not admitted again for treatment during the five year post-treatment period). This finding was interpreted as reflecting the facts that (1) readmission is an indicator of relatively more severe illness, and (2) that a "floor effect" in pretreatment earnings was probably created by unemployed housewives at intake which then generated a large jump in earnings when some females obtained jobs in post-treatment years.

Post-treatment trends in increased earnings were strongest for the 27-40 age group, with male non-readmissions in that age bracket showing a slightly stronger trend than comparably-aged females. Post-treatment earning trends for males aged 41-60 who were readmitted for treatment indicated a significant continued decline during post (initial) treatment years. This latter finding again supports the hypothesis that readmission is indicative of more severe illness.

Educational level was also found to be related to earnings, both at pretreatment and post-treatment periods. Pretreatment income ranks indicated that more educated females were more adversely affected by illness than less educated females; post-treatment trends in earnings for both males and females indicated that more educated clients responded better to treatment, especially when their illness was relatively less severe (as indicated by nonreadmission).

Finally, the variable of "time-employed," not surprisingly, was the strongest correlate of mean yearly income during both pre- and post-treatment periods. A particularly important factor in predicting post-treatment income was the number of months unemployed at the time of admission to treatment. This finding corresponds to other studies showing client social stability at intake (largely reflecting employment) to a strong correlate of follow-up status (Gerard and Saenger, 1966; Ruggels et al., 1975). In sum, then, the Cicchinelli et al. study demonstrates an overall change in earnings following treatment for alcoholism, with the degree and direction of change mediated by such factors as client's employment record, sex, age, education, and severity of illness.

Relationship Among Outcome Measures

A long standing issue in the assessment of treatment outcomes is the relationship among various indicators of improvement or recovery from alcoholism. The particular focus of controversy in this area has been over the question of whether abstinence, as a single criterion outcome, is strongly associated with other improvements in related behavioral and social domains. An early study by Gerard et al. (1962) presented empirical data contradicting the assumption that abstinence would result in the amelioration of other related life problems for the alcoholic. In fact, the Gerard et al. study has been widely cited for showing that a sizeable number of abstinent alcoholics in their sample were rated as overtly disturbed on measures of psychological functioning. Subsequently, Pattison (1966; 1968, 1976) has argued

that the uae of abatinence as the main atandard for judging treatment aucceaa ia contradicted by the results of many empirical investigations which report low or negative measurea of aasociation between the attainment of abstinence per se and improvements in either physical or mental health, or indices of social adjustment.

Recognizing the limitations of abstinence as a singular criterion measure, many researchers have argued for the uae of a continuum of drinking outcomes in order to empirically establish the relationship between drinking and nondrinking outcome indices (e.g., Pattison, 1968), the development of multidimensional outcome measures (e.g., Foster et al., 1972; Pattison, 1976), and the definition of global categories of remission or recovery (e.g., Armor et al.).

Uaing a multiple criteria strategy to eatablish global remission patterns for the NIAAA 6-month and 18-month ATC outcome data, Armor et al. (1976) provide empirical results on the relationship between consumption and behavioral impairment. A summary atatistic representing total volume of alcohol conaumed in a 30-day period (expressed as a daily average) was shown to correlate .69 and .68 with level of behavioral impairment at intake and 18-month follow-up points, respectively. While such correlations are substantial and tend to confirm the expected causal link between consumption and impairment, they are not so high as to preclude patterns of high consumption-low impairment and vice versa.

Cross-tabulations of average daily conaumption, typical quantities consumed on drinking days, and meaaurés of impairment indicated that aigna of phyaical addiction (withdrawal tremors) appeared frequently in the male non-DWI sample whenever daily consumption exceeded three ounces (of ethanol) per day or when typical amounts exceed five ounces. For other measures of impairment, the 3 oz./day point for average daily conaumption was associated with increasea in behavioral signs of impairment. These data indicated, therefore, that most male alcoholics at follow-up who are consuming less than 3 oz. of alcohol per day, did not have substantial levels of impairment resulting from that alcohol use. Moreover, most men in the general population fall below the 3 oz. limit, with a substantial proportion drinking in the 1-3 oz. range.

On the basis of these data, the authors classified clients at each of the two follow-up points into either one of three remission categories (Long-Term Abstention, Short-Term Abstention, and Normal Drinking)* or into a fourth nonremission group. This procedure enabled description of overall remission rates as well as an analysis of the critical question of whether alcoholics who engage in normal drinking at one follow-up point have a higher probability of relapsing to nonremission status than do clients who engage in a long-term abstention.

