

Psychedelic Drug (DPT)-Assisted Psychotherapy with Alcoholics: A Controlled Study

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Hofmann's serendipitous discovery of the psychological effects of LSD, in 1943, kindled a surge of interest and research concerning the possible implications of LSD and related compounds (principally mescaline and psilocybin) for psychiatry, psychology, religion, and society in general. Among the intriguing reports published during this flood of investigations were a substantial number suggesting that LSD could be used with dramatic success in the treatment of alcoholism (Chwelos et al. 1959; Hoffer & Osmond 1968; Jensen 1962; MacLean et al. 1961; Savage 1962; Smith 1958). However, there were also some studies that found LSD to be of little if any use in the treatment of this population (Faillace, Vourlekis & Szara 1967; Smart et al. 1967; Soskin 1970). This discrepancy may well have resulted from differences in the manner in which LSD was employed, especially in regard to the attention given to various extrapharmacological variables. There was a tendency for studies using LSD in the context of a fairly intense and unique form of psychotherapy to report more favorable outcomes than those which used the drug in a format more similar to chemotherapy, although exceptions to this tendency can be found (Soskin 1970).

The work of some of the present investigators and their colleagues, using LSD as an adjunct to psychotherapy with 135 chronic alcoholics in a double-blind controlled study, was quite encouraging (Kurland et al. 1971; Kurland, Unger & Shaffer 1967; Kurland et al. 1967). In that study the experimental group was given a high dose of LSD (450 μ g) and the control group was given a low dose (50 μ g). At the six-month follow-up point, the experimental group showed a statistically significant advantage over the control group with regard to drinking behavior and global adjustment, but this advantage did not hold at 12 and 18 months.

Although LSD seems to hold substantial promise as an adjunct to the treatment of alcoholics when properly employed, some aspects of the nature of the responses to this compound require that certain specialized procedures be used in conjunction with it. First, the duration of the reaction to a high dose of the drug runs from eight to 12 hours. This makes attendance by the psychotherapist for the entire course of the drug action a rather prolonged affair. Second, the termination of drug effects is quite gradual with LSD; the patient often experiences a period of several hours when the effects abate and then return in a wave-like fashion. Although some subjects find this an enjoyable and/or therapeutically productive period, many others would elect to do without it if given the option. Finally, some patients who might benefit from LSD-assisted psychotherapy find it unacceptable because of the negative publicity and associated social pressures that have surrounded the irresponsible abuse of psychedelic drugs. Although the negative public image of LSD will presumably be

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mitigated by the passage of time, it is a significant issue at the present for any potentially large-scale treatment program.

Because of the above disadvantages of LSD, as well as its therapeutic promise, interest has arisen regarding the possibility of using dipropyltryptamine (DPT) as an alternative to LSD as an adjunct to psychotherapy. DPT was synthesized some twenty years ago by Szara (1957). Subsequent research has indicated that it elicits qualitatively the same range of subjective effects as LSD (Faillace, Vourlekis & Szara 1966; 1967). In addition, DPT appears to possess certain qualities that make it preferable to LSD as an adjunct to psychotherapy. First, it does not have the negative public image that LSD has acquired. In fact, it is hardly known outside medical circles. Second, in low dosage, DPT is active for a relatively brief period of time (one to two hours), thus making it a drug which might be used in a more conventional psychotherapeutic framework involving interviews two or three hours in length. Finally, the termination of the effects of DPT is quite abrupt and complete. Hence, patients who receive DPT can be more conveniently returned to a ward if they are hospitalized, and might even be treated on an outpatient basis, if they returned home in the company of a relative or friend.

Because the above qualities suggested that DPT might be a useful adjunct to the treatment of alcoholics, a pilot project was undertaken to determine the feasibility and efficacy of its use in this context, with results that were quite encouraging. A double-blind phase of this work revealed that one and a half to two hour interviews facilitated by a low dose (15-30 mg) of DPT were rated significantly higher than placebo interviews on recall of memories and experiences, emotional expressiveness, depth of self-exploration, psychodynamic resolution, and productivity (Soskin, Grof & Richards 1973). In addition, 51 patients were treated with DPT in a non-blind format, receiving one to six (mean 1.86) administrations of the drug in dosages from 15 to 150 mg (Grof et al. 1973). There was "dramatic improvement" from pre- to post-treatment on a variety of psychological test variables, many of which reached high levels of statistical significance. At six-month follow-up there was significant improvement (compared to pre-treatment) on all five of the variables that were measured: occupational adjustment ($p < .01$), residential adjustment ($p < .02$), interpersonal adjustment ($p < .001$), abstinence ($p < .001$) and global adjustment ($p < .001$).

Another much smaller pilot study involving DPT concluded that "the use of hallucinogenic drugs in the treatment of alcoholism appears to be of limited value"

(Faillace, Vourlekis & Szara 1970). This conclusion was based on the treatment of twelve chronic alcoholics with DPT and two other drugs: N,N-diethyltryptamine (DET) and 6-fluorodiethyltryptamine (6-FDET). The latter compound was presumed to have been a placebo and the description of the design reveals little more than the fact that each subject received each of the three compounds at least once, in a dosage of either 0.7, 1.0, or 1.3 mg/Kg of body weight. The lack of scientific rigor demonstrated in the conduct and reporting of this study, and the fact that it was clearly only a small pilot probe, renders rather meaningless its very broad conclusion. Hence the results of the more rigorous and extensive pilot work described above (Grof et al. 1973; Soskin, Grof & Richards 1973) were deemed sufficiently promising to warrant the initiation of the present controlled study.

