COMPARISON BETWEEN THE PERSONALITIES OF LSD USERS AND NONUSERS AS MEASURED BY THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

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Personalities of 60 users of illicit LSD and 60 matched nonusers were compared by the results of the Minnesota Multiphasic Personality Inventory (MMPI). Eighty-eight per cent of the users' MMPI protocols were judged abnormal as compared to 54 per cent of the nonusers'. In addition, the users' mean scores were significantly greater ($p < .05$) than nonusers for the neurotic triad, the psychosis classification, and the behavior disorder category. It was suggested that the relationships between elevated MMPI scales and LSD usage should be viewed as correlational, since it was impossible to determine whether the measured personality deviations of the users predated LSD use.

Lysergic acid diethylamide (LSD-25) has an interesting history in the sense that it started out as a legitimate adjunct to psychotherapy. Savage (13) used LSD as an effective method of overcoming resistance by providing patients an opportunity to relive previous experiences. Unconscious materials liberated in the form of hallucinations and perceptual changes often led to dynamic insights. Martin (11) reported a study of 50 neurotic patients treated with LSD of which 45 patients showed improvement. A follow-up 2 years later showed nine relapses. Another study by Chandler and Hartman (1), involving 110 patients treated with LSD, revealed greater depth and greater acceleration of therapy as a result of the treatment. Savage *et al.* (14), reporting on 113 patients through a follow-up questionnaire, discovered that 85 to 90 per cent of the patients 1 year after treatment reported a greater understanding of self and others, the greatest thing that ever happened, a transcendental experience beyond usual comprehension, a new way of looking at the world, more frequent and persistent feelings of happiness, and an increased interest in universal concepts, *i.e.*, meaning of life and relation to the rest of the world. In this article Savage used the MMPI to verify the aforegoing statements. Later, Savage (12), using tests and clinical evaluations, indicated that, following LSD administration, patients displayed more adequate ego resources, less depression and psychic discomfort, greater outgoingness, less compulsivity and anxiety, and less distance in interpersonal relations.

Word of caution. Although Savage *et al.* (14) were prime proponents of LSD as an adjunct to psychotherapy, they were also aware that LSD could be misused. Writing about the value and dangers of LSD, Savage and Stolaroff (15) made reference to the flagrant misuse of LSD by illicit operators using black market materials for parties and "kicks" and by irresponsible investigators who, enthralled with the remarkable possibilities of LSD, sponsored and encouraged its widespread use under improperly controlled conditions without medical supervision. Many unstable persons who seek a ready solution to their difficulties do not use the proper safeguards in taking LSD. Savage and Stolaroff refer to the

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number of possible ways that LSD can be misused even by professional investigators: inadequate preparation of the person for the nature of the experience; too ready a desire to analyze the person's experience; too frequent use of LSD which prevents the person from assimilating and integrating new exposures of himself; leaving the person alone during the experience (the presence of supportive, understanding, and accepting companions appears essential to a comfortable and rewarding session); and improper dosage, especially an overdosage which drives the subjects into ranges of experience for which they are not prepared, deteriorates judgment, and impairs perception and the ability to communicate.

As far back as 1957, Day (4) was promulgating reservations about LSD. She stated that although the drug is administered to establish a better therapeutic relationship, its secondary effects can defeat the very purpose for which it is administered. Along the same lines, Eisner and Cohen (6) wrote of the danger of suicide—especially with higher dosages (above 75 μg)—transient depressions following the administration of the drug, and an impairment of motor coordination. Provided there was selectivity of patients and medical supervision, Eisner and Cohen felt overall that LSD was a valuable adjunct to psychotherapy. Ditman *et al.* (5) investigated 87 LSD subjects through a questionnaire and concluded that, although 80 per cent reported the experience was pleasant and valuable even up to 3 years later, the degree of improvement has been exaggerated by subjects and investigators alike.

Personalities of drug users. Cohen *et al.* (2) used the Leary Interpersonal System to analyze interlevel relationships of personality among 80 drug abusers and a control group matched for age and sex who were seeking professional help. The control group tended to be more assertive and self-sufficient while the drug abusers tended to be more dependent and passively hostile. In addition, the controls showed no severe identity problems and had assimilated an image of more nurturant mothers while the drug abusers had long term identity problems.