Table 3 shows the remission rates for the two follow-up samples. Overall, Armor et. al. reported remission rates of 68 percent at 6 months and 67 percent at 18 months for the three patterns combined. The consistency in overall remission rates for the two follow-up periods is impressive since they are based on largely independent samples of clients. The rates also compare favorably with improvement rates for individual outcome criteria.

It should be noted that the distribution across remission patterns between the two follow-up points is not as stable; in particular, 1 month abstention declines, whereas normal drinking and, to a lesser extent, long-term abstention increase. Short-term abstention appears to be the least stable remission pattern, with some clients returning to normal drinking and others adopting permanent abstention.

Methodological Considerations

The generally positive picture emerging from recent treatment evaluation research must be tempered by awareness that a number of methodological problems still prevent final conclusions about treatment success. Most of the studies reported here suffer from one or more limitations which effect the generalizability of their findings, such as small sample sizes, low response rates, non-experimental designs, and short follow-up periods. The exact impact of these limitations on research conclusions

*See category definitions on p. 9.

Table 3

REMISSION RATES FOR THE 6-MONTH AND 18-MONTH FOLLOWUP SAMPLES

Recovery Status	Percent	Average Drinking Behavior Last Month			Impairment Last Month	
		Daily Consumption (oz)	Typical Quantity (oz)	Days Drank	Tremors (%)	Serious Symptoms[a]
6-Month Followup						
Remissions	68					
Abstained 6 months	18	0	0	0	0	0
Abstained 1 month	38	0	0	0	0	0
Normal drinking[b]	12	0.5	1.9	7	0	0
Nonremissions	32	6.7	12.1	14	69	44
(N)	(2250)					
18-Month Followup						
Remissions	67					
Abstained 6 months	24	0	0	0	0	0
Abstained 1 month	21	0	0	0	0	0
Normal drinking[b]	22	0.7[c]	2.1[d]	10	0	0
Nonremissions	33	7.1	13.1	17	54	39
(N)	(597)					

[a]Frequent episodes of at least 3 of the following 6 symptoms: tremors, blackouts, missing meals, morning drinking, being drunk, missing work.

[b]Clients who drank last month but who met all four of the following criteria: (1) daily consumption less than 3 oz/day; (2) quantity on typical drinking days less than 5 oz; (3) no tremors reported; and (4) no serious symptoms (see note a).

[c]Range = 0.1 to 2.4; three cases over 2.0.

[d]Range = 0.9 to 4.4; five cases over 4.0.

is not clear at this time, although it is fair to state that the convergence in findings among the more comprehensive studies is encouraging.

The most troublesome methodological problem facing treatment evaluation research is the reliability and validity of follow-up information, which most often relies heavily on the former patient's self-reports, occasionally buttressed by additional reports from collateral persons (friends, relatives, etc.). Unfortunately, the validation of such reports is itself a complex research problem, and relatively few studies have attempted to do so. One fairly comprehensive review concluded that, on the reliability side, most self-reported drinking behaviors yield adequate psychometric reliability, and collateral reports generally corroborate patient reports (Armor et al., 1976). The same study found that self-reports of abstention are rarely contradicted by Blood Alcohol Consumption (BAC) tests, but that self-reports of moderate drinking are sometimes contradicted by BAC's, perhaps in 10 to 15 percent of the cases of self-reported moderate drinking. In another recent validity study, discrepant BAC's and self-reports were found for 50% of the total drinking sample, although some of these were self-reports that overstated the amount of drinking (Sobell, Sobell and Vanderspeck, 1976). Again, while encouraging, these studies are not definitive. Accordingly, NIAAA has initiated several more comprehensive validity studies whose results should provide a firmer basis for evaluating self-reported alcohol behaviors.

DIFFERENTIAL EFFECTS OF TREATMENT

While there is considerable disagreement over which criteria are appropriate for assessing outcome, the evaluation literature does seem to converge on one general point: for whatever reasons and by whatever mechanisms, treatment for alcoholism appears to help many people. The overall rate of success across studies ranges from 30 to 70 percent, depending on how broadly success is defined.