SUBJECTS

Subjects were recruited from the alcoholism treatment unit of a large state hospital. After new patients entering the unit had been detoxified and treated for acute withdrawal symptoms, those who seemed motivated for longer-term treatment were screened by members of the research team. Screening criteria included a minimum age of 21 years and the absence of the following: active psychosis or history of psychosis; organic brain disease; cardiovascular disease; and acute liver disease.

DESIGN AND PROCEDURES

The study was described to patients who met the above criteria, and participation was offered. They were told that they would be randomly assigned to one of the three treatment groups described below, and those who wished to participate were then asked to read and sign a written consent form. Approximately 50% of the patients approached agreed to take part in the study.

Once admitted, the patient was administered a battery of psychological tests and then informed of his random assignment to one of the following three treatment groups: routine hospital treatment (RHT); conventional therapy (CT); or DPT-assisted therapy (DPT). Patients in the RHT group received the usual treatment given to patients in the alcoholic unit of the hospital, consisting of group therapy three times per week, as well as limited individual counseling, marital counseling, occupational and vocational rehabilitation, and medical treatment. Patients in the CT and DPT groups received all the same treatment afforded those in the RHT group, as well as the following additional benefits. Those in the CT group received up to 35 hours

(mean 30.9 hours) of additional individual psychotherapy, and those in the DPT group received up to 35 hours (mean 24.1 hours) of additional individual psychotherapy assisted by the use of DPT.

The additional therapy in the CT and DPT groups was provided by the same group of 11 male therapists, with therapist assignment being determined relatively randomly by therapist availability as new patients were admitted into the study. Three of the therapists were physicians (two psychiatrists and one non-psychiatrist), seven were psychologists (four Ph.D. and three non-Ph.D.), and one was a clinical pastoral counselor. Of the patients treated in the study, 6% were treated by the physicians, 73% by the psychologists, and 21% by the clinical pastoral counselor.

The hours of individual therapy with patients in the CT group were spent in relatively traditional verbal therapy, at times facilitated by the use of Guided Affective Imagery (GAI) (Leuner 1969) and Guided Imagery with Music (GIM) (Bonny & Savary 1973). The latter technique involves having the patient recline on a sofa with eyes closed listening to music that has been selected for its tendency to elicit certain emotions that the therapist feels it is important to explore.

The procedures used in the DPT group represent a modification of the psychedelic psychotherapy model. In the psychedelic model a single high dose of a psychedelic drug was given in a supportive setting, with emphasis on facilitating the occurrence of a transcendental, mystical, or "psychedelic" experience. The present study included the use of at least one such exposure to a high dose of DPT, but also used the drug in a lower dose range, with a maximum of six administrations of the drug being allowed at the therapist's discretion.

The first few interviews for subjects in the DPT group were usually focused on the life history, with special reference to the development of the self concept and to drinking. Immediate problems were also reviewed, and sometimes GIM was introduced, in accordance with the general goal of establishing good rapport. After adequate rapport had been established DPT was introduced in relatively low dosage, usually ranging from 15 to 45 mg. In this range the drug is active for about one to two hours, and from one to five drug sessions (mean 3.00) were conducted with such dosage. Between these drug sessions non-drug interviews were also conducted.

When the therapist felt that adequate rapport had been established and that the patient's defenses were sufficiently flexible, DPT was administered in a high dose range, from 75 to 165 mg. In most cases one or two

drug sessions were conducted with dosage in this range (mean 1.48). They lasted from four to six hours and, when more than one such session was scheduled, non-drug-assisted interviews took place in the intervening period.

In the low dose range, the drug sessions were sometimes conducted in a face-to-face format, just as if a standard therapeutic interview were taking place, with the exception of the DPT injection being administered at the beginning. At other times the low-dose session included use of the GIM procedure.

For high-dose DPT sessions there was strong emphasis on acceptance and confrontation of the emotional aspects of the experience, and on the importance of refraining from logical analysis during the course of the drug action, attempting instead to accept whatever subjective events might occur without analysis, judgment, or resistance. In addition, before the first high-dose session, the therapist described the range of experiences that might occur under the influence of the drug. This description generally included references to feelings of dying, fears of entering a permanent psychotic state, ecstasy, and distortions of body image. Mentioned among possible body image distortions were feelings of merging with objects or other persons as well as complete disintegration of the body.² It was explained that the therapist and a specially trained nurse would be present throughout the course of the drug action; the nurse was introduced a few days before the first high-dose session. The patient was encouraged to extend his or her hand or ask for support if he or she felt frightened during the session, and it was explained that the therapist and/or nurse would take the hand in response to this action.

High-dose sessions were usually initiated before 11:00 a.m., since it was anticipated that they would last from four to six hours. The treatment setting gave the appearance of a comfortable living room, with carpet, sofa, easy chairs, coffee table, and stereo system. The DPT was administered intramuscularly in the buttocks by the nurse, and the patient then reclined on the sofa, which had been made up like a bed with sheets and a blanket. Eyeshades and headphones were put in place, final verbal reassurances and well-wishes were given, and the music was started. Frequently the therapist would take the patient's hand for the first 20 or 30 minutes, even if the patient did not request or manifest need for this form of support, in an attempt to avert a possible panic reaction as the rapid onset of drug effects took place. For the rest of the period of drug action the therapist and nurse offered verbal and non-verbal support as needed, encouraged the patient to fully

explore the experience, selected appropriate music, kept notes, and attended to the physical needs of the patient as required (usually elimination, thirst, and occasionally vomiting). A private bathroom was available immediately adjacent to each treatment room, and an emesis basin was kept unobtrusively at hand.

