Psychedelic [LSD] Therapy of Neurotic Disorders: Short Term Effects

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Since the discovery of the potent psychoactive properties of lysergic acid diethylamide (LSD) in 1943, and because of the obvious and compelling need for effective, brief psychotherapeutic procedures, a considerable number of clinical investigators have attempted to harness the period of LSD-altered reactivity to facilitate a variety of therapeutic objectives. There have been two major methods employed in the use of LSD as an adjuvant to psychotherapy, the *psycholytic* and the *psychedelic* approaches. The psycholytic approach, a combination of psychedelic drug and psychoanalytic technique, involves using relatively small doses (25–150 mcgs.) of LSD in weekly or bi-weekly sessions to expedite the development and/or resolution of the traditional phenomena of psychoanalysis: abreaction, catharsis, activation of the unconscious, transference, etc. (For representative reports see: Sandison, Spencer and Whitelaw,[30] Ling and Buckman,[19] Martin,[21] Leuner,[18] and Mascher.[22])

The psychedelic procedure has been described in detail elsewhere (Unger,[40] Savage and Wolf,[36] McCabe,[24] Savage, McCabe, Olsson, Unger and Kurland[34]) and involves a technique of high-dose (200–450 mcgs.) LSD administration following 4–6 weeks of intensive psychotherapeutic preparation. Whereas in psycholytic therapy the single overwhelming experience is avoided, in the psychedelic model of therapy the LSD-induced ego-loss experience is viewed as the major fulcrum for behavioral redirection, a notion first conceived by William James[15] and later implemented by Osmond[28] in his LSD treatment of alcoholics. Consistently impressive results have been claimed for the psychedelic procedure with alcoholics (e.g., Smith,[38] Chwelos, Blewett, Smith and Hoffer,[4] O'Reilly and Reich,[27] and Fox[10]) and with non-alcoholic, functional disorders as exemplified in reports of Savage and associates (Savage, Terril and Jackson,[35] and Mogar, Fadiman and Savage[26]).

Although many reports have been published claiming unique therapeutic value for LSD, nearly all of the clinical literature on LSD is vulnerable to criticism. Some of the weaknesses of these studies are: (1) absence of control groups; (2) insufficient size and inadequate descriptions of patient populations; (3) inadequate and/or inappropriate assessment procedures; and, (4) statistical naivete. In an attempt to remedy some of the shortcomings of previous investigations, the systematic exploration of psychedelic therapy has been underway at Spring Grove State Hospital since 1964 and more recently at the Maryland Psychiatric Research Center in Baltimore, Maryland. To date, reports of controlled investigations of psychedelic therapy with alcoholics[17] and narcotic addicts[33] have been encouraging, as have been pilot investigations of

1. This study was supported by Grant MH-15555 from the United States Public Health Service, National Institute of Mental Health, and administered by Friends Medical Science Research Center, Inc., Baltimore, Maryland 21228. The authors wish to acknowledge the assistance of the following individuals at various phases of the ivestigation: Marling Burgess, Carol Dew, Jordan Lawrence, Virginia Lee, Robert Leihy, James Olsson, Walter Pahnke, William Richards, John Shaffer, Mona Shevlin, Harry Shock, Robert Snyder, Ramon Solas, and Sidney Wolf.

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psychedelic therapy with terminal cancer patients.[29] The present study with a "psychoneurotic" population has sought to rigorously assess both the short-term effects of one therapeutically designed low-dose LSD exposure, of a high-dose exposure, and to compare these against each other and against a conventional treatment group.

METHOD

Subjects. The subjects in this study were patients of Spring Grove State Hospital who received a psychoneurotic diagnosis. Eliminated from consideration for the study were any patients who were suffering from organic illness, defective intelligence, and those under 18 or over 55 years of age.

Clinically, the patients were depressed, anxious, and typically received "depressive reaction" diagnosis. In order of their frequency of occurrence, the presenting problem behaviors upon admission to the hospital were: (1) suicide attempt; (2) sleeplessness; (3) crying; (4) anorexia; and, (5) psychomotor hyperactivity.

The average age of the total sample was approximately 33 years (32.9). The mean amount of formal education was 11 years. Of the 85 patients comprising the study population, 54 (65%) were female. Approximately half (51%) of the subjects were married, and most were white (95%), Protestant (50%), and employed (or had been employed) in clerical or sales work (34%).