Recent treatment evaluation research has, therefore, gone beyond the issue of whether treatment works at all, to an examination of differential effects of various treatment settings, duration and mechanisms. Final conclusions about differential effects (or their absence) are premature, however, for a number of reasons. First, very few studies exist in the literature which utilize appropriately randomized designs, matched treatment groups, or proper statistical techniques to permit valid assessment of true treatment differences unconfounded by patient characteristics and other sources of systematic bias. Since many evaluation studies are conducted within the context of ongoing treatment centers, ethical problems of denying treatment (in order to establish "untreated" control groups) or coercing clients into one or another "randomly assigned" treatment mode preclude optimal experimental conditions. Since clinical practitioners have preferences for certain types of clients with whom they believe they have the best chances for success, de facto selectivity biases may also operate even within given therapeutic modalities. Such factors greatly increase the probability of spurious effects. In addition, most treatment programs offer a variety of therapeutic activities (especially inpatient settings) so that a singular technique of treatment administered in isolation of other methods is a rare occurrence. Thus, multiple treatments used in various combinations create a serious confounding of conditions for the purposes of evaluation research. Finally, many studies which putatively have found differential effectiveness for certain treatments suffer from other methodological limitations (e.g., inadequate follow-up periods; poorly operationalized outcome measures) which raise doubt about the validity of the results.

Treatment Setting

Systematic comparisons of treatment settings are rare in the literature; when available, such studies are often riddled with methodological problems of patient selection biases and treatment confoundings. Baekeland et al. (1975), in a review of the effectiveness of inpatient and outpatient settings, respectively, found no strong evidence to support the view that either setting is generally preferable.

Ritson (1968; 1971) examined outcomes at 6 months and one year for two groups of patients, one of which received inpatient care and the other outpatient treatment. No significant differences were found. However, a confounding of different treatment types (e.g., group therapy for inpatients, individual therapy for outpatients) makes the interpretation of the findings unclear.

Edwards and Guthrie (1966) randomly assigned well-matched patients either to two months of outpatient or inpatient treatment. Again, no significant differences were found at 6 and 10-month follow-ups. In a more recent study of the issue (Edwards and Guthrie, 1976), the same authors again found no significant differences in treatment outcome between patients given an eclectic regimen of inpatient treatment and those given a similar regimen on an outpatient basis.

Armor et al. (1976) studied the differential effectiveness of three settings (separately and in combination) offered by NIAAA comprehensive treatment centers: hospital, outpatient and intermediate (e.g., halfway houses). Again, these authors failed to find significant differences in remission rates across settings at either 6-month or 18-month follow-ups. In general, clients in all settings evidenced relatively high remission rates. Furthermore, the nature of drinking behavior (long-term abstention, short-term abstention, or normal drinking) was also essentially invariant across settings.

Given the relatively higher cost of hospitalization and/or intermediate care as well as the potentially disruptive effects of inpatient care on a patient and on his or her family, the lack of differential outcome effects raises important questions about the cost-effectiveness of various alcoholism treatment settings.

Amount and Duration of Treatment

A related question, relevant to both cost concerns and conceptual therapeutic models, is whether treatment length and/or amount (intensity) is related to outcome. In general, the length of treatment has been found to be positively related to outcome in outpatient treatment settings (Fox and Smith, 1959; Gerard and Saenger, 1966; Kissin et al., 1968,

Ritson, 1969). The evidence in the case of inpatient care is, however, equivocal. Some investigators have reported better outcomes following relatively longer hospitalizations (Ellis and Krupinski, 1964; Moore and Ramseur, 1960; Rathod et al., 1966), whereas others have failed to find an association between length of inpatient stay and treatment outcome (Ritson, 1969; Willems et al., 1973; Grenny, 1973). In both inpatient and outpatient studies, length of stay has been confounded with such factors as patient motivation, social background, and other prognostic variables, thereby making conclusions rather tenuous.

Baekeland et al. (1975) examined the relationship between treatment length and outcome across studies rather than individuals. Reporting on results of some 24 inpatient and 7 outpatient studies, the authors tentatively concluded that treatment length has a stronger positive relationship to abstinence than to other indices of improvement that may depend more heavily on environmental factors external to the treatment process.

Armor et al. (1976) distinguished duration from amount of treatment, since the latter could occur over both short and long periods of time. In order to separate the effects of amount and duration, clients were classified according to the length of time they stayed in treatment (duration) and the actual amount of treatment (e.g., number of inpatient weeks or number of outpatient visits) they received. The data indicated that total amount of treatment, but not duration, was significantly related to client remission status at follow-up. Thus, clients with relatively higher amounts of treatment also had higher overall remission rates than did those with lower amounts, regardless of whether the treatment was given intensively over a short period of time or extended over a longer time. Clients with lower amounts of treatment in their samples had remission rates only slightly higher than clients who had only an initial contact with a center and, for all intents and purposes, received no treatment at all.