In the latter portion of the drug session patients usually described some of the experiences that had occurred and were offered selected objects to examine. These objects almost always included a fresh rose, and sometimes photographs of significant persons and/or events in the patient's life were presented.

RESULTS

Measurements related to treatment outcome took place at four points in time: 1) pre-treatment (during the brief interval between acceptance into the program and initiation of treatment), 2) post-treatment (immediately upon termination of treatment), 3) six-month follow-up and 4) 12-month follow-up.

The pre-treatment assessment battery consisted of the Social History Questionnaire (SHQ) (Grof et al. 1973) completed by a social worker during the course of a structured interview, and the following instruments completed by the patient: Minnesota Multiphasic Personality Inventory (MMPI); Personal Orientation Inventory (POI) (Shostrom 1965); Outpatient Symptom Checklist (OSCL, a slightly modified version of the Hopkins Symptom Checklist) (Derogatis 1974); KAS Behavior Inventory S Form 25 (KAS-25) (Katz & Lyerly 1963); and the Psychiatric Evaluation Profile (PEP) (Levine & Ludwig 1967). In addition a Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham 1962) was completed by the psychologist or psychiatrist who screened the patient. The same battery, excluding the BPRS and SHQ, was repeated at the post-treatment point. The SHQ was repeated at the six-month and 12-month follow-up points; the social worker who interviewed the patient and completed this instrument did not know in which treatment group the patient had been.

Since the patient population being studied proved to be rather mobile, at least in terms of the frequency of relatively abrupt departures from the hospital (and hence from the present study), it became necessary to determine criteria for considering a patient as having received adequate treatment to provide valid data for the study. It therefore was decided to drop from the study patients who did not meet the following criteria: for the RHT and CT groups, at least two weeks participation in the research program; for the DPT group, at least one high dose of DPT. Patients who met these criteria but

whose departure from the hospital was so abrupt that it precluded their taking the post-treatment testing were still included in the six-month and 12-month follow-ups if they could be located. Since females constituted only 7% of those who met these criteria, (and 6% of those who were screened and accepted) they were dropped from the data analysis in order to provide a more homogeneous sample.

The 103 males who were ultimately considered to have been treated and were therefore included in the data analysis had a mean age of 40.04 years. Of the total sample, 18% were black and the remaining 82% were white, with 20% married and living with their spouses while the remaining 80% were either single, separated, divorced, or widowed. Educational achievement, occupation, and general drinking pattern were each rated on a 1 to 7 scale. For educational achievement in which a rating of 1 implies a graduate degree and 7 indicates less than seven years of schooling, the mean was 4.86 (4 = high school degree; 5 = partial high school). The mean of 5.76 on occupation fell between 5 (skilled labor) and 6 (semi-skilled labor) on a scale that rated a professional at 1 and an unskilled laborer at 7. On the scale for general drinking pattern a rating of 1 was given to subjects who reported continuous and heavy drinking, while 7 indicated that only occasional small amounts were consumed. Our subjects had a mean of 3.45 on this scale.

Differential Completion

Table 1 presents data pertaining to the differential completion of the various portions of the study by the patients in the three treatment groups. Although very nearly equal numbers of patients were assigned to each of the groups initially, it can be seen in line B of Table 1 that there were significant differences between the groups in terms of the percentages that met the above criteria for inclusion in the study.

A certain percentage of those considered to have been treated and therefore included in the study left the hospital unexpectedly and/or abruptly, so that post-treatment data were not obtained. These patients were labelled "premature departures" and line C of Table 1 shows that there was a significant difference between the three treatment groups in terms of the percentage of those who were considered to have been treated but became premature departures. It can be seen that a far greater percentage of treated patients departed prematurely from the CT group than from either of the other two groups.

However, when one turns to the comparison of the percentage of each treatment group that fully completed the clinical phase of the study (i.e. met the criteria for

TABLE 1
DIFFERENTIAL COMPLETION OF VARIOUS PORTIONS OF THE STUDY
BY PATIENTS IN THE THREE TREATMENT GROUPS (N = 174)

Completion Criteria Group	N of Treatment Groups			χ^2 ^a
	DPT	CT	RHT	
A. Total Sample: screened, accepted, and assigned to treatment group	56	59	59	
B. Patients Treated: met criteria ^b for inclusion in study (% = B/A)	33 (59%)	46 (78%)	24 (41%)	17.92 (p < .001)
C. Premature Departures: met criteria for inclusion but did not complete post-testing (% = C/B)	3 (9%)	13 (28%)	1 (4%)	8.58 (p < .02)
D. Fully Completed: met criteria for inclusion and completed post-testing (% = D/B)	30 (54%)	33 (56%)	23 (39%)	3.96 (p < .20)
E. Follow-Up I: six-month follow-up data obtained (% = E/B)	28 (85%)	26 (57%)	16 (67%)	7.11 (p < .04)
F. Follow-Up II: twelve-month follow-up data obtained (% = F/B)	27 (82%)	24 (52%)	14 (58%)	7.56 (p < .03)

^aEach χ^2 was based on a 2 x 3 contingency table comparing the N of the completion criteria group in question (e.g. Premature Departures) with its opposite (e.g. those who did not depart prematurely), across the three treatment groups. Mathematically this amounts to using the components of the fraction employed to derive the percentages for the completion criteria group in question (e.g. C/B): the first row of the contingency table is the numerator of this fraction, and the second row is the difference between the denominator and the numerator.