Hartung *et al.* (8), using the Holtzman Inkblot Technique, found no significant differences between 39 matched pairs of LSD users and nonusers in body image or in the degree of defensiveness.

Smart and Jones (17) compared the personality characteristics and psychopathology of 100 LSD users and 46 nonusers with the MMPI. LSD users exhibited a much higher incidence of psychopathology than did nonusers. The MMPI scales showed a pattern of alienation and emotional disturbance for LSD users.

Welpton (18) studied 10 chronic LSD users by means of psychological tests and psychiatric interviews. He reported that broken homes and intense oedipal conflicts led to interpersonal and marital problems. The psychological test results showed difficulties with sexual identification and other personality problems that were precursors of drug usage.

A comparison of 100 illicit LSD users and 46 nonusers matched in social background, drug use, and personality was made by Smart and Fejer (16). They found that LSD users tended to be underachievers and were more often diagnosed as psychotic and conduct disorders; 96 per cent of the LSD users had abnormal MMPI records (having a score of 70 or above on one or more of the eight clinical scales). They also found strong indications that much of the psychopathology predated use.

The bulk of the research on drug usage during the last decade has concerned itself with the extent of drug usage and with the adverse reactions of small samples of subjects. However, there have been a few recent studies that attempted to compare the personalities of LSD users and nonusers (2, 8, 16, 17). Our purpose was to identify personality differences between LSD users and

nonusers as measured by the MMPI. We did not attempt to draw any inferences or conclusions about the comparative social backgrounds and histories of the users and nonusers.

METHOD

The sample for this study consisted of 60 persons (40 males and 20 females) who had taken illicitly obtained LSD and 60 persons (40 males and 20 females) who had not taken LSD. Age of the subjects ranged from 16 to 28 years with a mean of 21.1 years (males, 21.4; females, 20.6). The majority of the subjects were college students.

A small minority of the subjects in the experimental group had taken LSD as few as 5 times but the majority had taken it more often. The number of times LSD had been used ranged from 5 to 450 with a mean frequence of 90 (males, 114.5; females, 37.9). The median frequency was 35 for the total group. The length of time of LSD usage ranged from 3 months to 5 years.

None of the control group had taken LSD, although approximately 50 per cent of them had experimented with marijuana.

Subjects for this study were unpaid volunteers. They were assured of complete confidentiality regarding their being assigned to the LSD user and nonuser groups.

Subjects for the nonuser group were chosen by age and sex to match members of the LSD user group. Those nonusers preliminarily found to match one of the LSD user group were assigned to the control group. All of the subjects in both the experimental and control groups took the MMPI upon assignment to their respective groups.

The MMPI was administered as an objective test of personality. It is typically used as a diagnostic instrument which provides information on mental stability, neuroticism, and psychotism. In addition, the MMPI yields information on four validity scales and nine clinical scales—hypochondriasis, depression, hysteria, psychopathic deviant, interest, paranoia, psychasthenia, schizophrenia, and hypomania. The rationale of the MMPI as a diagnostic technique is based on the assumption that the items can be grouped to form scales that contrast the normal population with carefully studied clinical cases of neuropsychiatric patients. Validity and reliability of the Inventory have been established by extensive research, especially Hathaway and Meehl (10) and Hathaway and McKinley (9), since the instrument was introduced.

RESULTS

Dahlstrom and Welch (3), along with other researchers, have generally held that the special scales, L(Lie), F(False), and "cannot say" (?) can be used as a validity check on MMPI profiles. However, we agree with Gynther and McDonald (7) and other recent researchers that discarding MMPI data because of elevated F scores, and in our opinion, L scores, is questionable, especially if the investigators are attempting to draw valid conclusions about groups. Consequently, we have eliminated from our data eight profiles that were much in excess of the suggested arbitrary limits. More specifically, we retained four profiles whose L scores were either 8 or 9 and four profiles with F scores of 18 or 19; none of the profiles cannot say scales exceeded 50.

The LSD users group mean score for the L scale was 3.2, for the F scale 9.2, and 13.0 for the K scale. The nonuser group scores were 2.7, 5.6, and 14.4 for the L, F, and K scales, respectively. Only very tentative conclusions might be drawn from these differential scores of the two groups. For example, the L score is a validating score that affords a measure of the degree to which a subject may be trying to falsify his scores by consistently choosing the most "acceptable" response. A high L score does not necessarily invalidate other scales but might indicate that the true values are likely to be higher than those actually obtained.