Treatment Type

Emrick (1975) reviewed 384 studies of psychologically-oriented treatment of alcoholism in order to assess the relative effectiveness of different treatment approaches. Of the 384, only 72 studies used random assignment or matched treatment groups, thereby permitting assessment of treatment differences unconfounded by patient characteristics. In all, only five studies were found that presented significant long-term differences (i.e., longer than six months) between treatment groups. Client-centered and psychoanalytic groups were reported to be superior in effectiveness to a learning-theory and social discussion group by Ends and Page (1957). Two studies compared treatment regiments that included some form of aftercare with those which did not and found clients who received aftercare to function significantly better than the controls (Pittman and Tate, 1972; Vogler et al., 1971). Superior outcomes, relative to conventionally treated controls, were also reported for lysergide (LSD) treatment (Tomsovic and Edwards, 1973) and for behavior therapy (Sobell and Sobell, 1972; 1973).

Emrick has argued, however, that even in these five instances of reported differential treatment effects, the results could have been an artifact of experimental procedures in which control-group patients may have been made to feel "disappointment, abuse, neglect or rejection" (p. 94) by not being permitted to receive the experimental treatment. According to this argument, the differential effects attributed to the unique beneficial aspects of the treatment modalities studies may have been due instead to the relatively harmful effects of the control treatment.

A number of recent reviews have examined the overall effectiveness of behavioral techniques in achieving controlled drinking behavior goals with alcoholics (Lloyd and Salzberg, 1975; Pomerleau, 1976; Hamburg, 1975). In general, behavioral methods have enjoyed considerable success in establishing the desired outcomes, although many studies suffer from methodological limitations that make unequivocal interpretations of the results impossible. The research does indicate, however, that nonabstinent drinking goals may be appropriate and attainable for at least some alcoholics.

Few systematic comparisons of behavioral and nonbehavioral treatments have been conducted. Ewing and Rouse (1974; 1976) examined the efficacy of a controlled drinking paradigm with alcoholics who had failed in programs requiring mandatory abstinence and who had not responded to participation in Alcoholics Anonymous. Of a total sample of 35 patients, only 14 patients came to treatment six times or more. At extended follow-up periods (up to 55 months), none of the 14 were classified as completely controlled drinkers. Ewing concluded that, in his hands, the behavioral method was not effective. It should be noted, however, that a majority of the treated clients were abstinent at the time of follow-up--an outcome Ewing counted as a failure for the controlled drinking approach. In this regard, it is interesting that Hedberg and Campbell (1974) reported an abstinence rate of 53 percent for clients treated with behavioral methods in their study (abstinence or controlled drinking goals were left to the client's discretion); this rate is greater than that achieved in nonbehavioral treatments as reported in recent reviews by Rohan (1972) and Hunt and General (1973).

The most extensive test of controlled drinking as a goal of therapy has been reported by Sobell and Sobell (1972; 1973; 1976). Male alcoholic clients in that study were permitted to choose either abstinence or controlled drinking as a treatment goal. After designation of that goal, clients were randomly assigned (within treatment goal groups) to either behavioral treatment or conventional hospital treatment. At the one year follow-up point, the Sobells reported 80 percent and 75 percent success rates for the behavior therapy groups with abstinent and controlled drinking goals, respectively. These outcome rates contrast impressively with the 33 percent and 26 percent improvement rates of the control patients treated with conventional approaches. At the second year follow-up, the functioning of the behavioral treatment-controlled drinking goal clients was significantly better than the controls; the differences between outcomes for the abstinence-goal behavioral treatment group and the controls did not retain statistical significance during the second year follow-up however.

Baekeland et al. (1975) compared various nonbehavioral treatment regimens offered within inpatient and outpatient settings, respectively. Despite attempts to demonstrate their superior therapeutic effectiveness, evidence that either individual psychoanalytic therapy (e.g., Moore and Ramseur, 1960) or group therapy (Wolff, 1968; Gerard and Saenger, 1966) results in better outcome rates is marginal. Baekeland et al. (1975) concluded, in fact, that the empirical data to support the effectiveness of group therapy as "almost an article of dogma" (p. 265) is simply lacking.