^bCriteria for inclusion in the study are given in the text.

being considered to have been treated and also completed the post-treatment testing), those who did not meet the criteria for inclusion in the study and the premature departures seem to have somewhat cancelled each other out. Line D of Table 1 reveals that these "fully completed" percentages were not significantly different.

There were significant differences in the percentage of patients considered to have been treated in each group who were eventually located for the six-month and 12-month follow-ups. Lines E and F of Table 1 show that these differences were significant at the .04 and the .03 levels for the six-month and 12-month points respectively. In both cases the percentage was much higher for the DPT group than for either of the other two groups.

Adequacy of Randomization

Although patients were originally assigned to treatment groups on a random basis, the highly significant difference in "dropout" rate between the groups that is reflected in Line C of Table 1, raises the question of whether there might have been initial differences between the treatment groups. In order to answer the question, separate analyses of variance were performed on each of the pre-treatment variables. The combination of 45 scales on the five instruments completed by the subjects at pre-treatment, plus the six scales of the SHQ and the five scales of the BPRS, resulted in a total of 56 variables being available for analysis. Of these, only two yielded significant *F* ratios, each at the .05 level. These were the NC (Nature of Man) scale of the POI and the TD (Thinking Disorder) scale of

the BPRS. Pairwise comparisons, using the Least Significant Difference test (Keppel 1973), revealed that the DPT group scored higher than the CT group ($p < .01$) on the NC scale of the POI, and that the RHT group scored higher than both the CT group ($p < .05$) and the DPT group ($p < .05$) on the TD scale of the BPRS. None of the other 54 analyses of variance was significant.

Post-Treatment

When treatment was terminated, patients again completed the MMPI, POI, OSCL, KAS, and PEP. These five instruments contain a total of 45 scales. The post-treatment scores on each of these scales were compared across the three treatment groups by means of 45 separate analyses of covariance. In each case, the pre-treatment score on the scale in question was used as the covariate control. Table 2 presents the adjusted group means for the three scales that were significant out of the 45 that were compared. Pairwise comparisons using the Least Significant Difference test reveal the following: for the Self Regard scale of the POI the DPT group scored higher than the RHT group ($p < .01$); for the Distress scale of the PEP the CT group scored lower than the RHT group ($p < .05$); and for the Hs scale of the MMPI the DPT group scored lower than the RHT group ($p < .01$) and the CT group also scored lower than the RHT group ($p < .05$).

A further reduction in the post-treatment data was accomplished by the following procedures. First, the 45 variables were sorted into three categories: 1) those indicating positive outcome (self-actualization, positive social behavior, and mental health), 2) those indicating negative outcome (symptomatology and psychopathology), and 3) those that did not fit clearly into

either of the first categories (the three validity scales of the MMPI and the Social Desirability scale of the PEP). This sorting procedure resulted in the following 18 variables being included in the "positive outcome" category: all 12 scales of the POI; scales S2, S3, RS4, and S5 of the KAS; and the Future and Insight scales of the PEP. The 23 variables designated as indicators of "negative outcome" were: scale S1 of the KAS; the 10 standard clinical scales, plus A, R, Ac, and B, of the MMPI; and the Distress, Distrust, and Great Cause³ scales of the PEP. Next, a tally was made of the number of scales in the positive outcome category on which each treatment group had achieved the highest mean covariate-adjusted post-treatment score. A similar tally was done for the lowest mean covariate-adjusted post-treatment scores for the scales in the negative outcome category.

Frequency distributions based on these tallies are presented in Tables 3 and 4. Table 5 summarizes the data from Tables 3 and 4 and presents χ^2 tests of the significance of the differences in the frequencies across the three groups. For the highest mean scores on positive outcome measures this test is highly significant ($p < .01$), while for the lowest mean negative outcome the χ^2 does not even approach significance ($p < .50$). Finally, the frequencies of highest mean positive outcome and lowest mean negative outcome are summed for each of the three treatment groups, and χ^2 for these three totals is significant beyond the .025 level.

Follow-Ups

Subjects who could be located by the social worker were interviewed at six months and again at 12 months after completing treatment. The social worker then rated the subjects on each of the six scales of the SHQ at each

TABLE 2
VARIABLES SHOWING SIGNIFICANT ($P < .05$) DIFFERENCES
BETWEEN TREATMENT GROUPS AT POST-TREATMENT BY
ANALYSIS OF COVARIANCE, USING PRE-TREATMENT VALUES
OF SAME VARIABLES AS COVARIATE CONTROLS

Variable	Adjusted Group Means			F	P
	DPT	CT	RHT		
POI-Self Regard	12.83 (n = 31)	11.81 (n = 32)	10.73 (n = 22)	3.835	.025
PEP-Distress	33.89 (n = 28)	22.99 (n = 31)	38.11 (n = 23)	3.425	.036
MMPI-Hs	54.03 (n = 31)	54.36 (n = 32)	59.96 (n = 23)	3.972	.022

TABLE 3

FREQUENCY WITH WHICH EACH TREATMENT GROUP ATTAINED
HIGHEST MEAN COVARIATE-ADJUSTED POST-TREATMENT SCORE^a
ON INDICATIONS OF POSITIVE OUTCOME (MEASURES OF SELF-ACTUALIZATION,
POSITIVE SOCIAL BEHAVIOR, AND MENTAL HEALTH)

Measure	DPT	Group CT	RHT
POI — all 12 scales	7 (n = 31)	5 (n = 32)	0 (n = 23)
KAS — scales S2, S3, RS4 ^b and S5 ^b	4 (n = 27)	0 (n = 31)	0 (n = 21)
PEP — scales for Future and Insight	1 (n = 28)	1 (n = 31)	0 (n = 23)
TOTALS	12	6	0

^aPre-treatment values on the same measures were used as covariate controls.