The F scale serves as a validity check on the entire profile. An extremely high F score

TABLE 1

Mean Raw Scores and Standard Deviations of LSD Users and Nonusers on MMPI Clinical and Nonclinical Scales

Scale	LSD Users		Nonusers	
	Mean	Standard deviation	Mean	Standard deviation
Hs	14.0*	4.13	12.5	3.63
D	21.0*	6.26	18.9	5.07
Hy	23.2†	4.49	20.8	4.21
Pd	27.3†	4.19	22.5	4.04
Mf (males)	33.3†	4.41	28.7	5.49
Mf (females)	40.5	3.33	38.7	4.11
Pa	12.1†	4.08	9.9	2.81
Pt	29.3	5.81	28.9	5.35
Sc	32.9†	7.40	28.2	6.01
Ma	24.6†	4.26	22.3	4.27
Si	27.5	9.01	22.5	1.07

* $p < .05$.
† $p < .01$.

indicates that the subject was unable to comprehend the questions or major errors in recording and/or scoring the record. A low *F* score is a reliable indication that the subjects' responses were rational and pertinent.

The *K* scale functions as a suppressor variable that sharpens the discriminatory power of the clinical variables. It should be considered as a subtle measure of one's test-taking attitude. Extremely high *K* scores represent overdefensiveness against psychological weaknesses. Very low *K* scores indicate that one is overly candid and open to self-criticism and perhaps a deliberate attempt to present a bad impression.

Needless to say, any interpretation of any one of the three scales should be leavened with caution along with a thorough acquaintance with the relevant literature.

The clinical scales were statistically analyzed by one-tailed *t* tests for significant differences between the means of small independent sample.

The mean scores of the LSD users' profiles exceeded the nonusers' mean scores ($p < .01$) on scales *Hy, Pd, Mf* (male), *Pa, Sc*, and *Ma* and ($p < .05$) on the *Hs* and *D* scales. Table 1 summarizes the MMPI mean raw scores and standard deviations of the LSD users and nonusers.

Table 2 shows the relative number of LSD users' and nonusers' MMPI scales that exceeded 70. It is interesting to note the disparity between the two groups, but perhaps more striking is the contrast (intragroup) between males and females. However, the ratio of excessive male scales to scales of females appears generally constant across both the users and nonusers.

In order to analyze further the profiles of the LSD user and nonuser controls, we used the system of differential diagnosis developed by Meehl (3). Meehl's approach involves a quick inspection of the profiles to determine which are normal and abnormal. A second, more detailed inspection, differentially diagnoses the abnormal patterns into three categories, 1) psychosis, 2) psychoneurosis, and 3) behavior problems.

Eighty-eight per cent of the LSD users' profiles had a score of 70 or above on one or more of the clinical scales and consequently were considered to be abnormal. Approximately one-half of the abnormal profiles did not specifically fall into any of the three categories. Twenty-two per cent of

TABLE 2

Number of MMPI Scales that Exceed 70 for the Control and Experimental Groups

Scale	LSD Users			Nonusers		
	Males	Females	Total	Males	Females	Total
Hs	6	1	7	3	0	3
D	10	2	12	5	1	6
Hy	8	0	8	2	0	2
Pd	18	5	23	6	0	6
Mf	29	0	29	13	0	13
Pa	11	1	12	4	0	4
Pt	11	0	11	10	1	11
Sc	19	6	25	10	0	10
Ma	27	5	32	12	2	14
Si	3	2	5	3	2	5
Totals	142	22	164	68	6	74

the LSD users followed the criteria for "behavior problems." Another 18 per cent of the users' profiles had peaks toward the right side of the profile, displaying psychotic patterns. The psychoneurotic pattern was not so common among LSD users' profiles as only 7 per cent fit this category.

Among the nonuser controls, 54 per cent of the profiles were judged abnormal. Again, it was impossible to classify the majority of the abnormal profiles. However, 5 per cent of the nonusers displayed the psychosis pattern. None of the nonuser group were classified as psychoneurotic or behavior problems.

A comparison of the LSD users' and nonusers' scales comprising the three diagnostic categories reveals that: 1) the users' mean scores for the "neurotic triad" were significantly higher than the nonuser group (*Hs*, $p < .01$; *D*, $p < .05$; *Hy*, $p < .05$); 2) the users' mean scores for the *Sc*, *Pa*, and *Ma* scales (psychosis classification) significantly exceeded ($p < .01$ the nonusers' mean scores; and 3) the users' mean scores for the behavior disorder category were significantly greater ($p < .05$) than the nonuser group.