Initial Assessment.—The subjects were administered the following tests: (1) the Minnesota Multiphasic Personality Inventory,[14] (2) The Eysenck Personality Inventory,[9] and, (3) the Personal Orientation Inventory.[37] The MMPI was selected as the major measure of evaluation because it is an objective measure that is well constructed, empirically derived, and extensively validated. The EPI measures two pervasive, independent dimensions of personality, Extraversion-Introversion and Neuroticism-Stability which, according to Eysenck's factor-analysis studies, account for most of the variance in the personality domain. The POI, based on Maslow's[23] concept of the "self-actualized" person, provides a comprehensive measurement of values and behavior seen to be of importance in the development of self-actualization. In the past, diagnostic instruments (e.g., the MMPI) have provided accurate estimates of the patient's pathology and provided a negative approach to evaluating the therapeutic process. When used as a pre- and post-therapy measure, the POI provides a much needed measure of the change in level of positive mental health.

After psychometric assessment, patients were randomly assigned to one of three groups: a conventional treatment group (N, 27), a low-dose (50 mcgs.) LSD control group (N, 30), or a high-dose (350 mcgs.) LSD experimental group (N, 28). The random assignment of subjects to groups was accomplished by the supervising physician. He, alone, had knowledge of which patient had been assigned to Group II and which to Group III. Indistinguishable drug preparations were available for the therapist on the morning of the session day. The code was not broken until after the data collection phase had elapsed.

Treatment and Disposition of Patients.—Subjects assigned to the conventional treatment group received standard treatment from the regular hospital clinical staff. The range of measures employed, geared to the needs of the individual patient, encompassed drug therapy, electroshock, and group and individual psychotherapy as well as general milieu programs. All of the patients in the conventional treatment group received group therapy; therefore, group therapy was considered the major comparison-control treatment method for the LSD groups. Patients in Group II (the low-dose LSD group) and Group III (the high-dose LSD experimental group) existed as separate entities only administratively; from the standpoint of the therapists and investigators they were entirely undifferentiated.

DESCRIPTION OF THERAPY TECHNIQUE

Group Therapy.—Group therapy sessions with control group subjects were of one and one half hour duration and were held three times per week by a psychiatrist who described his approach as eclectic. The groups varied in size from three to eight participants. The therapeutic approach was direct and reality-oriented with a focus on the solution of specific intercurrent problems through group interaction. Although "insight" was valued and fostered, dynamic interpretations were used sparingly.

Psychedelic Therapy.—All patients in Groups II and III began preparation for their LSD session immediately after assignment following the psychedelic model of psychotherapy. The preparation period occupied 3—5 weeks with patient-therapist interview time totalling approximately 20 hours. The climax of the treatment was the 12—14 hour long LSD session during which the therapist and a nurse were in constant attendance. It may be noted that the method of drug utilization was not (and is not) considered a chemo-therapeutic procedure in any conventional sense. All drug sessions were pre-programmed and conducted so as to maximize the likelihood of the patient emerging from the experience with an altered perspective on, and increased insight into, his adjustment difficulties and maladaptive behaviors and "defenses," a generally reduced level of

anxiety, and a more constructive pattern of responses and interpersonal attitudes.

No difficulty was encountered in maintaining the double-blind character of administration. The patients remained in the hospital for a minimum of one week after the LSD session; they were seen by the therapist several times before discharge for reinforcement and debriefing purposes; and were retested.

POST–TREATMENT ASSESSMENT

The initial assessment battery was readministered to all patients 5 to 7 days after treatment, usually just prior to release from the hospital, approximately 6 to 8 weeks from the date of initial assessment.

Data Analysis.—In the evaluation of treatment outcome, use of analysis of covariance[12] was made with initial scores on the various measures serving as the covariate controls. Through analysis of covariance adjustments were effected in the terminal scores which allowed for any differences on the initial variables.

RESULTS

Six psychedelic therapists were involved in the treatment of Groups II and III; 86% of the cases were treated by 3 therapists, each treating approximately 17 patients. All of the Group I treatment (group therapy) was conducted by one therapist.

Table 1 provides a summarization of gross description data for subjects by groups as determined by the randomization. Because of predominance of female referrals at the initial stage of the study, and a simultaneous, inordinately large consecutive series of high-dose LSD assignments, Group III was comprised of considerably fewer males (6) than either Group I (13) or Group II (12). The mean ages for the respective treatment groups were equivalent: Group I, 32.5; Group II, 33.2; and Group III, 33.1.

An attempt was made to equate the intervals between test assessments. The resulting discrepancies were greater than were desired (Group I, 44.6 days; Group II, 53.8 days; and Group III, 50.2 days); however, on the more crucial dimension of time engaged in formal psychotherapeutic activity, the groups were equivalent, with Groups I, II, and III being exposed, respectively, to 21.2, 19.4, and 20.4 mean-hours of formal psychoterapy during the interval between the pre- and post-psychological test assessments. The assumption was that any significant differences revealed in the test score changes could be attributed to the treatment effect, *per se*.

