

## A New Behavior Change Program Using Psilocybin

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This paper describes the procedure and results of a new kind of behavior change or rehabilitation program. The methods used here may have applications to a wide range of settings in the field of rehabilitation or behavior change.

The program aims to produce such changes in prisoners' ways of thinking and living as will enable them to stay out of prison once they are released. It is well known that our contemporary prison systems do not perform this function (usually called "reforming" the criminal). Fifty to seventy percent of offenders paroled or released return within a 5-year period, with a nationwide average of 67% (Mattick, 1960).

Many attempts have been made to develop treatment programs which would better serve the purpose of "reform" or "rehabilitation."

Our program may be summarized as follows:

- (1) It is a collaborative group program; we avoid as much as possible the traditional doctor-patient, researcher-subject, or professional-client roles.
- (2) The program is relatively short and emphasizes the crucial importance of certain far-reaching "insight" experiences (produced by consciousness-altering drugs).
- (3) The program has a built in evaluation procedure. Records of changes serve as feedback for the group members and to communicate the activities of the group to other research workers.

The program does not require expensive professional personnel. It does require persons (usually non-professionals possessing a certain egalitarian wisdom) who are experienced in the procedures we have developed.

Although the particular combination of methods used in this program is new, some of the methods have been used successfully by others within institutional settings. Stürup (1957) has developed a group "total treatment" program for criminals, involving insight experience, self-help in changing patterns of interaction and the concept of the "chain-reaction" by which groups are encouraged to further their own learning and progress. The Highfields project, which uses "guided group interaction" to provide insight and assumes that increased responsibility makes for change, is also similar in many respects (McCorkle *et al.*, 1958). Feedback and self-evaluation) by the group has been discussed by Jenkins (1948). Most writers on group treatment have agreed that the learning and change takes place through observation and understanding of "here-and-now" experience and behavior. The group behavior which serves as the focus around which the learning takes place may be role-playing (Levit and Jennings, 1960) or psychodrama (Moreno, 1959); or it may be some set of stimuli brought in from the outside, such as a problem or a case-history (Slater, 1961). In our case, the group experience around which the therapeutic process is constructed is the shared insight experienced by psilocybin.

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Although psilocybin per se has only rarely been used in therapy (e.g. Duché and Laut, 1961) other drugs from the same group such as LSD-25 have of course been widely used as adjuncts

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to therapy (*e.g.* Abrahamson, 1955; Cutner, 1959; Sandison, 1954). More recently Tenenbaum (1961) also reports the use of LSD with criminal offenders in a prison setting.

The halfway house for parolees is also an integral part of our program. There have been many attempts to establish such transitional institutions, based on the principle of support coming from others who have shared similar experiences. The St. Dismas Home in St. Louis for ex-convicts, the Synanon, Inc. group in California for ex-addicts, and especially Alcoholics Anonymous are some of the better known examples.

### PROCEDURES

This program was carried out in the Massachusetts Correctional Institution, Concord, a maximum security prison for younger offenders, between February, 1961, and January, 1963. Concord's daily average population in 1959 was 395, the average age is around 21 or 22. During 1959, 67% of the 247 men committed were recidivists, *i.e.*, had served former commitments, mostly in county jails or juvenile institutions.

The program as now developed through pilot studies, and continual revision and improvement over the period of a year may be divided into five stages: selection, testing, change program, pre-parole period and parole. In describing the stages we will distinguish between what we actually did and what we would now do, having learned from our mistakes.

**Stage 1: Selection.** Candidates for the program were selected by the prison parole officer according to the following criteria: (1) they were eligible for parole in three to five months' time; (2) they had not had more than one previous parole violation.

We now add a third criterion: we don't accept inmates who will be paroled out of state because of the difficulty of keeping adequate follow-up records. The group thus selected is interviewed by a clinical psychologist and a psychiatrist jointly, the program is explained and volunteers are accepted. Of the 40 men interviewed 2 refused and 6 did not complete the program for technical reasons. Thus only 32 men are involved in the final evaluation.

During our pilot studies we also accepted inmates from sources other than the parole officer. Three were referred by the prison psychiatrist. One was accepted because of his interest in the project. These were older men with longer records and longer sentences.

We now feel that it is wiser to adhere strictly to the criteria developed because otherwise the project becomes involved with power struggles in the institution which may cause tension in the groups. Also, older inmates serving long sentences pursue somewhat different objectives in the group than men who are about to be paroled. These different goals need not conflict but they are distinct: a young offender at Concord is most likely to concern himself with post-release adjustment to life outside. An older offender serving a 15-20 year sentence is more likely to be trying to find ways of adjusting to prison life.

