RIGHT-LEFT BODY REACTIVITY PATTERNS IN DISORGANIZED STATES[1]

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INTRODUCTION AND PURPOSE

In preceding studies it has been shown that the relative reactivities of various sectors of the individual's body are linked with the body image attitudes he maintains toward these sectors. Thus, it was found that the ratio of the reactivity of the body exterior to that of the body interior is correlated with the degree of definiteness attributed to the body image boundaries (7). Similarly, it was observed that the differential reactivity of the right vs. left sides of the body is associated with the manner in which the individual has learned to distinguish his right and left sides in his body schema (3, 4, 5). It was also established that individuals who are stable and well organized, especially in terms of body image, manifest different right-left reactivity patterns than individuals who are poorly organized (5, 6). Data were obtained which indicated that right-handed[4] persons with good body image integration manifest a GSR response gradient in which the left body side is more reactive than the right side. However, persons characterized by poor body image integration either show relatively greater GSR reactivity on the right side than on the left or fail to show any consistent differences between the two sides.

In a related vein, it was discovered that up to adolescence most individuals have not yet worked out a clear-cut body image differentiation between the two body sides and at the same time they rarely exhibit the left GSR reactive pattern which typifies the adult who has a well defined body image (8). The pre-adolescent is either right reactive or without a consistent gradient. But at adolescence many individuals seem suddenly to arrive at a more clear-cut body image differentiation between the right and left sides; and simultaneously about 40 per cent begin to manifest left GSR directionality. It appeared, then, as if developmentally the left reactive GSR pattern was a more mature one than the right reactive or non-directional patterns.

These findings suggested that factors which make for disorganization or regression in the body schema result in abolishing or diminishing the body reactivity patterns which seem to accompany the mature, well integrated body image. More specifically, it was conjectured that under such disorganizing or regressive conditions there would be a significant decrease of left GSR directionality and an increase in the other reactivity patterns.

Two classes of disorganizing conditions seemed appropriate for exploring the hypothesis. It was considered, first, that an ideal testing situation would be provided by the disorganization associated with schizophrenia. There have been many studies (*e.g.* 1, 2, 10) which have demonstrated that schizophrenic regression is accompanied by unusual and bizarre distortions in the body image. These distortions take such diverse forms as depersonalization, confusion about sexual characteristics of the body, and attributing unusual significances to various

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[4] All statements in this paper concerning right vs. left differentiation are restricted to right-handed subjects. It has not been possible to make predictions concerning right vs. left reactivity in left-handed subjects. This special problem with left-handed individuals has been discussed in detail elsewhere (3).

body areas. If the hypothesis which has been proposed is correct, it would be anticipated that schizophrenic patients would be significantly less often left GSR reactive and more often right reactive than normal subjects.

A second means for exploring the hypothesis presented itself in terms of the effects of LSD. There are numerous reports, among which that by Savage (9) is most dramatic, which indicate that a prominent effect of LSD upon normal individuals is to produce changes in their body images. Some of the changes which have been described involve fading of body boundaries, confusion about body symmetry, and radical shifts in apparent size of body sectors. Alterations of this magnitude certainly imply that LSD has a disruptive effect upon the existing body image structure. If such be the case, it would be predicted that normal subjects would manifest left GSR directionality significantly less often and right reactivity more often while under the influence of LSD than during a control period.

SCHIZOPHRENIA CONDITION SUBJECTS

The subjects consisted of 41 male, right-handed patients in the Houston VA hospital diagnosed as schizophrenic. Their median age was 35 years and their median length of total hospitalization for psychiatric treatment was two years. None had received any form of shock treatment for at least six months prior to the experiment. About 60 per cent of the patients had been taking small doses of Thorazine (50 mgms. four times per day). In order to control any differential effect of Thorazine on GSR, most of these patients were removed from the drug 60 hours prior to testing. There were a few who were removed from the drug only 48 hours before testing.

METHODS

The technique for evaluating right vs. left GSR reactivity has been described in detail elsewhere (3). Briefly, it may be said that it is of the exosomatic type. It is based on applying a constant current of 20 microamperes and picking up resistance changes across the skin as changing potentials and feeding them into a Grass EEG amplifier. Recordings from the right and left sides were made simultaneously on separate channels against a relatively inactive upper arm. The recordings were taken at the same time from the two middle fingers; secondly, from the forefingers; then from the ring fingers; and finally from two corresponding points on the palms. There was careful matching of the currents to each finger. The area of recording from the sites was made equivalent by covering each with a piece of tape that had the same sized hole punched into it. The electrodes made contact with the skin only through the punched holes. At least two minutes of recording were obtained from each set of sites. There were finally available for each subject the side by side GSR responses from the homologous sites. Thus, one could compare amplitudes of responses at homologous points at a given time.