An analysis of variance of the pre-(x) and post-(y) test scores is shown in Table 2. The F tests applied to the initial scale scores (co-variate x) are uniformly non-significant, indicating that pre-treatment test score means did not differ significantly and that the random assignment of subjects to the three groups was successful, i.e., each group may be considered to have been equivalent at the outset on the assessment variables. It was considered particularly crucial to have the experimental and control groups comparable in terms of prognosis and severity of initial condition. The MMPI provided a basis of comparison on both points. The test was scored not only on the commonly used clinical and validity scales, where scores would indicate severity of psychopathology, etc., but also on the Ego-strength (Es) scale, which was originally designed to predict response of psychoneurotic patients to psychotherapy, and has been proven to have substantial validity for that purpose (Barron,[1] and Barron & Leary[2]). As Table 2 indicates, the groups were equivalent in initial severity of condition and prognosis. It is apparent that all three subsamples were drawn from the same population and were not differentially affected by attrition. Therefore, the essential conditions on which the groups were varied are: (a) whether the patients received group therapy or psychedelic (LSD) therapy in the interval between

TABLE 1
GROSS DESCRIPTIVE DATA FOR SUBJECTS (N=85) BY GROUPS

Groups[a]	Sex		Age		Days Between Testings		No. of Hours of Formal Therapy	
	M	F	Mean	Range	Mean	Range	Mean	Range
I	13	14	32.5	19-48	44.55	23-99	21.2	3-38
II	12	18	33.2	20-50	53.76	28-117	19.4	10-36
III	6	22	33.1	20-53	50-17	18-114	20-4	7-45

[a]I = Group Therapy; II = Low-dose LSD; III = High-dose LSD.

assessments I and II; and (b) whether the patients who received psychedelic therapy were given low-dose (50 mcgs.) or high-dose (350 mcgs.) LSD treatment. The relationships between these conditions and the quantity and kind of change, as shown in the differences between test scores at assessment I and assessment II, are as

TABLE 2

ANALYSIS OF VARIANCE OF PRE- AND POST-TEST SCORES WITH ADJUSTED MEANS FOR GROUP THERAPY, LOW DOSE LSD AND HIGH DOSE LSD GROUPS (N=85)