It should be noted that the participants are not necessarily men who have sought help for "psychological" problems. Simultaneous individual therapy for participants in the group program may be a valuable complement. However, the group program, with its emphasis on collaborative ways of self-help, provides a behavior change setting for many men who would refuse to seek help within the traditional psychiatric framework.

We have experimented with different sizes of groups, five to ten inmates with three psychologists. Large groups are too unwieldy. For the major experiment the groups consisted of three new inmates, one psychologist and one additional inmate who had already participated in

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the program once.

**Stage 2: Testing and feedback.** After an initial discussion meeting the inmates take a battery of personality tests consisting of the MMPI (Minnesota Multiphasic Personality Inventory), the CPI (California Psychological Inventory), the Maher Sentence Completion Test (Watt & Maher, 1958), designed especially to measure cynicism in prisoners, and a TAT (Thematic Apperception Test) constructed especially to measure a variety of motives.

Then follow three to four discussion meetings (twice a week). Test results are "feedback" and personal situations are reviewed. The group is told about the possible experiences with psilocybin and encouraged, on the basis of their test results and the information on psilocybin, to plan and initiate their own individual personality change programs. This may take the form of statements such as "I want to understand what drinking means to me" or "I want to try and reduce my paranoid suspicions." We have found, however, that the *first* time a person takes psilocybin most can be learned by not imposing any plans or pre-conceived interpretation on the experience. Thus, goal-setting becomes more important for second or third experiences. Group leaders carefully avoid imposing

*their*

expectation. They emphasize the wide variety of different individual experiences that can be had. Any planning must come from the subject himself.

**Stage 3: Change program.** The group meets for an all-day session in a room in the prison hospital and takes psilocybin. The main effects of the drug usually last about 3-4 hours but the group stays together all day for support and discussion.

During the session, the atmosphere is relaxed and permissive. Beds are provided for subjects to lie down if they wish, music is also available, the session is not interrupted by visitors or guards. No interpretations are made, although the more experienced group members are always ready to handle panic or paranoia by providing a warm, supportive "reality" orientation. To do this, it is necessary that the group leaders have experienced the effects at some time since they would otherwise be incapable of understanding the reactions the members of the group are having. We have experimented with different dosages and now usually start with 20 or 30 mg., and in subsequent sessions increase up to 50 or 70 mg. Large dosages should only be taken by an experienced subject in a very secure situation, since they can be quite shattering. The prison psychiatrist is always in attendance during the session to handle any adverse physical reactions, although we have never had any except transient minor nausea and headache. In order to minimize suspicion on the part of the inmates and to increase the sense of collaborative trust, we have found it advisable for one of the group leaders to take a small amount of the drug (5-10 mg.) in initial sessions.

After the session, a series of three to four discussion meetings is held, during which subjects work through their experiences, compare, analyze and try to integrate into everyday life what they have learned. Then follows a second all-day session with psilocybin and further discussion meetings.

Our program in the major study consisted of 6 weeks of bi-weekly meetings, with two psilocybin sessions. [3] However, there is some evidence that a longer (perhaps 8-week) program with at least three psilocybin sessions would be better. Partly this is because the first session tends to be minimal in terms of learning since subjects often spend a major portion of the day fighting the experience off. Only when confidence in the experience and in the group is established, through this first experience, does real learning begin.

After the final discussion meetings the men are re-tested with the same battery of tests and the

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results again fed back.

**Stage 4: Pre-parole period.** Around this time most of the men come up before the parole board and will either be given a date or deferred. If they are paroled, they move into a special *pre-parole group*.

In this group they discuss the nature of parole, employment opportunities, difficulties and legal problems they may have. We provide whatever help we realistically can. We have been aided in this by graduate students from Harvard University who work in Concord as part of their training in clinical psychology. Psychologists may meet individually with inmates to work out anticipated special problems. The rationale underlying these procedures is to minimize abruptness, shock and difficulty in adjusting to non-prison life.

Those men who are not paroled but have been through the program participate as assistant group leaders in one of the next groups. This serves both to increase inmate collaboration and responsibility and to maintain contact with all our participants.

**Stage 5: Parole.** This phase of our program was never fully developed. We now realize that it is necessary to set up a halfway house where members of the project can meet regularly and discuss mutual problems along Alcoholic Anonymous lines. For practical and material reasons we were limited to irregular individual contacts with group members. In making such contacts we have found it necessary to "set the limits" of our contract rather widely. Thus most ex-convicts will not come to a middle-class institution like a university unless highly motivated. The only alternative is for the group leader to seek out the men in the community, e.g., in bars or homes, sometimes at unusual hours, as the need arises.