Commenting on the overall effectiveness of hospital treatment programs, the same authors further concluded that "...despite the introduction of new methods, [hospital program effectiveness] seemed no better from 1960 to 1973 than it was from 1953 to 1963, and no differences were found in the effectiveness of different kinds of treatment regimens" (1975, p. 305).

Reviewing the differential effectiveness of methods employed in outpatient clinics, Baekeland et al. again found no strong data to support the superiority of any one therapeutic technique. Some suggestive evidence does come from comparative studies which have examined the relative effectiveness of individual psychotherapy versus multidisciplinary approaches indicating that the latter may be favorable. Finally, there is some evidence to suggest that involvement of the spouse in treatment results in superior outcomes for the alcoholic patient (e.g., Pemberton, 1967; Burton and Kaplan, 1968). It should be remembered, however, that such results are based on highly selected groups of patients whose spouses are willing and enthusiastic about cooperating in the treatment process.

Evidence for the superior effectiveness of drug treatment over other interventions with alcoholics, or for the superiority of any one drug over another, is generally unavailable (Mottin, 1973). While disulfram (Antabuse) has resulted in claims of therapeutic success (e.g., Wallerstein, 1956; Gerard and Saenger, 1966), the absence of well-controlled studies has left the question unanswered

as to whether disulfram works because of its pharmacological effects, or because the acceptance and disciplined use of the drug strengthens the therapist-patient relationship and reflects stronger patient motivation. Further research, using double-blind designs, longer follow-up periods and clear criterion measures, are required before conclusions can be drawn about the effectiveness of the range of drug interventions currently in use.

Baekeland et al. (1975) state throughout their review of the alcoholism treatment research that the patient's own characteristics, rather than any kind of therapy per se, play a dominant role in the eventual outcome of treatment. In particular, patients who are relatively higher socioeconomically and who are more socially stable at intake have better prognoses across all treatment types than do those who are relatively lower on the SES and social stability dimensions.

Armor et al. (1976) reported similar findings in their comparison of the relative importance of client background and treatment factors in predicting remission rates. Based on regression estimates, they reported that client background factors--both drinking history and social environment--exercised considerably more influence on outcome than anything associated with treatment modalities. About two-thirds of the explainable variance in remission rates was attributable to client factors, with greater weight given to social background variables than to drinking behavior. In contrast, all treatment variables combined accounted for only one third of the explainable variance in outcome.

Virtually identical results have been obtained recently in a large, multicenter treatment evaluation in Ontario, Canada (Smart, 1977). Of the explainable variance in a global outcome criterion, nearly 90 percent was due to patient characteristics at intake, while only 10 percent could be explained by treatment factors, including treatment setting, treatment technique, and treatment duration. Given the generally positive albeit uniform effects of various treatments with alcoholics, it appears that the client's own background characteristics and his decision to seek help for his problem may be the essential factors in the recovery process.

TREATMENT VS. NO TREATMENT: THE NATURAL REMISSION QUESTION

As can be readily seen from the foregoing review, much effort has been expended by researchers to assess both the overall effectiveness of treatment for alcoholism as well as the relative effectiveness of different treatment settings, amounts and techniques. Only very recently, however, have observers and evaluators attended to the basic and possibly more critical question of whether formal treatment of any kind is superior to no treatment at all in alleviating problems associated with alcohol abuse and alcoholism. The issue has been labeled variously by several authors--"spontaneous remission," "spontaneous recovery," "natural remission," "natural recovery." Essentially, the same question is being asked: What is the natural course of alcoholism if left untreated--does it inexorably progress and worsen, does it spontaneously abate with some individuals, or does it remain essentially stable over time?

Systematic research on the natural remission issue is generally sparse. Most studies relevant to the question have focused on the overall success rates of treated samples, compared to minimally treated samples with one contact or one counseling session. Very little is known about how truly untreated (no contact) samples change or how alcoholics resolve their problems without the aid of formal treatment.

Emrick (1975) attempted to assess the relative improvement rates of patients who received some kind of formal help with those who received no or only minimal amounts of treatment. Among the studies he reviewed, reported abstinence rates for "untreated" individuals ranged from zero to about 30 percent, and "improvement" rates ranged from 37 to 54 percent. Emrick concluded, on the basis of his analysis, that (1) many alcoholics can stop altogether or drink less with no or minimal treatment, (2) untreated alcoholics show the same degree of change over time as do those who received only minimal treatment, and (3) while no significant differences were found for mean abstinence rates, formal treatment does seem to increase an alcoholic's chances

of reducing his drinking and improving his drinking problem. However, methodological problems of many of the studies used in his analyses, as well as definitional ambiguities associated with classifying "no treatment" and "minimal treatment" groups, leave the interpretation of Emrick's findings somewhat open to question.