Test Scales	A Group Therapy (N = 27)			B Low Dose LSD (N = 30)			C High Dose LSD (N = 29)			F & P Values Co-Variates (x)		F & P Values Variate (y)	
	I[a]	II[b]	Adj. Means	I[a]	II[b]	Adj. Means	I[a]	II[b]	Adj. Means	F	P	F	P
MMPI													
Lie	49.63	50.22	49.26	48.07	52.03	52.00	46.40	53.32	54.28	1.36	0.260	0.95	0.400
F	68.96	62.41	61.10	62.17	56.70	58.80	68.32	55.36	54.37	2.58	0.082	3.20*	0.046
K	48.33	51.04	50.72	48.03	56.73	56.63	47.29	60.18	60.60	0.12	0.884	5.42**	0.006
Hs	63.96	59.04	58.14	62.43	57.97	57.91	60.64	57.04	57.96	0.47	0.630	0.20	0.816
D	81.15	69.67	69.66	83.60	65.20	63.71	78.50	57.82	59.42	0.89	0.414	3.37*	0.039
Hy	66.63	61.19	61.73	68.57	62.97	62.57	67.96	64.32	64.22	0.23	0.798	0.54	0.587
Pd	73.70	70.70	72.24	74.87	69.93	70.67	79.21	74.14	71.87	1.12	0.332	0.66	0.519
Mf	57.89	55.07	52.99	54.87	53.30	53.30	51.93	48.54	50.55	1.45	0.240	2.21	0.116
Pa	67.78	61.85	61.49	64.47	62.10	63.25	68.89	63.57	62.69	1.15	0.323	0.18	0.834
Pt	74.52	69.15	69.49	76.93	64.67	63.81	74.00	61.43	62.02	0.33	0.722	2.30	0.107
Sc	77.07	69.15	68.98	75.30	66.33	66.96	77.82	66.68	66.18	0.14	0.871	0.30	0.740
Ma	63.11	59.26	58.73	60.03	61.50	62.32	62.75	61.04	60.67	0.50	0.612	0.33	0.720
Si	66.48	60.41	58.49	62.83	52.57	53.11	61.75	49.96	51.24	1.19	0.311	4.73*	0.011
A	64.60	59.89	60.06	65.60	52.97	52.41	64.21	47.18	47.67	0.12	0.887	5.90**	0.004
R	52.04	50.89	50.46	52.17	48.30	47.78	49.68	49.79	50.76	0.52	0.598	0.46	0.632
Es	35.70	39.56	40.09	37.13	43.00	42.46	36.32	43.61	43.68	0.21	0.815	1.74	0.183
EPI													
E	43.11	48.56	49.18	45.97	53.43	53.46	49.07	51.61	50.98	1.60	0.208	1.55	0.218
N	62.56	59.96	60.30	63.50	53.87	63.64	63.25	47.07	46.99	0.06	0.942	5.95**	0.004
L	2.67	2.37	2.32	2.23	2.97	2.99	2.25	3.11	3.13	0.46	0.630	1.38	0.257
POI[c]													
Ti	10.37	9.11	9.11	10.74	7.49	7.24	9.82	6.24	6.61	0.33	0.712	2.30	0.110
Tc	12.63	13.84	13.80	12.19	15.52	15.79	13.12	16.71	16.34	0.34	0.714	2.25	0.115
Od	61.11	56.11	55.18	58.37	46.70	47.02	57.88	43.06	43.60	0.41	0.668	4.53	0.015
Id	65.90	70.84	71.46	67.63	79.96	79.80	68.24	83.88	83.46	0.18	0.835	4.45	0.016
SAV	16.32	16.53	16.79	17.19	18.52	18.40	17.18	19.29	19.18	0.41	0.667	3.60*	0.033
Ex	15.68	18.37	18.53	16.56	18.70	18.41	15.47	19.94	20.22	0.35	0.705	0.48	0.623
Fr	11.58	12.53	12.79	12.85	14.33	14.24	13.00	14.06	13.92	1.45	0.242	2.09	0.132
S	9.21	9.37	9.39	9.22	11.04	11.05	9.35	12.29	12.25	0.02	0.983	5.26**	0.008
Sr	8.58	9.26	9.02	7.82	11.93	12.02	7.77	13.06	13.18	0.38	0.687	5.90**	0.025
Sa	11.84	13.05	13.18	12.59	14.85	14.81	12.71	16.18	16.11	0.41	0.665	3.43*	0.039
Nc	10.68	11.47	11.45	10.52	11.85	11.88	10.65	12.77	12.75	0.04	0.964	3.05	0.055
Sy	5.90	6.37	6.27	5.56	6.52	6.56	5.53	6.35	6.40	0.33	0.722	0.12	0.888
A	12.05	13.26	13.55	12.82	15.52	15.48	13.35	14.71	14.45	0.65	0.527	2.29	0.110
C	14.58	16.53	16.66	15.19	18.07	17.95	14.77	18.41	18.47	0.14	0.874	0.95	0.394

[a] I = Pre-score means, co-variate (x).

[b] II = Post-score means, variate (y).

[c] N = 64 (A, 19; B, 27; C, 17), due to delayed incorporation of POI in standard assessment battery.

*Significant at .05 level of confidence or less.

**Significant at .01 level of confidence or less.

TABLE 3
F TESTS BETWEEN ADJUSTED MEANS (ANALYSIS OF CO-VARIANCE) OF MMPI SCALES FOR GROUP THERAPY, LOW DOSE LSD AND HIGH DOSE LSD GROUPS (N=85)

Groups	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	R	Es
A x B	2.02	0.88	6.43*	0.01	2.29	0.10	0.30	0.02	0.19	3.57*	0.39	2.07	3.74*	6.60*	1.51	2.27
A x C	6.41*	7.63**	17.34**	0.01	6.56*	0.86	0.02	1.23	0.41	6.00*	0.73	0.59	6.51*	16.91**	0.02	5.09*
B x C	1.43	3.34	2.95	0.00	1.19	0.39	0.18	1.67	0.04	0.36	0.06	0.45	0.47	2.64	1.89	0.63

A = Group Therapy; B = Low Dose LSD; C = High Dose LSD.
*Significant at .05 level of confidence or less.
**Significant at .01 level of confidence or less.

follows:

Application of the F test to post-treatment test scores (Table 2) indicates twelve of the thirty-three scales comprising the total assessment bettery showed significant changes (MMPI: F, L, K, D, Pt, Si, and A; EPI: N; POI: Sav, S. Sr, and Sa). Several scales (POI: Od, Id, and NC) apparently significant, did not meet the assumption required in the application of analysis of covariance that regression lines for the treatment groups be parallel within the limits of random sampling. Similarly, three scales (MMPI: L, Pt; POI: Sr) achieved significance through adjusted mean computations to correct terminal (y) scores for differences in initial (x) scores.

The between-treatment differences in test score changes are summarized in Tables 3, 4, and 5, which show the group comparisons on the MMPI, EPI, and POI.

