THE EFFECT OF GROUP ADMINISTRATION UPON SYMPTOM FORMATION UNDER LSD[1]

PHILIP E. SLATER, KIYO MORIMOTO, AND ROBERT W. HYDE

During the past few years the number of research studies designed to measure the effect of various drugs upon human behavior has shown a rapid increase. One of the most interesting of these drugs is lysergic acid diethylamide (LSD), largely because of the similarity of its effects to psychosis. Its discovery aroused hopes that the biochemical correlates of psychosis might be more clearly delineated. It also raised the possibility that controlled studies of experimentally induced as well as natural variations in the reactions of individuals to the drug might contribute to our knowledge of the etiology and treatment of psychosis, much as experiments with animals have contributed to our knowledge of the human organism.

Studies of the effects of LSD have been carried out in large part without regard for certain situational variables capable of influencing the course of the reaction. Some studies, for example, have involved the administration of the drug to individual subjects (1), others to groups of subjects (2). The possible effect of this difference has not been considered, yet if the subject's perception of the situation is capable of influencing his reaction to the drug, this would seem to be a serious oversight. The individual who takes a drug alone may view the entire experimental situation in a manner quite different from the individual who takes it along with a group of fellow subjects.

The decision to undertake the present study arose from clinical observation of just such an effect during the routine administration of LSD to research subjects. We were impressed by the tendency for group membership to produce a modification of symptoms in the direction of increased elation and overactivity, and there were a number of striking examples of this tendency. In one group of three students, one of the subjects expressed the view that the entire experiment was like a party and behaved accordingly. Whenever this subject was present, his cosubjects, previously withdrawn and retarded, became more talkative, active and interested, and laughed and joked along with him, relapsing into their original syndromes as soon as he had departed.

Our major interest, however, was not in the temporary contagion of manic-type symptoms, but in the possibility that group membership during the lysergic experiment might produce more permanent differences in symptom formation. In other words, we were interested in testing the hypothesis that subjects taking the drug in groups would manifest symptoms which differed, even when the subjects were separated, from those of subjects taking the drug alone.

PROCEDURE

The sample consisted of 72 normal subjects, mostly college students and hospital personnel. Of these, 24 subjects received LSD[2] alone and 48 in groups of two or more. The experiments were conducted over a two-year period, with exactly half of both the "alone" and "group" subjects taking the drug during each year. The subjects typically had little or no acquaintance prior to the experiment, and no choice as to whether they would take the drug alone or with others.

All subjects received the drug early in the morning and spent the day within the hospital under continued observation. A portion of the day was spent in structured testing and interviewing situations, while during the remainder the subjects were allowed to move about the hospital interacting with patients and personnel. Subjects taking the drug in groups were separated during most of the more structured situations, but were together

[1] This study was carried out as part of a larger Project investigating the effects of lysergic acid. The project was conducted at the Massachusetts Mental Health Center under the direction of Dr. Robert W. Hyde. The authors are indebted to Dr. H. Jackson DeShon, who conducted the clinical psychiatric interviews and made the ratings upon which much of this analysis was based.

[2] One gamma per kilogram of body weight.

when the drug was administered and during unstructured portions of the day.

From three to four hours after administration, which is the period during which the reaction to LSD usually reaches its peak, all subjects were interviewed by a psychiatrist, who rated each on the incidence and intensity of various symptoms, made a diagnostic classification of the nature of the reaction in terms of standard clinical categories, and rated the over-all severity of the reaction on a 6-point scale. The psychiatrist conducted the interview according to the procedure used in interviewing patients upon admission to the hospital. In most cases he had no previous acquaintance with the subject and in all cases had no knowledge of the subject's experiences or reactions during the early part of the day. All subjects were interviewed alone.

The symptom ratings made by the psychiatrist were simplified somewhat for the purposes of this study. Originally, subjects were assigned a zero rating if a given symptom was absent, and a rating of from one to four, according to its intensity, if it was present. To investigate the differences between "alone" and "group" subjects, however, subjects were merely compared with regard to the frequency with which a given symptom was present or absent, and also with respect to the frequency with which it was present in a severe form. "Severe form" was defined as a rating of two, three or four.