Armor et al. (1976) reported remission rates of slightly greater than 50 percent for clients who received only minimal contact with a treatment center. While such individuals do not constitute a truly "untreated" group, in that at least initial contact with a formal treatment agency was made, their relatively high rate of remission remains striking. Given the 70 percent remission rates among treated clients in that study, the authors concluded that formal treatment appears to add about a 20 to 25 percent increment to overall remission rates over and above what would be expected from no treatment. However, for outpatient care, the increment only occurs if the amount of treatment exceeds a certain minimum threshold on the order of five visits.

One of the most carefully designed comparisons of treatment and minimal-treatment effects was carried out by G. Edwards and associates in England (1977). One hundred consecutive admissions were randomly assigned to either an "advise" group, which received only a single counseling session, or a treatment group which received regular inpatient or outpatient treatment regimens. At a one-year follow-up the "advise" group had still received only minimal treatment, and yet there were no significant differences in outcomes between the two groups.

Several other studies have also documented the occurrence of the so-called natural remission phenomenon (e.g., Lemere, 1953; Thorpe and Perret, 1959; Kendall and Straton, 1965; Boggs, 1967). Most of these studies, however, disagree on the extensiveness of problem resolution without formal treatment aid.

In addition to clinical studies, epidemiological surveys and longitudinal studies have demonstrated that alcohol abuse is not a unilinear and necessary progressive disorder. Cahalen (1970), in a longitudinal

study of "problem drinking" among American males, has reported that such drinking follows a bimodal curve, varying as function of age and sex. It appears that persons may mature both into and out of problem drinking status. In a later analysis of the same cohort, Cahalen and Roizen (1974) commented that their findings "would seem to fly in the face of our everyday notion that the more severe are [sic] the drinking problem 'symptoms,' the less likely is a spontaneous remission" (p. 28). Other empirical evidence for the occurence of natural remission has been reviewed by Tuchfeld et al. (1976).

In summary, evidence converges from several sources that persons are able to resolve their problems of alcohol use without the aid of formal treatment--although good data on overall natural remission rates for alcoholic samples is as yet unavailable.

A recent and intriguing exploratory study of natural remission by Tuchfeld et al. (1976) presents evidence on the processes involved in the recovery of alcoholics who have experienced no formal help at all. On the basis of intensive interviews with respondents to media advertisements, the authors reported that 41 persons had resolved their alcohol problems without the assistance of formal treatment intervention. All of these persons indicated that they had previously suffered social, psychological and/or physical problems associated with alcohol use as assessed by the Michigan Alcoholism Screening Test. Of the 51 persons analyzed, 40 cases reported maintaining abstinence; of the 11 others who reported occasional drinking, 10 indicated exercising care to drink only a predetermined amount. The authors admonished that their sampling procedure may have generated a biased set of cases and that their study provides no basis for estimating the rate of occurrence of problem resolution without treatment. While their findings are not, therefore, generalizable they do indicate that:

"1) resolution of alcohol problems without the aid of formal treatment does occur,

2) this is effective for some people, and

3) the processes and associated factors are amenable to empirical investigation." (p. xix)

Several factors were reported to account for persons precluding formal treatment as a source of assistance for their problem. Of particular importance were resistances to being labeled "alcoholic" and negative attitudes toward institutional forms of intervention.

Among the conditions observed to initiate commitment to resolution were: "identification with a negative role model, a personally humiliating event, the onset of serious health problems, a sudden religious experience, extensive exposure to educational information about the effects of alcohol misuse and/or prior experience with self-control (e.g., having quit cigarette smoking)." (p. xxi).

The investigators found further that the initial commitment to change was not itself a sufficient condition for resolving their drinking problems; other social conditions were apparently critical to successful maintenance of problem resolution including the availability of non-alcohol-related leisure activities, reinforcement from friends and family, and the existence of relatively stable economic support systems.

The Tuchfeld study raises a number of provocative issues for future research as do other preliminary findings on the natural remission process. Given the costliness of formal treatment interventions and the fact that such treatment reaches only a relatively small proportion of the estimated alcoholic population, the question of natural remission in untreated alcoholics would seem an urgent topic for further and more extensive study.

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