Group Therapy vs. Low-Dose LSD.—On the MMPI (Table 3) there were four significant findings when group therapy patients were compared to those receiving psychedelic therapy plus an active placebo (low-dose LSD): the low-dose LSD subjects as a group scored significantly ($P<.05$) higher on the K (Correction) scale and lower on the Pt (Psychasthenia), Si (Social Introversion), and A (Anxiety) scales after treatment than did those having received group therapy. Similarly, on the EPI (Table 4), the low-dose group showed a greater relative reduction ($p<.05$) on the N (Neuroticism) scale than group therapy patients. Table 5 provides additional data regarding purportedly positive dimensions of psychological functioning. Two POI scales, S (Spontaneity) and Sr (Self-regard), reflect statistically significant changes ($p<.05$, $p<.01$) in favor of low-dose LSD versus group therapy.

Group Therapy vs. High-Dose LSD.—It is in the direct comparison of the relative efficacy of these two treatment methods that the greatest number of significant findings occur. Of the thirty-three scales of the MMPI, EPI, and POI, fifteen scales showed significant between-group differences. Tables 2 and 3 show that the validity scales of the MMPI were differentially and significantly affected: group therapy patients showed relatively less increment on the L ($p<.05$) and K ($p<.01$) scales and less decrement on the F ($p<.01$) scale, relative to those subjects having undergone high-dose LSD therapy. On the clinical scales of the MMPI, high-dose patients showed a consistent and significant reduction in scale scores compared to group therapy patients on Depression (D), Psychasthenia (Pt), Social Introversion (Si), and Manifest Anxiety (A); the Ego Strength (Es) scale showed a significant increase in favor of the high-dose group. With the exception of the A scale ($p<.01$), all were significant at the .05 level of confidence. On the EPI (Table 4), high-dose subjects showed greater significant reduction ($p<.01$) on the N (Neuroticism) scale than did group therapy subjects.

The superiority of the high-dose LSD technique over group therapy in inducing test score changes in favorable directions is further reflected in the POI (Table 5) where six scales yielded significant differences be-

TABLE 4
F TESTS BETWEEN ADJUSTED MEANS (ANALYSIS OF CO-VARIANCE) OF EPI SCALES FOR GROUP THERAPY, LOW DOSE LSD AND HIGH DOSE LSD GROUPS (N=85)

Groups	Ex	N	L
A x B	0.41	4.06*	2.19
A x C	2.46	15.71**	3.07
B x C	0.84	4.14*	0.09

A = Group Therapy; B = Low Dose LSD; C = High Dose LSD.
*Significant at .05 level of confidence or less.
**Significant at .01 level of confidence or less.

tween groups: Time incompetence-Time competence (Ti-Tc; $p<.05$), Self-actualized Values (SAV; $p<.5$), Spontaneity (S; $p<.05$), and Self-regard (Sr; $p<.01$).

Low-Dose LSD vs. High-Dose LSD.—Although the pre- and post-treatment scores on all tests showed a consistent change-trend in favor of high-dose vs. low-dose LSD therapy (Table 2), only the Neuroticism (N) scale of the EPI demonstrated a statistically significant ($p<.05$) difference between those groups; that being in favor of high-dose therapy. See Table 6 for a complete summary of significant post-treatment differences between groups on the MMPI, EPI, and POI.

DISCUSSION

General Treatment Effects Upon Psychopathology (MMPI).—Some aspects of psychopathological functioning as defined by the MMPI were significantly altered by all treatment procedures; conversely, other aspects of same were not significantly affected, irrespective of the type of therapeutic intervention. MMPI scales purportedly measuring depression (2), obsessive-compulsive behavior (7), schizoid and schizophrenic behavior (8), social withdrawal and alienation (Si), and anxiety (A) were significantly reduced, and ego strength (Es) was increased by all forms of treatment, regardless of whether it was group therapy or either of the psychedelic approaches. These findings were consistent with the therapists' clinical impressions of the type of improvement shown by the patients.

The F score of the validity scales, likewise, was significantly reduced by all forms of therapy. That the F scale was modified as a result of all treatment methods supports the contention that the F scale is a general indicator of psychopathology. Although high F scores are associated traditionally with "artificially" elevated scores, that a high F score is suggestive of severe psychiatric disorder is consistent with what has been reported by the authors of the test[14] and other investigators (Zazan and Sheinberg,[41] Meehl,[25] and Kaufmann[16]).

There were two scales on the MMPI that proved refractory to the influence of any treatment method. These were the Mf (5) and Ma (9) scales. This is not surprising since these were on the average the two lowest scales at assessment I for most groups. Scale 5 was designed to identify personality features related to the disorder of male sexual inversion and homoeroticism.[6] There were few subjects in the study population with primary homoerotic difficulties; moreover, most of the items in this scale are frankly sexual and psychologically obvious, e.g., "I am very strongly attracted by members of my own sex." This lack of subtlety lends itself to dissimulation, thereby making it more difficult to measure validly this dimension of psychopathology.