^bFrequencies indicate lowest numeric scores on these scales, which represents highest frequency of, and satisfaction with, positive social behavior.

of these points in time. (As reported above, the social worker had been kept blind as to the treatment group for each subject, and he reported that only two subjects revealed this information in the course of the follow-up interviews.) These ratings were then subjected to analyses of covariance, again using the pre-treatment values as the covariate controls.

None of the six analyses of covariance performed on the SHQ scales at the six-month follow-up point was significant. At the 12-month point two SHQ scales, Occupational Adjustment and Sobriety, showed significant differences. The group means and *F* ratios are given in Table 6. Pairwise comparisons revealed that the CT group was higher than the RHT group on Occupational Adjustment ($p < .01$), and that on Sobriety the CT group was higher than each of the other two groups ($p < .05$).

All six of the scales of the SHQ could be placed in the positive outcome category. Hence a further reduction in this data was achieved by counting the frequency with which each treatment group attained the highest mean covariate-adjusted scores on these scales at each of the two follow-up points. The figures contained in Table 7 demonstrate a marked consistency in the data across the two follow-up points when it is reduced in this manner. At each of these points the frequencies of highest mean covariate-adjusted SHQ scores are zero, six and zero for the DPT, CT, and RHT groups respectively.

Each of these two frequency distributions is significant at the .005 level by itself, and when the two distributions are summed, the resulting totals are significantly different at the .001 level.

DISCUSSION

The results of this study are somewhat complex, and defy simple interpretation or summary. Differential treatment effects on the whole were not strong, as shown by the relatively small number of significant *F* ratios emerging from the various analyses of covariance done on the post-treatment and follow-up data. Nor was there great consistency in the effects that did emerge either at a given point in time or across time. While the DPT group seemed to have some advantage on the positive outcome measures at the post-treatment point, followed by the CT group, this difference was not found on the negative outcome measures at the same time. Finally, what advantage the DPT group did seem to manifest at the post-treatment point was forfeited to the CT group at the six-month follow-up point, producing a difference on the SHQ scales in favor of the CT group that became even more pronounced at the 12-month point.

Success of Randomization

Many hypotheses could be advanced in an attempt to account for the above patterns in the data. First, one

TABLE 4

FREQUENCY WITH WHICH EACH TREATMENT GROUP ATTAINED LOWEST MEAN COVARIATE-ADJUSTED POST-TREATMENT SCORE^a ON INDICATORS OF NEGATIVE OUTCOME (MEASURES OF SYMPTOMATOLOGY AND PSYCHOPATHOLOGY)

Measure	DPT	Group CT	RHT
KAS — scale S1 only	0 (n = 27)	0 (n = 31)	1 (n = 21)
MMPI — 10 clinical scales plus A, R, Ac, and B	6 (n = 31)	3 (n = 32)	5 (n = 23)
OSCL — all 5 scales	4 (n = 29)	0 (n = 31)	1 (n = 20)
PEP — scales for Distress, Distrust and Great Cause	0 (n = 28)	3 (n = 31)	0 (n = 23)
TOTALS	10	6	7

might question whether the randomization was successful. Since only two of the 56 analyses of variance run on the pre-treatment data yielded significant F ratios, the randomization would appear to be adequate and failure of the randomization procedures can be ruled out as a likely explanatory hypothesis.

Self-Selection by Differential Attrition

The data on differential completion of various portions of the study by the three treatment groups, as presented in Table 1, is not to be dismissed so easily. Of the five χ^2 tests presented in this table, four are significant at the .04 level or beyond, indicating some quite significant differences between the three treatment

groups in the percentage of subjects who completed the various stages of the study. The differences between the percentages of subjects who left the study before having met the criteria⁴ for being considered to have been treated and therefore included in the study ("Patients Treated," Table 1, Line B), and the differences between the percentages of subjects who were considered to have been treated but left before completing the post-treatment testing ("Premature Departures," Table 1, Line C), are both significant and may both be due to the same factor.

This factor might be termed "preferred treatment modality." Each subject who was recruited for the study

TABLE 5

SUMMARY OF FREQUENCIES WITH WHICH EACH TREATMENT GROUP ATTAINED HIGHEST MEAN COVARIATE-ADJUSTED SCORE^a ON INDICATORS OF POSITIVE OUTCOME (FROM TABLE 3) AND LOWEST MEAN COVARIATE-ADJUSTED SCORE^a ON INDICATORS OF NEGATIVE OUTCOME (FROM TABLE 4) AT POST-TREATMENT, AND ASSOCIATED χ^2 VALUES

Measure	DPT	Group CT	RHT	χ^2	p
Highest Positive Outcome	12	6	0	12.000	< .01
Lowest Negative Outcome	10	6	7	1.188	< .50
TOTAL	22	12	7	8.537	< .025

^aPre-treatment values on the same measures were used as covariate controls.