### RATIONALE OF THIS PROGRAM

The guiding principles underlying this program are that the problem of changing behavior is not one of "curing" and "illness." Our approach is outside of a medical framework (*cf.* Leary, 1961), and more in line with an existential approach. We assume that self-defeating behavior patterns (such as recidivism) can be overcome by recognizing the

*game-quality*

of conduct (Szasz, 1960). A "game" is any learned behavior sequence with roles, rules, rituals, values, specialized languages and limited goals. Self-defeating games are maintained largely through inability to recognize the features and rules of the game one is involved in, and through inability to detach the self from its actions; they are maintained further through lack of instrumental capacity (power, knowledge) to carry out one's preferred games successfully. Helplessness is the key obstacle to efficient game performance.

Thus many of our procedures are designed to reduce helplessness. Relationships which imply or emphasize power differences are avoided as much as possible. Decisions are made collaboratively by all group members whenever possible. Any knowledge or resources the group leaders have are shared with the group members. This is the rationale for feedback of the test results and interpretations. Maximum responsibility for his own change processes is given to each prisoner. He is encouraged to practice new games and given the help of whatever resources we have.

New interpersonal or behavioral games can only be acquired in shared time and space. In the field of criminology this principle was formulated in the "differential association theory" of Sutherland (1955). Prisoners learn their games from the two groups that share most time and

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space with them, viz. other prisoners and guards. No middle-class role-relationship could possibly compete with or counteract that influence. Goffman (1957) has made a similar point with reference to the role of attendants in mental hospitals. Therefore we have stressed the importance of mutual collaborative problem-solving at all stages of the program.

***The role of the drug experience.*** The drug used in this project, psilocybin, is a synthetic derivative of *Psilocybe mexicana*, the "Sacred Mushroom" of Mexico. It was discovered by R. Gordon Wasson in 1954 and synthesized by A. Hofmann of the Sandoz Laboratories in Basel, Switzerland, and is classified with the group of drugs variously known as "hallucinogenic," "psychotomimetic" or "consciousness-expanding"—a group that also includes mescaline and LSD-25.

We have found that in a benign, supportive setting and with a favorable set, psilocybin can produce a state of dissociation or detachment from the roles and games of everyday interaction (*cf.*

Leary, Litwin, and Metzner, 1963). This detachment, or temporary suspension of defenses, can provide insight and perspective about repetitive behavior or thought patterns and open up the way for the construction of alternatives. If the defenses are abandoned in a non-anxiety provoking situation, the experience also serves to establish a quite profound level of trust and communication between members of the group.

If the situation is such that suspicion or fear are aroused then the drug experience will only lead to an intensification of defensive manoeuvres. This often happens the first time the group takes the drug and hence it is important to prepare each group member intensively for what he may experience. Subjects who are caught by surprise and become afraid of the effects will attempt to fight the experience *e.g.*, by becoming hypochondriacal about physiological changes, or by obsessive talking, writing or moving around, or by paranoid accusations against the group leaders or against people present who have not taken the drug.

This is why previous experience with drug is important. An inexperienced person is likely to communicate his own anxiety about the reaction. The group should be, to quote Gerald Heard (1959), ". . . concerned but not anxious, interested but not engrossed, diagnostic but not critical, aware of the seriousness and confidential value of what is being conveyed and all the more incapable of coldness or shock, aloofness or dismay. . . Any sense of fear or alienness means that the root danger and origin of all breakdown, *i.e.*, separation is present."

During the main effects of the drug, which start about half an hour after ingestion and last 3-4 hours, a minimum of interpretative or analysis is done; participants are best left free to explore whatever material comes up, whether it be entirely personal or involve interpersonal issues with other group members. Afterwards, when ordinary reality relations have been re-established, there is generally a very fruitful period for discussion and review. (See *Handbook on the Therapeutic Use of LSD*

by Blewett and Chwelos, 1959.)

Psilocybin has the advantages over LSD and mescaline of (a) being relatively short-lasting and (b) involving minimal somatic side-effects.