The Hypomainia (Ma) scale, likewise, showed no appreciable modification as a function of any treatment. Similarly, this probably is related to the fact that no patient in the study received a "manic" diagnosis nor did any exhibit mania as a primary symptom.

Differential Treatment Effects Upon Psychopathology (MMPI).—The overall results indicate that all treatment-specific effects on psychopathological functioning are in favor of psychedelic therapy, in general, and high-dose psychedelic therapy, in particular. However, it was found that both low-dose and high-dose LSD therapy raises the K score significantly more than does group therapy. In point of fact, group therapy does not significantly ($p = .07$) alter the K score. In addition to operating as a suppressor variable and measure of test-taking attitude, K, like the F score, has clinical relevance. Why the K score should not increase after group therapy, especially when there has been significant reduction in symptomatology, is interesting especially in the light of the tendency for diverse therapies

TABLE 5
F TESTS BETWEEN ADJUSTED MEANS (ANALYSIS OF CO-VARIANCE) OF POI SCALES FOR GROUP THERAPY, LOW DOSE LSD AND HIGH DOSE LSD GROUPS (N=64)

Groups	Ti	Tc	Od	Id	Sav	Ex	Fr	S	Sr	Sa	Nc	Sy	A	C
A x B	3.63	4.01	4.60	4.87	3.43	1.01	2.55	4.86*	9.89**	2.31	0.94	0.75	3.94	1.04
A x C	5.25	5.32	7.45	8.08	6.08*	1.25	1.25	11.59**	15.28**	5.99	6.98	0.13	0.64	1.67
B x C	0.39	0.30	0.76	0.87	0.76	1.65	0.12	2.37	1.39	1.39	3.65	0.20	1.07	0.16

A = Group Therapy; B = Low Dose LSD; C = High Dose LSD.
*Significant at .05 level of confidence or less.
**Significant at .01 level of confidence or less.

TABLE 6

SUMMARY OF SIGNIFICANT[a] POST-TREATMENT DIFFERENCES BETWEEN GROUPS (GROUP THERAPY, LOW DOSE LSD, HIGH DOSE LSD) ON MMPI, EPI, POI

Groups	Test	Significant Scale Changes Post-Treatment					
		Lower for (B)			Higher for (B)		
(A) Group Therapy vs. (B) Low Dose LSD	MMPI	Pt*	Si*	A*	K*		
	EPI	N*					
	POI				S*	Sr**	
		Lower for (C)			Higher for (C)		
(A) Group Therapy vs. (C) High Dose LSD	MMPI	F** Si*	D* A**	Pt*	L*	K** Es*	
	EPI	N**					
	POI				SAV*	S**	Sr**
		Lower for (C)			Higher for (C)		
(B) Low Dose LSD vs. (C) High Dose LSD	MMPI						
	EPI	N*					
	POI						

[a]Based on F tests between adjusted means.
*Significant at .05 level of confidence or less.
**Significant at .01 level of confidence or less.

(Kaufmann,[16] Barron & Leary,[2] and Gallagher[11]) to induce such a change. It is possible that the "constructive" criticism group therapy patients frequently received from other participants may militate against significant modifications of the self-criticism already a chronic correlate of many psychoneurotic patients. Group therapy may tend to reinforce what Goodenough[13] has described as "a peculiar kind of exhibitionism which takes the form of an urge to display one's troubles and confess one's weaknesses" and may preclude the individual from focussing on more positive and constructive orientations to himself and others. Although they made no comment upon the finding, Barron and Leary,[2] likewise, reported in their study that patients undergoing group therapy had no significant increase on the MMPI K scale whereas those subjects who underwent individual psychotherapy did show an increase.

The L scale was differentially affected by treatment techniques, showing significantly more increment in high-dose LSD patients than in group therapy patients. The L scale is short (only 15 items) and with narrow raw-score variation the effect of a change on a single item or two can make an appreciable difference on T scores. The mean T score increase on L for high-dose patients was seven points (46.4 to 53.3); however, this is still well within the normal range. Nevertheless, the between-group difference is significant, and the nature of a high-dose LSD session is such that it is conceivable that selected items on the L scale would be endorsed in directions which would elevate the "Lie" score. Several such items are: (1) I would rather win than lose a game; (2) I like to know some important people because it makes me feel important; (3) I get angry sometimes. The foregoing reflect attitudes and emotions of the type which patients often report have been altered by a

high-dose LSD session, especially in the wake of the psychedelic experience.