TABLE 6
SHQ VARIABLES SHOWING SIGNIFICANT ($P < .05$) DIFFERENCES
BETWEEN TREATMENT GROUPS AT 12-MONTH FOLLOW-UP BY ANALYSIS
OF COVARIANCE, USING PRE-TREATMENT VALUES OF SAME
VARIABLES AS COVARIATE CONTROLS

Variable	Adjusted Group Means			F	p
	DPT (n = 33)	CT (n = 25)	RHT (n = 25)		
Occupational Adjustment	6.04	7.03	4.75	3.352	.039
Sobriety	5.96	7.59	5.95	3.117	.048

was given a thorough explanation of the randomization procedures. He was told that he had to agree to accept whichever treatment group he might be assigned to, regardless of his preference. Although this agreement was made with each subject before he was accepted into the study, it was obviously not kept in each case. Some subjects expressed preferences for one or another of the treatment groups (usually either DPT or CT) when volunteering for the study, and pleasure or dissatisfaction when they either received or failed to receive their preferred treatment. In some cases these expressions were merely verbal, and in some cases the expressions of dissatisfaction took the form of leaving the study altogether. Since being assigned to the RHT group conferred no additional benefits beyond those already accrued as a function of being in the hospital, it seems reasonable to conclude that most of the subjects volunteered in hopes that they would be assigned to either the DPT or CT groups. Hence the highest dropout percentage is in the RHT group, presumably reflecting, at least in part, the fact that these subjects had wanted to be in one of the other two groups. Following this line of reasoning, it would appear that more subjects who were assigned to the DPT group had actually hoped to receive the CT assignment than vice versa. This conclusion is drawn from Line B of Table 1, showing only 59% of those assigned DPT stayed long enough to meet the criteria for inclusion in the study, whereas 78% of those assigned CT did so. Of those who met the criteria for inclusion in each treatment group, the majority of the RHT and DPT groups fully completed the clinical phase of the study, including post-treatment testing. These two groups lost only an additional 4% and 9% respectively. On the other hand it appears that a substantial number (28%) of those remaining in the CT group decided, after trying it, that they were not getting what they wanted, and left before fully completing the clinical phase.

Hence, by the time that the study had reached the end of the clinical phase and post-treatment testing had taken place, the subjects had self-selected themselves, to a substantial extent, into their own preferred treatment groups. The 54%, 56%, and 39% of the original samples in the DPT, CT, and RHT groups respectively that remained in the study presumably represent those subjects who preferred, or at least found acceptable, the treatment group to which they had been assigned. The smaller the percentage, the more refined the particular treatment group may be presumed to be, in terms of the "fit" between the subjects' preferences and the treatment actually received. It has been shown that there is a positive correlation between the goodness-of-fit on this dimension and the degree of success in therapy (Devine & Fernald 1973). Hence, the percentage of subjects in any given group that complete a certain phase of the study would be expected to be negatively correlated with the degree of success or positive outcome in the therapy to that point, all other things being equal. Although the percentages of the original samples that completed post-treatment testing (and therefore formed the source of the data that was used in making post-treatment comparisons) were not significantly different (Table 1, Line D), it is noteworthy that the RHT percentage was 15 and 17 percentage points below the DPT and CT groups respectively, while the latter groups differed from each other by only two points. This would imply that any advantage resulting from differential attrition, and hence refinement of the sample in terms of goodness-of-fit between preferred treatment and assigned treatment, would have fallen to the RHT group. This implication in turn lends additional significance to the differences on indicators of positive outcome presented in Table 5, which shows the RHT group doing the least well in terms of positive outcome measures at the post-treatment point.

A similar analysis leads to significant implications

for the results obtained at the six-month and 12-month follow-up points. At both these points there were significant differences between the three treatment groups in the percentages of subjects who were located and whose data was therefore included in the analysis. In both cases the DPT group had a substantially higher percentage than either of the other two groups, and in both cases the CT groups had the lowest percentage. Since the follow-ups were done by a social worker in the field, these percentages do not reflect a direct choice made by the subjects, as the "dropout" and "premature departure" percentages discussed above did. However, they do reflect in some way the stability of the life style pursued by the subjects upon leaving the hospital, since their being included in the follow-up analyses was a direct function of the ability of the social worker to locate them. Hence the percentage of subjects located for the follow-ups in each of the treatment groups can again be taken as an index of the extent to which the sample had been refined. In this case it is an inverted index, and the dimension on which refinement is being accomplished is that of stability of life style. By assuming that stability of life style is positively correlated with good adjustment in an alcoholic population recently released from the hospital, it follows logically that the group with the smallest percentage located for follow-ups (in both cases the CT group), would have the greatest advantage, since those located in some way represent the "cream of the crop" of subjects treated in that group. Conversely, the larger the percentage located for follow-ups (in both cases the DPT group had the largest percentage), the more representative the sample is and the less it benefits from the positive bias inherent in a smaller percentage.

The above reasoning leads to the expectation that, other things being equal, the CT group would have the most favorable outcome at the follow-up points, and the DPT group would have the least favorable. The data presented in Table 7 might therefore be taken to indicate that the relative advantage demonstrated for the CT group at both follow-up points may be at least partially artifactual, a result of differential availability of the different treatment groups rather than representing a positive differential treatment effect. By the same token, the failure of the DPT group to demonstrate such advantages at the follow-up points could be taken as an indication of the suppressor effect of a larger percentage of subjects located for follow-up, rather than the lack of positive differential treatment effect.