Two special problems: (1) the two or three days after an intense insight-producing drug experience can be quite painful and depressing as the subject attempts usually with some difficulty to integrate the enormous quantity of material into his habitual life-patterns. Hence group support, exchange of experience and discussion is particularly important at this time. (2) The second problem is that in a group psilocybin experiences that are repeated there is a danger for certain persons to attempt to use the experience to maintain or improve their

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"games" rather than to see through them. This can express itself in narcissistic preoccupation with one's own "profound" experiences and a certain superior aloofness towards other less experienced group members. This is exemplified in the case of S., described below (see Section V), who in one session repeatedly demanded more of the drug and when it was refused became irritated and withdrawn. It should be the role of one of the other group members or of the leader to point out in a calm, non-critical way whenever a person gets caught in an ego-enhancing pattern for its own sake. Such selfishness tends to obstruct the progress of a really therapeutic and enlightening experience.

### TWO EXAMPLES

**The Case of J.** J. is a 28-year old Negro who was serving a 5-year sentence for robbery. (6 prior arrests of which 5 were for drunkenness.) He attended a school for retarded children till the age of 17.

The group leader reported that from the start "J's behavior in the group was cooperative and interested. Although he did not talk a lot he followed the group program very closely." During the first psilocybin session he experienced feelings of confusion and isolation. In his report he wrote: " I kept saying to myself in thought—where do you belong?" Through discussions afterwards he gained some insight into his experience and his relationship. The second experience, in the same group of 4 men as before, was much more intense and emotional, with hallucinations of colors, of positive and frightening scenes; it apparently stimulated him to do some thinking about his life.

A few weeks later J. was released on parole. His employer was quite satisfied with his work. At the time of the follow-up evaluation there had been no arrests of J. since his release from prison two years earlier and no indications of criminal involvements.

**The Case of S.** S. was a 48-year old white man who was serving time on charges of being a common and notorious thief, forgery, larceny and escape. He had a prior history of 30 arrests, the first one being at the age of 12. The offenses were mostly drunkenness (9) and thefts of small amounts of money by the use of bad checks. He had served eleven prior commitments with a total time of fourteen years in prison.

On the initial tests S. presented the classic picture of a "hardened inmate." The Pd and Ma scales on the MMPI were both elevated—the well-known profile of acting-out criminals.

During the first psilocybin session, S. was suspicious and attempted to control and suppress the changes that were occurring partly due to a competitive situation with another inmate.

For the second session in the same group, he was given a larger dose (40 mg.) since he was a very heavily-built individual. Out of the shell of the hardened criminal emerged a sensitive, lonely, child-like human being. "At the time of the peak of the drug's effect I had a terrific feeling of sadness and loneliness, and a feeling of great remorse of the wasted years.... It seemed to me that I was crying inside of me and a feeling as if tears were washing everything away. And I was hollow inside. with just an outer shell standing there watching time stand still."

He continued in a second group as assistant group leader. With a group of three younger inmates it was possible for him to assume a role of responsible and encouraging leadership. In the two sessions with this group he was able to experience and explore certain more alien and unacceptable aspects of his personality. In one it was the fear of death which he envisioned in the form of a summoning figure; in the other it was his own selfishness (in demanding drugs).

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After both experiences he reported feeling very detached from prison life, uninterested in gambling or even talking to anyone except those in his group.

In describing the influence of the project experience on his life, S. wrote: ". . . before taking this drug my thinking always seemed to travel in the same circles, drinking, gambling, money and women and sex as easy and I guess a fast life ....Now my thoughts are troubled and at times quite confusing, but they are all of an honest nature, and of wondering. I know what I want to be and I am sincere in my mind when I say I will try very hard to make it so. I also know that the mushroom drug, in group discussions, and tests, the group therapy is most important. Because there is then also an opening of the mind, and you also get a better understanding of yourself and also the people who are in your group. You feel more free to say and discuss things, which you generally do not do."

He was discharged some weeks later, unexpectedly released from several outstanding warrants and was rather disoriented by the sudden change. However, he obtained a job with a construction company, he worked ten to thirteen hours a day and one month later was promoted to assistant foreman of a small crew. He and two friends subsequently started an auto body paint shop. A few months later he became assistant cook in a large restaurant. Two years later he was still out of prison and working successfully.

**Evaluation:** Our evaluation research was designed as follows. After a series of pilot group experiences involving a total of nine inmates, the main treatment group of 12 men was run through the program from September to October, 1961. The men met in 4 groups of 3 inmates each, with one psychologist and one inmate from the pilot groups serving as group leaders. A control group of ten men was given the pre- and post-tests at the same time as the treatment group, but did not have any other contact with the program. After the first six-week program they then became the second experimental group, with members of the first group serving as assistant leaders.