Symptoms which were somewhat rare were grouped into broader categories whenever such grouping seemed conceptually sound. In such cases, the *number* of symptoms in the broader category exhibited by the subject was tabulated. The significance of all the differences was tested by means of chi-square tests, using the Yates correction (more out of a diffuse conservatism than because such a correction is necessary in a sample of this size). In cases where symptoms were grouped into categories, the mean of the entire sample was used as a cutting-point for the chi-square tests.

In addition to the psychiatrist's ratings, symptom and severity ratings were also made by psychologists and sociologists on the basis of observations of the subject in unstructured situations throughout the day. These ratings will not be described in detail here, but at all comparable points they show the same similarities and differences between "alone" and "group" subjects as do the psychiatrist's ratings.

Sixteen categories of symptoms and the severity ratings were used to test the hypotheses. These categories include, either separately or under broader groupings, all of the ratings made by the psychiatrist except a few symptoms of very rare occurrence which could not be grouped.

There are three broader categories subsuming groups of symptoms. The first, "sensory illusions and hallucinations", includes distortions of size, shape, color, distance, movement, taste, sound. It excludes, however, all forms of distortion of one's own body image. The second, "thinking and speech disturbances", includes difficulties in formulation and expression of ideas, acceleration and retardation of speech and thought, bizarre ideation, and the like. The third, "somatic symptoms", includes a great variety of different physiological manifestations, only a few of which (tremor, numbness, tingling, loss of appetite) occurred with any frequency.

Results

Symptoms

Table 1 shows the proportion of "alone" and "group" subjects showing various symptoms, and also the proportion showing these symptoms in a severe form. The most striking finding is the sharp reduction in anxiety brought about by group membership. Group subjects are also less depressed, have fewer perceptual distortions of a severe nature, fewer thinking and speech disturbances, fewer somatic symptoms, less inappropriate behavior, and are less often severely underactive than the "alone" subjects. They also show some tendency toward less perplexity and confusion although this difference is not significant at the .05 level. On the other hand, the group subjects are more often severely elated and show a tendency, though not significant, toward greater suspiciousness, hostility, and overactivity. The two groups of subjects are virtually identical in the frequency of feelings of unreality, disturbance of body

TABLE 1. PROPORTION OF "ALONE" AND "GROUP" SUBJECTS MANIFESTING GIVEN SYMPTOMS

Symptom	Proportion Showing Symptom			Proportion Showing Symptom in Severe Form		
	Alone	Group	p*	Alone	Group	p*
Anxiety	.79	.31	.001	.38	.12	.05
Perplexity, confusion	.50	.27	.10	.38	.15	.10
Depression	.38	.12	.05	.08	.04	-
Elation, euphoria	.33	.54	-	.08	.38	.02
Suspiciousness, hostility	.12	.35	.10	.04	.17	
Indifference	.62	.50		.50	.35	
Feelings of unreality	.79	.81		.67	.65	
Disturbance of body image	.38	.40		.29	.21	
Sensory illusion, hallucination	2.54†	1.69		1.75	.79	.05
Thinking and speech disturbance	3.58†	2.62	.001	2.00	1.35	
Somatic symptoms	5.38†	3.96	.01	2.21	1.54	
Underactivity	.67	.42	.10	.29	.04	.01
Overactivity	.21	.40	-	.08	.19	
Inappropriate behavior	.58	.21	.01	.12	.15	
Inability to carry out	.92	.94	-	.79	.62	
Attention impairment	.50	.46		.08	.15	

* Using chi-square test with Yates correction.

† Mean number of separate symptoms in this category per man. The mean of the total sample was used as the cutting point.

TABLE 2.—PSYCHIATRIST'S DIAGNOSIS OF REACTIONS OF "ALONE" AND "GROUP" SUBJECTS (BY PERCENTAGE)

Diagnosis	Alone Subjects	Group Subjects
Schizophrenic-turmoil	62.5	29.2
Schizophrenic-undifferentiated	12.5	16.7
Schizophrenic-affective	8.3	16.7
Manic	0.0	18.7
Other	16.7	18.7

image, inability to carry out, attention impairment and indifference.