With regard to the issue of self-selection, it is of interest to compare the results of the present study with those of our pilot work using DPT in the treatment of alcoholics (Grof et al. 1973). In that study 51 patients were treated with DPT-assisted psychotherapy, but no control group was employed. Hence each patient knew that he would receive DPT and presumably elected to volunteer for the study because that was his treatment of choice. At the initiation of treatment and again at the six-month follow-up point a social history questionnaire was completed by a social worker, and this questionnaire contained five of the six scales in the current SHQ (Occupational Adjustment, Residential Adjustment, Interpersonal Adjustment, Abstinence, and Global Adjustment). Scores on all five scales were significantly higher at the six-month follow-up point than at the initiation of treatment, with *t* tests yielding $p < .001$ on three of the scales and $p < .02$ and $p < .01$ on the other two scales. These results are encouraging if not dramatic,

TABLE 7
FREQUENCY WITH WHICH EACH TREATMENT GROUP ATTAINED
HIGHEST MEAN COVARIATE-ADJUSTED^a SCORE ON SIX SHQ
SCALES AT 6- AND 12-MONTH FOLLOW-UPS

Follow-Up	DPT	Group CT	RHT	χ^2	p
6-Month	0 (n = 35)	6 (n = 27)	0 (n = 29)	12.0	< .005
12-Month	0 (n = 33)	6 (n = 25)	0 (n = 25)	12.0	< .005
TOTAL	0	12	0	24.0	< .001

^aPre-treatment values on the same measures were used as covariate controls.

and serve to underscore the potential of this form of treatment when it is applied in such a way that the patient is allowed to select it for himself.

There is one final way in which self-selection of treatment by patients may have influenced the outcome of the present study. Ditman et al. (1970) found a number of significant differences between alcoholic patients who volunteered for LSD-assisted therapy and those who did not volunteer. The former group had more arrests for drunkenness, more felony arrests, more jail sentences of greater than one month duration, more previous treatment, more use of other drugs, and a greater tendency to feel detached and anesthetized while drinking. These authors conclude that "those men who did volunteer... were more strongly motivated to volunteer — a motivation resulting perhaps from their desperation over an uncontrollable drinking problem." The patients in the present study were told that DPT was very similar to LSD, and many were well aware from the hospital "grapevine" that the present research team had treated alcoholics on the same ward with LSD in the past. Hence it seems likely that the results of Ditman et al. can be at least partially generalized to the population of the present study. By making such a generalization one can infer that, within the DPT group, it is likely that those patients who elected to stay in the study after their group assignment was made, had a more acute problem with their alcoholism than those who dropped out (and were dropped from the study) at that point. There is no reason to believe, on the other hand, that such a mechanism would have been operative in either of the other two groups. In fact something quite the reverse may have occurred — those patients who were experiencing more acute difficulties with their drinking may have tended to drop out of the CT and RHT groups because they felt the need for what they perceived to be more drastic treatment intervention (i.e. treatment with an LSD-type drug) in light of "their desperation over an uncontrollable drinking problem." Some support for this hypothesis can be found in the data of the present study. On the general drinking pattern scale mentioned earlier (1 = continuous and heavy drinking; 7 = occasional small amounts) the mean pre-treatment scores were 3.10, 3.56, and 3.64 for the DPT, CT and RHT groups respectively. Their respective mean ages were 38.00, 40.53, and 41.96 years. Although not reaching statistical significance, these data indicate a uniform trend for a more severe drinking pattern and younger age in those patients who elected to remain in the DPT group after the random assignment was made than in those patients who elected to remain in either of the other two groups. This trend indicates a more acute drinking problem in

the former group of patients, and is consistent with the data of Ditman et al. (1970).

Disjointedness of DPT Treatment

There is another major factor that may help account for the fact that the DPT group showed an advantage in positive outcome measures at the post-treatment point, but did not do well, relative to the CT group, on measures of adjustment at the follow-up points. This is the factor of the "disjointedness" of the treatment received by the DPT group. The present study was designed with the hope that it was based on more realistic assumptions about the usefulness of psychedelic drugs in psychotherapy than had been the basis for many earlier studies. The earlier studies frequently operated under the assumption that a single administration of a high dose of a psychedelic drug would reliably elicit a psychedelic or peak reaction (see Pahnke & Richards [1966] for a description and discussion of such reactions), and that this reaction would in turn serve as a life-changing or transforming experience which would, with a minimum of external support and direction, allow the alcoholic to change his or her drinking patterns and make all the necessary attendant changes in the pattern of his or her life. The difficulty with this assumption was that it proved to be true on a frequent enough basis to be very seductive and to lure many researchers into naive and almost magical expectations about the efficacy and general application of such a treatment approach, but it proved to be false frequently enough to wash out differential treatment effects in controlled studies. The design of the present study, by allowing up to 35 hours of psychotherapy and up to six administrations of DPT, was meant to capitalize on the apparently dramatic potential of these drugs, while avoiding the pitfalls of unrealistic expectations. It was hoped that multiple drug administrations, including relatively low doses, would facilitate the resolution of psychodynamic material while at the same time increasing the probability of the occurrence of a peak reaction. It appears that the former goal may not have been met, while the latter goal, though met to a certain degree, did not have the desired effect.

With regard to the resolution of psychodynamic material, the post-treatment data would seem to indicate that the DPT group did not do much better than the other two groups. The measures designated as indicators of negative outcome, shown in Table 4, are primarily indicators of psychopathology. If differential effects were present in terms of the resolution of psychodynamic material, they would be expected to be reflected in the data in this table. Although the DPT

group shows some slight advantage over the other two groups, it fails to achieve significance.