The Design Diagrammatically:

TESTS	SIX WEEKS	TESTS	SIX WEEKS
Experimental Group	I	TREATMENT	II
Control group	I	NOTHING	II

The actual results will be presented separately for the three sets for data—personality tests, behavior ratings and return rates.

**A. Personality Tests.** [Table I](#) shows the MMPI scores from pre- and post-tests for the pilot and experimental groups. It should be remembered that the schedule and time-period intervening between pre- and post-tests for the pilot subjects was somewhat longer and more variable than for the experimental subjects. The number of subjects involved in the analysis is less than the total sample owing to incomplete test-protocols or subject dropout. All means are

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based on T-scores, except for the ego-strength scale, which is based on raw scores. It will be seen that although on several of the scales (D, Pd, Sc, Ma) there are changes in the expected direction, these are not significant. The drop in the psychopathic deviate scale is almost significant at the .05 level. The significant decreases in the two validity scales (L and F) indicate that subjects are less likely to put on a good front or answering at random after the treatment program.

[Table II](#) shows the MMPI scores for the Control group before the control period (I), at the end of the control period and before treatment (II), and after treatment (III). Three comparisons were made, all using Wilcoxon signed-rank tests and 2-tailed probability levels. Comparing I and II no difference was predicted and none was found. Comparing the changes from I to II with the changes from II to III it was predicted the latter would be greater. However, the differences were not significant on any of the scales. It will be noted that on several of the scales (Hy, Pd, Pt, Sc) there is a U-shaped trend, with a tendency for scale scores to rise on the third testing after the treatment. This might reflect some peculiar effects due to repeated testing. The fact that the mean F-score did not change also indicates that the validity of these post-treatment scale scores is somewhat doubtful. When I and III, i.e., first and last tests are compared, only the D-scale shows a significant decrease ( $p < .02$ ).

[Table III](#) shows the mean scale scores from the CPI (California Psychological Inventory) for the pilot and experimental groups. Again, significance of change was estimated for the experimental group alone and for pilot and experimental groups combined. Significant increases are shown on 12 out of 18 scales, the most marked being on Sociability, Sense of Well-Being, Socialization, Tolerance and Intellectual Efficiency. The socialization-maturity scales (Re, So, Sc) and the achievement scales (Ac, Ai, Ie) as a group all show significant increases.

[Table IV](#) shows pre- middle- and post-tests for the control group. None of the changes from I to II are significant except an increase in Good Impression ( $p < .01$ ), which occurs also in the experimental group. Except for this scale then, the treatment group changed significantly more than the control group. For the final testing (III) only 7 subjects were available, hence the comparison of changes from I to II with changes from II to III, as well on the overall change from I to III becomes very unreliable. In fact, none of the differences are found to be significant, although they are in the predicted direction. There is however a significant increase from I to III on the Dominance scale for the control group ( $p < .05$ ).

A different method of analysis is to compute change-scores for each subject and compare mean change-scores in the experimental and control groups, using the Mann-Whitney U-Test. This is a direct estimation of the significance of difference in change, rather than the indirect method of comparing pre- and post-test scores in the two groups. On the MMPI only the decreases on the F and K scales are significantly greater in the experimental than the control group ( $p = .10$ ). On the CPI the increase in Tolerance (To) for experimental subjects ( $N = 20$ ) is significantly greater than for control subjects ( $N = 12$ ); the two-tailed p-value is  $< .05$ . The increase in Achievement via Conformity (Ac) is significantly greater for experimental subjects ( $N = 12$ ) than for the control subjects ( $N = 12$ ); the two-tailed p-value is  $< .10$ .

**Interpretation.** There are two problems which make the interpretation of these data difficult. One is artificial, one is substantive. The *artificial* problem is that the final test scores (III) of the control group are not apparently very reliable, and hence the within-group comparison cannot be made adequately. The *substantive*

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problem is that given the existence of significant changes after the treatment program on the CPI it is not known which features of the program are responsible for the changes. Firstly, the fact that most participants are about two to three months removed from parole introduces some ambiguity. Wheeler ( 1961 ) has shown that there is increasing conformity to staff and community norms in prisoners' attitudes just prior to release. However, two facts make this explanation of the data implausible: (1) the changes observed by Wheeler occurred in the last six months prior to parole—there is no evidence to suggest that this trend is continued linearly over such short periods as 6 weeks; (2) this general norm-shifting effect should apply to the control group also, which, as we have seen, does not change. A second factor is the possibility that the feedback of results has simply made the subjects "test-wise" and this can account for all the variance. Although the tests were taken honestly i.e., there was no possibility of memorizing all the items of a scale and their direction, it is true that we do not know whether the feedback alone could have produced these results. We can only say now that this requires further analysis. For example, eventually, it will be possible to correlate success on parole with changes in personality tests. Ferdinand (1962) reports similar CPI changes in a group of juvenile offenders treated by "milieu therapy."