The following excerpt from an LSD subject's session report suggests the possibility that the experience, which seems at least partly attributable to the ingestion of the chemical, is capable of eliciting responses which are significantly atypical of the "normal" respondent's answers on selected MMPI items, but sufficiently sincere not to be evaluated as "lies":

> Before my LSD session I was afraid of people and secretly felt very inferior. I could be hurt easily and usually reacted to this hurt with anger. In therapy, it was suggested that I had often seemed to operate on the principle: 'The best defense is a good offense!'
>
> Now I can hurt no one. I learned in my LSD session that we are all *One*, that no one is of either more or less basic worth than me, and that to hurt someone else is to hurt oneself, ultimately. I have not lost my temper once, nor been afraid since my session three weeks ago. I don't know how long it will last, but I am certain that I have learned something of supreme value that will be with me in some degree, until I die. And, then, that will not be the end but the Beginning.

The superior therapeutic impact of psychedelic therapy over conventional treatment procedures on specific "symptom" areas (as defined by the MMPI), viz. depression, the obsessive-compulsive syndrome, social introversion, manifest anxiety, and on ego strength, are consistent with the findings of Mogar, Fadiman and Savage[26] who observed after LSD therapy significant changes on the same MMPI scales when pre- and post-two month MMPI's were evaluated. They also found significant decreases on scales measuring "neurotic overcontrol" and "evaluation of improvement." Their findings that therapeutic improvement is still evident after two months suggest that improvement consequent to LSD therapy is not a function of transient drug-induced euphoria. Supplementary confirmation of this may be inferred from the fact that there was no significant elevation on the Hypomania (Ma) scale of the MMPI in either study.

General Treatment Effects Upon Self-Actualization (POI).—The results indicate that all treatment methods significantly altered several dimensions which Shostrom's Personal Orientation Inventory offers as essential ingredients of self-actualized behavior. These are the Time Competence (Ti-Tc) and Support (Od-Id) dimensions as well as Existentiality (Ex) and Capacity for Intimate Contact (C). Group therapy, as well as both forms of LSD-assisted psychotherapy, elicited some test behavior consistent with that of self-actualizers. Interpreting the above scales, the results imply that all subjects, as a consequence of something that intervened between the pre- and post-treatment assessments (which the logic of the experiment assumes to be psychotherapy), are able to live in the "here and now" more fully; appear to be less burdened by guilts, regrets, and resentments from the past; and, their aspirations are tied more meaningfully to present goals, implying faith in the future without over-idealistic goals.

Furthermore, subjects' test behavior indicates that pleasing others and insuring constant acceptance has become a less dominant method of relating, and that an obsessive, insatiable need for affection or reassurance of being loved tends to be replaced with more inner-directed behavior after therapy. That scale purportedly measuring "Existentiality," or flexibility in applying values or principles, also appears to be enhanced. The movement is away from dogmatism and rigidity. Finally, as a consequence of all forms of therapy, one's ability to develop meaningful contact relationships with other human beings has been improved. Making contact has been defined as "the ability to develop and maintain an 'I-Thou' relationship in the 'here and now,' or the ability to touch another human being."[37]

It is noteworthy that every scale on the POI was sufficiently sensitive to show significant change as a function of one or another form of therapy. Test-retest (within 11 to 15 weeks) reliability for the instrument is adequate, in low .90's;[37] therefore, changes over an equivalent period of time would appear to reflect the influence of the intervening variable of therapy and, thereby, suggest that the test is fulfilling one of the functions for which it was designed.

Differential Treatment Effects Upon Self-Actualization (POI).—When between-group comparisons are made, psychedelic therapy is clearly superior to group therapy in eliciting (test) behavior associated with self-actualized functioning. "Spontaneity" and "Self Regard" consistently show greater increments after both forms of psychedelic therapy, and "self-actualized values" are more frequently increased after high-dose LSD therapy. Psychedelic therapy, especially when employing high-dose LSD administration, appears to be preferable over conventional treatment methods for eliciting "healthy" behavior.