On the other hand, there is some indication that the DPT group may have experienced a substantial number of peak reactions, although in the long run these may not have had the desired effects. The significant differences between the treatment groups on positive outcome measures at post-treatment, with the DPT group being the highest (Table 3), could be taken as a reflection of the fact that the DPT group had had a significant number of peak reactions. The positive outcome category consists primarily of the 12 scales of the POI, which is purported to be a measure of self-actualization, or positive mental health surpassing the norm. It could be hypothesized that the experiences of the DPT group in some way propelled them temporarily into this realm of functioning, but that it did so in a somewhat artificial fashion, by bypassing psychodynamic material that needed to be resolved. Such a hypothesis would account for both the significant differences on the positive outcome measures at post-treatment, and the lack of significant differences on the negative outcome measures at the same point in time.

The same interpretation may also apply to the differential effects at the two follow-up points shown in Table 7. Although the DPT subjects may have temporarily experienced a more positive mode of functioning, the fact that the CT group was better adjusted at the follow-up points would seem to indicate that the DPT group did not know how to integrate their new modes of functioning into the everyday patterns of their lives.

The difficulty in making such an integration was obvious even on the day when a drug session was conducted. After the drug effects had subsided, the patient was encouraged to discuss his or her experiences and to begin thinking about how they might be applied to daily living. Of course, the first application to daily living, outside of the treatment environment, occurred when the patient returned to the alcoholic ward on the hospital grounds that same day. Here the difficulty in integrating the experiences and insights engendered by the drug experience was often acute. Take, as an example, the case of a patient who experienced an overwhelming and transcendent feeling of love for all of mankind, including himself, which in turn led to an attitudinal shift toward self-acceptance and a perception of one's self as having intrinsic worth (recall that the Self-Regard scale of the POI was one of the few individual variables that showed a significant difference at post-treatment, with the DPT group having the

highest covariate-adjusted score). To maintain one's belief in the validity of such an experience and to put into action its possible behavioral implications would be a challenge for most people; for a chronic alcoholic with a history of many years of having perceived himself and the world in just the opposite way, it presents a very severe challenge. Upon returning to the alcoholic ward the patient receives support in meeting this challenge from the staff, but the other patients, his peers, may not be so helpful. They may even make active attempts to dissuade the patient from such apparently delusional thinking.

After leaving the hospital, the situation may or may not be improved. The alcoholic who returns to a family and/or social milieu that is not supportive is also unlikely to achieve great success in his attempts to integrate therapeutic insights into his daily life.

It therefore seems that some kind of post-treatment support structure is required if this form of drug assisted therapy is to show long-lasting therapeutic impact. In some cases existing groups, such as AA, might be able to meet this need. In other cases it might be more useful to form outpatient follow-up groups that would meet relatively infrequently (perhaps twice a month), but would serve the purpose of providing mutual support in the attempt to integrate therapeutic insights into everyday life. Future research will hopefully discover the most efficient and efficacious manner of structuring such groups as well as developing other strategies for more fully realizing the therapeutic promise of psychedelic agents.

NOTES

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2. The authors are well aware that by describing the possible effects of an experimental drug to a patient before the drug was administered, they were deviating substantially from the ideal of scientific method. However, there were both humane and scientific reasons for doing so. The reports of persons who have been given LSD and similar drugs without forewarning provide ample evidence that very powerful and frightening subjective effects can be produced in the absence of any expectations whatsoever. Those who consume in a social setting a beverage

that has been laced with LSD not infrequently report precisely the kinds of experiences that were described to our subjects before they were given a high dose of DPT. It does not seem surprising that a person drinking a glass of punch at a Saturday night party, who suddenly feels that he is dying, becoming psychotic, or disintegrating, might become very frightened and even attempt suicide. We therefore decided to forewarn our patients about some of these possible effects in the hope that such forewarning would act as a sort of psychological prophylactic and perhaps avert a potential panic reaction.

From the scientific standpoint, the goal of telling patients about possible subjective effects of a high dose of DPT before it was administered also had to do with a desire to avoid panic reactions. Implicit in the hypothesis of the study was the belief that the therapeutic impact of the DPT-assisted treatment would be largely due to the subjective experiences encountered under the influence of the drug. However, in order to maximize the impact of the drug in producing subjective effects, it seemed necessary for the patient to "stay with" the experiences produced by the drug. Operationally, "staying with the experience" was defined as leaving the eyeshades and headphones in place, refraining from unnecessary distractions such as talking or smoking, and allowing oneself to feel fully whatever emotions emerged. Hence, in order to provide an adequate test of the experimental hypothesis it was necessary to avoid panic reactions, since such reactions would be expected to lead to behavior which is the antithesis of "staying with the experience." We therefore felt justified on scientific grounds in describing possible subjective drug effects before high dose DPT sessions, basing our decision on the assumption that such descriptions would reduce the probability of panic reactions and thereby provide a better test of the experimental hypothesis.

3. The content of some of the items comprising the Great Cause scale of the PEP is somewhat ambiguous in terms of placement in either a positive outcome or negative outcome category. However, the fact that the author of the instrument reports a correlation of $-.57$ between this scale and the Existentiality scale of the POI (Levine & Ludwig 1967) forces it into the negative outcome category in order to maintain the internal consistency of the present analysis.

4. Although these criteria were arbitrarily defined by the protocol and were not identical for all three treatment groups, it was intended that they provide an indication that the patient had been exposed to a reasonable sample of the treatment modality in question. Retrospectively it appears that they achieved this end, and that comparisons across treatment groups of the percentages of patients meeting these criteria are therefore justified.

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