The *Sentence Completion Test* used here (*cf.* Watt and Maher, 1958) consists of the responses to 41 sentence stems, coded according to a five-point scale from "extreme disapproval, non-conformity, very negative" (1) to "praise, approval, conformity, extremely positive" (5). The content of the stems covered a variety of social institutions,

*e.g.,*

law, family, sports, arts, business. etc. Three scores were computed for each person: (1) mean across all items, (2) frequency of very positive responses-4's and 5's, and (3) frequency of very negative responses-1's and 2's.

[Table V](#)

shows the means for two groups—the pilot plus experimental and the control group. On the mean "positive attitude" score the experimental and the controls increase, but the experimental group more. When only the extreme positive or negative 'responses are counted the experimental group changes (positively), the control group does not. Again the results from the third test are bedeviled by sample shrinkage. Since this test was not used in the feedback program, it is not subject to the same confounding variables as the MMPI and CPI. It would seem that a concomitant of the program is a decrease in cynical and hostile attitudes towards a variety of social institutions.

**B. Behavior Ratings.** Two types of behavior ratings by independent observers were collected, but both are subject to many sources of unreliability. (1) The regular quarterly *institutional work reports*,

by the inmate's work-instructor are six rating scales covering work competence, industry, co-operativeness, etc. When July, September and December work reports were examined there were not consistent trends on any of the scales over the period of the program; nor were there any significant differences between experimental and control groups. However, the samples in this analysis are very small (4 to 9) and the ratings are made by *different*

observers. Thus the absence of discernible trend is not really surprising. (2) A *special rating sheet*

for officers was constructed on eleven areas of interaction and behavior (see Appendix). The "experimental group" here consists of 13 men still in the prison who had gone through the

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program; the "control group" are a matched sample, selected according to the same criteria, but never having had any contact with the project at all. Again, there is the problem of the effects of different raters, and their possible bias about the project affecting their judgments. With these reservations in mind,

### [Table VI](#)

provides some suggestive evidence. The results are given in mean ratings (the scales were either four- or five-point) and the significance of differences was computed by means of chi-square. None of differences between the groups are significant, but 4, 5, 6. (which approach significance) very tentatively suggest that participants are seen as less excitable and as getting along better with officers and with other inmates.

**C. Return Rates.** One and a half years after termination of the project (18-26 months after release from prison). The recidivism rate in this project does not differ from the expected rate derived from base-rates for the Concord Reformatory as a whole (Metzner & Weil, 1963). In that study 56% of the 311 men released from Concord during 1959 had returned two and a half years later. Out of the 32 men involved in the project, four are still in prison and one escaped. These must therefore be omitted. Of the 27 men released, 11 are still on the street and 16 have returned, a return rate of 59%.

### ***Expected Rate of Return by Type of Return***

In the base-rate study half of the recidivists were returned for parole violations and half for new offenses. These two types were then combined for further calculation of predictive categories. In other words we would expect 28% of the released men to be returned as parole violators and 28% as new offenders. When we look at the figures actually obtained, we see that only two out of the 27 men (7%) were returned for new offenses, while 14 out of 27 (52%) were returned as parole violators. This discrepancy has a probability of less than .01 of occurring by chance, using the binomial distribution. In other words there is a significant reduction in the rate of new crimes and a significant increase in the rate of parole violations. This dual effect accounts for the lack of difference when the overall rate of return is considered.

One may speculate about the reasons for the rise in parole violation. Perhaps the men on the psilocybin project received an extra careful degree of parole supervision. The project had aroused a lot of interest in the Department of Correction, and it was impossible to prevent the parole officers from knowing which of their charges had been involved in it.

### ***Expected Rate of Return by Prognostic Categories***

In the base-rate study referred to above, expectancies were computed for six different sub-classes of offenders. The categories were obtained empirically on the basis of their predictive efficiency. Thus for example, men with no prior arrests and no prior commitments have an expected return rate of 22%. Men with prior commitments, who committed offenses against a person (but not sex offenders) or against property and who are non-white, have an expected return rate of 86%. Thus, these categories enable one to obtain a more precise

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expectancy for any particular sample than simply the overall rate.

[Table VII](#) compares for each category the percentage returning in the experimental and base-rate samples.