The large number of abnormal profiles that did not fall into any diagnostic category were reinspected and an attempt was made to identify any recurring patterns among them. Seven per cent of the users displayed a "pattern" suggested by Smart and Fejer (16) which includes peaks on the *Ma*, *Pd*, and *Sc* scales while only 1 per cent of the nonusers had this pattern. Dahlstrom and Welsh (3) describe individuals with peaks on the *Pd* and *Sc* scales as "unpredictable, compulsive, nonconforming, underachieving, margin adjustment, and uneven performance" in their educational and occupational histories. Persons with peaks on the *Ma* and *Pd* scales were described as "overactive, impulsive, irresponsible, and untrustworthy, shallow and superficial in their relationships having easy morals, readily circumvented consciences, and fluctuating ethical values."

An item analysis of the MMPI protocols revealed that the LSD users' responses significantly differed from the control group on numerous items in the *Pd*, *Mf*, *Pa*, and *Sc* scales. The users' frequency of responses and the statistical differences between them and the control group's responses for some specific items are presented.

Pd scale. During one period as a youngster, I engaged in petty thievery (LSD users responded true 46 times; $p < .01$). I have never been in trouble with the law (false, 31 times; $p < .001$). In school, I was sometimes sent to the principal for cutting up (true, 29 times; $p < .05$). I have used alcohol excessively (true, 23 times; $p < .05$). My parents have often objected to the kind of people I went around with (true, 30 times; $p < .05$). This item analysis of the *Pd* scale suggests that at least 50 per cent of LSD users had been behavior problems prior to the use of LSD and, in this respect, were significantly different from the control groups.

Femininity scale. Several responses to items on the Femininity scale for males also occurred significantly more frequently on the users' profiles. If I were a reporter, I would very much like to report sporting news (false, 32 times; $p < .01$). I should like to belong to several clubs or lodges (false, 32 times; $p < .05$). I like poetry (true, 27 times; $p < .05$). I have often felt that strangers were looking at me critically (true, 28 times, $p < .01$); I am very strongly attracted by members of my own sex (true, 6 times; $p < .05$).

Again the users tended to be more feminine in orientation than the control group, but this does not seem related to homosexuality. Only in 6 cases out of 40 males could homosexuality be inferred.

Pa and Sc scales. As expected in the *Pa* and *Sc* scales, the responses to several of the items were significantly different from the

control group. I feel I have often been punished without cause (true, 22 times; $p < .001$). I have had peculiar and strange experiences (true, 39 times; $p < .001$). At times I have very much wanted to leave home (true, 42 times; $p < .05$). I often feel as if things were not real (true, 27 times; $p < .01$). I have strange and peculiar thoughts (true, 27 times; $p < .01$). Things that some of my family have done have frightened me (true, 27 times; $p < .05$).

The paranoid schizophrenic attitudes and experiences again seemed characteristic of the users' group. Much of this personality formation very likely followed the taking of LSD as past research has indicated.

Item analysis of the other scales (*Hs, D, Hy, Pd, Pt,* and *Si*) gave no significant patterns of personality differences between drug users and nonusers.

The net result of the item analysis is that the drug users tend to be behavior problems, have a feminine orientation, and have paranoid schizophrenic experiences.

CONCLUSION

Any conclusions from this study should be viewed as correlational relationships and not necessarily cause and effect. For example, it may be that LSD users in this study used hallucinogens in response to an existing emotional disturbance. The patterns of the LSD users' MMPI profiles indicated that users were often diagnosed as behavior problems which tended toward nonconformity and deviation from conventional expectations. It is possible that some of the subjects had turned to drugs as a means of rejecting the existing social system. In any case, our data are insufficient to ascertain whether the use of LSD predated the onset of identifiable personality deviations (as measured by the MMPI) or did the user's personality problems precipitate the ingestion of LSD? Whatever the case, our results indicate that, collectively, the nonusers seemed to have more stable, conforming, and normal personalities than do LSD users. It seems appropriate that serious research efforts be directed toward determining cause and effect relationships between drug use and psychopathology. Until research evidence is available, the best we can do is to speculate and hypothesize and that is not enough.

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