It might be of interest to consider in more detail the grouped symptom categories in terms of the individual symptoms which show the most striking trends. For sensory illusions, this symptom is distortion of size, and occurs significantly (.02 level) more often among "alone" subjects.

Thinking and speech disturbances do not include any single symptom which significantly differentiates "group" from "alone" subjects, while only one is to be found among the somatic symptoms. The latter is loss of appetite which occurs more frequently (.05 level) among "alone" subjects.

Severity

The psychiatrist's rating of severity was an attempt to estimate the over-all severity of the subject's reaction without regard to type of symptoms or diagnosis. The ratings ranged from "minimal" to "severe" on a 6-point scale. The mean rating for alone subjects was 3.6, while the mean rating for group subjects was 3.4. This difference does not approach significance.

Diagnosis

The differences between alone and group subjects with regard to symptom formation would lead us to expect differences in diagnosis between these two classes of subjects. Only four diagnostic categories appeared with any frequency in the psychiatrist's ratings although a total of twelve were utilized. The four most common diagnoses were, in order of frequency, schizophrenic-turmoil, schizophrenic-undifferentiated, schizophrenic-affective and manic. The symptom differences in table 1 suggest that the first two categories would be applied more often to alone subjects and the latter two to group subjects.

Table 2 shows the percentage of alone and group subjects falling into each of these categories, and supports the above prediction save for the schizophrenic-undifferentiated category, which shows a more or less equal proportion of alone and group subjects. The tendency for alone subjects to fall into the turmoil category and group subjects to fall

into the manic or schizo-affective category is significant at the .01 level, using a chi-square test.

Discussion

There are many possible reasons for these differences between alone and group subjects. In the first place, the "aloneness" of the alone subject may have considerable emotional significance for him. He finds himself in a situation in which he has been made different from everyone else. He experiences strange sensations which no one else is experiencing, and the newness of these sensations is often frightening. The presence of a cosubject with whom the subject can compare symptoms provides reassurance that the subject is not entirely separate from other people. To be different alone is to be crazy or eccentric, but to be different together is merely to be exclusive.

When cosubjects are present, it becomes possible for the subject to redefine the experimental situation with very little subjective discomfort. It may be defined as a social situation, a party, or a game, and, as long as all agree, to define it is to create it. For the isolated subject to attempt to define the situation as a party might in itself create malaise, in view of the obvious unreality of such a redefinition. It would seem merely an indication of the severity of his reaction. The isolated subject's definition of the situation as an experimental task may actually be an important source of support since the only alternative to "experiment" might seem to be actual psychosis.

Despite these subjective benefits derived from group membership in LSD experiments, the over-all severity of the psychotic-like reaction is not mitigated by such membership. Symptoms such as unreality, indifference, disturbance of body image and inability to carry out—symptoms generally (and perhaps for this reason) treated as among the most severe of all the symptom manifestations of psychosis—are not susceptible to casual and unstructured interpersonal influences.

The group effect, then, does not counteract the impact of LSD but merely modifies it. At the same time, this effect seems powerful enough to warrant more careful consideration of the design of future drug experiments since it would be possible to arrive at totally disparate descriptions of the effects of a given drug depending upon whether it was administered to individuals or to groups.

Finally, although it is as yet too early to speculate about the broader substantive implications of these findings, one cannot help wondering whether similar differences might not be found between psychotics on a ward and psychotics kept in isolation. This would seem to be a fruitful ground for further research.

Summary

Subjects receiving LSD in groups were compared with subjects receiving the drug alone and found to have several differences in reaction. Group subjects tended to have manic or schizo-affective reactions, while alone subjects tended to have schizophrenic-turmoil reactions. Alone subjects showed more anxiety, depression, inappropriate behavior, underactivity, sensory illusions and hallucinations, thinking and speech disturbances, and somatic symptoms, while group subjects showed more elation. There were no differences between the two groups with regard to the incidence of feelings of unreality, disturbance of body image, inability to carry out, attention impairment or indifference, nor were there differences in the over-all severity of the reaction.

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Little Hall 35
Harvard University
Cambridge 38, Massachusetts