Although the experimental subsamples are too small to make statistically valid comparisons, the figures indicate a reduced return rate in groups (1) and (6) and an increased rate in group (2). It should be remembered that these figures for new offenses and parole violations are combined and therefore do not enable one to specify in what category a significant reduction of new crimes occurred.

**Conclusion.** Of the three types of evaluation, the most important is the rate of return. It is a completely objective behavioral index, not subject to any of the distortions of personality tests and clinical impressions. The main conclusion can be stated as follows: One and one half years after termination of the program the rate of new crimes has been reduced from 28% to 7%, although if parole violations are counted the overall return rate has not changed. It is proposed that these results warrant further research into the potentials of the methods used, especially since no other method of reducing the crime rate exists.

### FUTURE DEVELOPMENTS

From our experience in this project we would offer the following suggestions for an improved rehabilitation program designed to decrease the recidivism rate of offenders with relatively short sentences.

If the core of the rehabilitation or change process is some form of intense group experience designed to bring about insight then it is essential that the environment in which this insight takes place is supportive of applying such insights to behavior. The ideal solution to this problem is to involve the entire institution, officers, psychologists, as well as inmates, in a joint change process, as in the Herstedvester Center in Denmark (Stürup, 1959). We have attempted to tackle this problem by placing some responsibility for stimulating behavioral change on older, more experienced inmates.

It is highly undesirable to have an inmate return to the same frustrating environment after experiencing an internal liberation. An alternative would be to have the group experience (whether it involves drugs or not) occur outside of the prison, immediately after release, in a special transitional center. This would serve both as a sort of retreat for internal change and as a halfway house to prepare the convict for regular life on the streets.

The second suggestion concerns the importance of the follow-up period. Many convicts are reluctant to get involved in middle-class activities. The doctor-patient model, in which a client regularly visits the office of a professional, is simply not applicable. In practical terms, the "therapist" must be prepared to visit his clients at all times of the day or night in bars or homes, to help find employment, to lend money, etc., because these are the accepted "tests" of a trusting relationship. This is not to say that there should be no structure at all to the relationship, but the structure should come from a definite contractual agreement about the purposes of contacts—and not from arbitrarily imposed space-time limits. For further elaboration of these two ideas see the discussions by Leary (1961), Schwitzgebel (1961) and Eissler (1950).

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## Footnotes

1. The help, advice and encouragement of the following persons are gratefully acknowledged: Edward W. Grennan, Superintendent of Massachusetts Correctional Institution, Concord; David C. McClelland, Ph.D., Director of the Center for Research in Personality, Harvard University; Norman A. Neiberg, Ph.D., Director of Psychological Research in the Division of Legal Medicine; and David Houghey, Ph.D., Director of Psychological Research in the Department of Correction; Bernard Dee, Institutional Parole Officer; William P. Ryan, head Correctional Social Worker; Cornelius Twomey, Chairman of the Parole Board and Martin Davis, Chief of Parole Division The following graduate students contributed actively to this program: Stephen Berger, Jonathan Clark, Don Fowles, Rudolf Kalin, David Kolb, George Litwin, Jonathan Shay, James Uleman; and Michael Hollingshead. ([back](#))

2. Grateful acknowledgment is also made to Sandoz Pharmaceuticals, and its director, Carl Henze, M.D., for supplying us with psilocybin and for his continued interest and cooperation in our program. ([back](#))

3. The pilot group usually had three sessions; some of the later group members also participated as assistant group leaders, hence the number of psilocybin sessions is not constant. The actual distribution is as follows: 15 had two sessions, 9 had three, 4 men had four and 5 had five. One man, a chronic alcoholic and multiple parole violator, was given the drug once outside of the regular program; he is not included in the main sample. We feel that alcoholics present a special problem and have not attempted to cope with it here. Other investigators, however, (Chwelos. *et al.*, 1959) have reported considerable success using LSD-25 with alcoholics. ([back](#))

## Tables

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Mean Minnesota Multiphasic Personality Inventory Scores of Pilot and Experimental Groups

Pilot Group (N=8) Scale	Experimental Group (N=8)		Significance* I—pre
	pre	post	
L	50.1	50.1	54.9
F	64.7	50.2	60.5
K	57.1	51.1	52.4

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Hs	51.0	45.5	47.5
D	61.1	50.1	58.8
Hy	58.0	56.1	53.0
Pd	77.8	73.6	71.1
Mf	50.9	50.7	62.3
Pa	50.1	50.5	56.1
Pt	50.6	50.4	56.9
Sc	62.1	50.6	58.2
Ma	65.0	65.6	66.8

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Si	50.2	46.1	47.4
Es	—	50.0	47.2

Col. A: Significance of difference from pre- to post-test for Experimental Group

Col. B: Significance of difference from pre- to post-test for Pilot and Experimental Groups combined

\* All significance estimates made with Wilcoxon signed-rank test. Probability levels are two-tailed.