Group therapy (as conducted in the present study) was singularly ineffective in changing one's ability to express feelings in spontaneous action(s). Fear of group censure could have had an inhibitory effect upon one's behavior. Psychedelic therapy, on the other hand, appeared to reinforce "congruent" behavior—overt behavior which is a reflection of what is felt inside. Likewise, one aim of psychedelic therapy, purportedly

implemented by the psychedelic experience, is the establishment of the patient's functioning on a core of positive "self"-acceptance. The importance of this, as well as the rationale for utilizing LSD therapy to accomplish this end, is expressed in the following:

> A neurotic individual carries in himself a secret concept which may be stated as: If people knew all there was to know about me (that is, my bad unconscious), they would think that I was a pretty unpleasant, worthless, individual. Under LSD some actually experience walking into the shadow and finding a great inner light. . . . the result of this self-unifying experience is that he has value. He finds that he can like himself more, that he can love himself. Such positive changes towards one's self also alter one's view of other people, for one's concept of others is always colored by the way one sees himself. If the individual accepts himself more, loves himself more, he can also trust others and love others to a greater degree.[7]

Although one may disagree, on a theoretical basis, with respect to how this comes about, if test behavior is presumed to validly tap this dimension, the increase in self-regard (Sr) implies that this goal is consistently achieved through psychedelic therapy, especially high-dose LSD therapy.

CONCLUSIONS

With test behavior the criterion, the present investigation suggests that psychedelic psychotherapy can effect personality change in subjects willing to undergo, and specially prepared for, such a procedure. The especial rapidity with which this occurs seems primarily attributable to the pharmacologically-induced receptivity occasioned by the LSD administration and must be considered promising in light of the greater duration of time and environmental manipulation upon which the more common methods of behavior modification rely.

The functional significance of these changes and their relative permanence, as well as their modes of action, are issues which lie beyond the scope of the present study. Other studies (Kurland *et al.*[17] and Savage & McCabe[32]) have indicated that psychedelic therapy-induced change is relatively enduring and meaningful as indicated by one-year follow-up assessments of community adjustment. The mechanisms through which change occurs are sufficiently obscure to allow interpretation along whatever theoretical lines one is identified. There is every reason to believe that with further refinement of theory and techniques integrative behavior may be effected even more reliably and rapidly. Also, it is reasonable to assume that work with less severely disturbed patients will yield more consistently positive results.

It should be understood that psychedelic therapy utilizing high-dose LSD administration hardly has far-reaching public health implications, mainly because it is a highly specialized technique requiring intensive training, thus precluding its use on a mass basis. Although it appears that an LSD experience renders the individual open to good psychotherapy, perhaps unlike any other technique known, LSD also "opens one up for bad therapy."[31] The psychedelic drugs, if they are to be meaningful adjuncts to psychotherapy will be so only insofar as the therapist has skill in using such agents.

Appropos this discussion is the safety record established by the Spring Grove LSD research team. Only two patients, of the nearly 400 treated to date, have had protracted adverse reactions: one in the study here reported and one in the alcoholic study. Both recovered uneventfully after conventional psychotherapy and anti-psychotic medication.

Several years ago the spectre of chromosomal damage was raised;[5] subsequent investigations have been equivocal or contradictory. (See Egozcue, Irvin & Maruffo,[8] Loughman, Sargent & Israelstam,[20] and Bender & Sankar.[3]) A double-blind collaborative investigation of the Spring Grove group with the cytogenetics laboratory at NIH yielded negative results: no difference was found in the rate of chromosomal aberrations before and after administration of LSD to 37 individuals participating in the neurotic and alcoholic studies. Detailed reports of this research have been published.[39]

Despite efforts to the contrary, there were several shortcomings in the present study which should be noted:

(1) A no-treatment control group did not exist—an unfortunate omission in the research design;

(2) the "psychedelic hypothesis," that the transcendental ego-loss experience is the major vehicle of therapeutic effect, was not adequately tested. A considerable number of low-dose patients unpredictably achieved the psychedelic experience with 50 mcgs. of LSD and, conversely, many (over one-third) of the high-dose sample did not have a psychedelic reaction. This overlap between groups in psychedelic reactivity vitiated dosage-specific differences and contradicted the assumption of the experimental design that high-dosage LSD experience is tantamount to psychedelic experience. The use of a totally inert placebo would have posed additional problems. In retrospect, the use of a non-psychedelic, but psychoactive compound might have been preferrable.

(3) The argument may be raised that therapists

occasionally could tell the difference between the high and low-dose and did not exert maximum effort with low-dose patients and that what was investigated was patient and therapist disappointment. The failure to observe indications of this, the actual difficulty in determining dosage as indicated by (2) above, and the fact that both groups achieved significant improvement, do not seem to substantiate this argument.

FOOTNOTES

This study was supported by Grant MH-15555 from the United States Public Health Service, National Institute of Mental Health, and administered by Friends Medical Science Research Center, Inc., Baltimore, Maryland 21228. The authors wish to acknowledge the assistance of the following individuals at various phases of the investigation: Marling Burgess, Carol Dew, Jordan Lawrence, Virginia Lee, Robert Leihy, James Olsson, Walter Pahnke, William Richards, John Shaffer, Mona Shevlin, Harry Shock, Robert Snyder, Ramon Solas, and Sidney Wolf.

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