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Table II

Mean Minnesota Multiphasic Personality Inventory Scores of Control Group

Controls (N=9)

Scale	I	II	III
L	44.3	34.8	43.1
F	65.1	64.9	63.9
K	45.7	48.3	48.7
Hs	49.4	47.8	48.7
D	62.2	59.7	57.1
Hy	53.0	49.7	53.9
Pd	76.8	68.8	79.7
Mf	56.4	52.7	55.4
Pa	54.7	56.8	59.9
Pt	61.8	58.9	62.1

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Sc	66.3	61.9	65.7
Ma	67.8	67.8	72.3
Si	57.3	55.9	53.1
Es	44.4	46.1	46.4

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[\(back to text\)](#) Table III

Mean California Personality Inventory Scores of Pilot and Experimental Groups

Pilot Group (N=8) (N=12) Scale N=20	Experimental Group Signif.* pre	Signif. post	I—pre
Do	49.1	56.4	50.4
Cs	54.3	61.0	49.1
Sy	53.4	58.5	47.3
Sp	57.5	62.4	52.4
Sa	63.0	61.0	56.3

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Wb	46.1	54.5	43.0
Re	34.4	47.0	33.2
So	32.6	41.8	31.9
Sc	42.8	48.9	38.9
To	42.2	52.1	41.8
Gi	45.5	53.4	40.2
Cm	53.8	56.4	52.6
Ac	45.6	54.6	39.9
Ai	48.0	53.6	44.0

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le	48.1	57.4	43.5
Py	44.0	51.2	46.8
Fx	50.8	52.0	51.4
Fe	50.0	48.3	52.2

\*Wilcoxon signed rank test two-tailed.

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[\(back to text\)](#) Table IV

Mean California Personality Inventory Scores of Control Group

Controls (N=12)

Scales	I	II	III (N=7)
Do	34.1	34.7	40.7
Cs	38.9	40.2	46.0
Sy	37.9	41.9	46.6
Sp	49.8	52.2	51.6
Sa	55.0	52.7	53.3
Wb	32.7	38.1	43.6
Re	25.8	26.4	32.0
So	22.6	27.8	26.3

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Sc	31.5	38.5	41.0
To	32.7	33.3	42.7
Gi	33.3	40.6	42.1
Cm	46.7	48.1	50.4
Ac	27.5	31.7	34.0
Ai	38.5	40.2	45.6
le	28.4	32.3	39.7
Py	37.2	42.3	44.6
Fx	58.3	56.4	52.9
Fe	48.0	50.8	54.3

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[\(back to text\)](#) Table V

Sentence Completion Test Data

Pilot & Experimental Groups (N=6) Control Group (N=11)

Measure (n=6) Mean	Pre I vs II 2.99	Post II vs III 3.15	Signif.* p<.01*
Freq. Pos.	10.7	13.6	p<.01**
Freq. Neg.	10.9	9.5	p<.01**

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\*t-test, 2-tailed

\*\*Wilcoxon sign rank test, 2-tailed

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[\(back to text\)](#) Table VI

Means of Officers' Ratings	Question	Exp. X(N=12)	Control X(N=12)
1. Cooperative	3.5	3.5	
2. Hardworking	2.8	3.2	
3. Responsible	3.0	2.8	
4. Not excitable	2.8	2.4	
5. Getting along with officers	3.0	2.7	
6. Getting along with inmates	3.1	2.5	
7. Influence	.75	1.0	
8. Talk with officers	1.5	1.8	
9. Friends	1.6	1.7	
10. Parole success	2.5	2.6	
11. Estimate of project	2.0	1.8	

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[\(back to text\)](#) Table VII

Rates of Return by Prognostic Categories		Description	Base-Rate Sample	Psilocybin
N	% Return	N	% Return	
22	2	22	2	
27	3	30	3	
59	3	37	3	
44	3	61	3	

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5. Some prior commitments; offense against person (except sex), against property or combination; <del>whites</del>	69	13
6. Some prior commitments; offense against person (except sex) against property or combination; <del>other</del> ethnic group	86	3
<b>Combined</b>	311	56
		27

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