The criterion of right vs. left directionality of response was based upon comparisons of the homologous amplitudes. All corresponding responses were noted in which there was a difference in amplitude equivalent to at least 80 ohms. If the differences occurring for a specific site were such that there were twice as many favoring one side as the other and if at least eight such differences were present, then it was judged that a directionality for that site had been demonstrated. Further when it was found that the directionality was in favor of one side for three out of the four sites, it was considered that there was a significant GSR gradient in that direction. When all four sites showed a majority of the differences in the same direction, a less stringent criterion of significant directionality was applied in evaluating any single site. It was then necessary for only five of the differences at any one site to be in the given direction in order to designate that site as showing definite directionality.

TABLE 1

Chi square Analyses of Differences in Incidence of Right Left Reactivity Patterns in Normal and Schizophrenic Groups

Groups	Left Reactive			Right Reactive		
	Group with Highest Incidence	X^2	Significance	Group with Highest Incidence	X^2	Significance
Schizophrenics VS						
Normal Sample 1	N	4.1	.05–.01	S	2.0	.20–.10
Normal Sample 2	N	6.3	.02–.01	S	4.5	.05–.01

Any given GSR record was categorized as being either left directional, right directional, or without consistent directionality.

RESULTS

The GSR patterns of the schizophrenics were compared with those obtained from two samples of normal males who had been evaluated in previous studies (3, 5). Sample 1 consisted of 35 subjects and sample 2 of 36 subjects. The two samples were comprised in the main of college students; and the median age in both instances was 21 years. The fact that the normal group was younger than the schizophrenic group was not considered to be important because it has been found that there is no correlation between the frequency of the various reactivity patterns and age beyond adolescence.

It can be seen in Table 1 that a chi-square comparison of the frequency of left GSR directionality in the schizophrenic group and in normal sample 1 indicated that it was significantly less frequent (.05–.01 level) in the schizophrenic group.[5] The same comparison of the schizophrenic group and normal sample 2 indicated that left GSR reactivity was significantly (.02–.01 level) less frequent in the schizophrenic group.

[5] It should be noted that there were only chance differences in GSR patterns between those patients who had and had not been taking Thorazine.

A chi-square analysis was also made of the relative frequency of right GSR reactivity in the schizophrenic group as contrasted to normal samples 1 and 2. It was found that right directionality tended to be more frequent among the schizophrenics than in normal sample 1 (.20–.10 level) or in normal sample 2 (.05–.01 level).

Clearly, the overall results support the hypothesis that was being tested. Schizophrenic patients do show less of the left directional and more of the right directional GSR reactivity patterns than do normal subjects.

LSD CONDITION SUBJECTS

Ten normal subjects were paid a fee to participate in the experiment. Six were medical students and the other four were college students. There were eight men and two women.

METHODS

Eight of the subjects took LSD doses of 100 gamma; one of 40 gamma; and one of 20 gamma. Each subject was tested during a control period either the day prior to or the day following the LSD condition. Each subject was also tested during the LSD period within one to two hours after the drug had been administered.

The technique for evaluating right-left GSR reactivity was approximately the same as that described for the schizophrenic group. However, there was one important difference. GSR reactivity was measured from three sets of homologous sites instead of four. The palm sites were omitted.

TABLE 2

Mean GSR Right-Left Reactivity Patterns for Control and LSD Conditions and Significance of Differences between Conditions

GSR Patterns	Control	LSD	Significance of Difference
Left Reactive	1.6	.2	.01–.001
Right Reactive	1.0	2.1	.05–.01
Non-directional	.4	.7	—

RESULTS

Analysis of the data revealed clear differences in GSR right-left patterns from the control condition to the LSD condition. There was tabulated for each subject the total number of control period and LSD period sites which were right or left or non-directional in reactivity. As can be seen in Table 2, there was a significant *decrease* (.01–.001 level) in left reactive patterns from the control period to the LSD condition. One also notes that there was a significant *increase* (.05–.01 level) in right reactive patterns from the control period to the LSD period. The incidence of non-directional patterns was essentially the same for the two sets of conditions. The significant shifts in left reactivity and right reactivity which occurred are obviously congruent with the original hypothesis.

DISCUSSION

The results pertaining to the schizophrenia condition and the LSD condition are mutually supportive and at the same time in the predicted direction. It does appear that disorganized states which are considered to have a disruptive influence upon the body image are accompanied by an increased frequency of immature right-left reactivity patterns. Of course, it is only a presumption that the greater frequency of immature reactivity patterns is due to the disorganization of body image, as such. There are, after all, a variety of functions beside those relating to body image which are adversely affected by schizophrenia and LSD. Indeed, one would be in a stronger position to specify that disturbance of body image is an important variable in the regression of right-left reactivity patterns if body image measures had been taken on the same subjects and if these measures had proven to be correlated with variations in right-left reactivity. However, the techniques which have proven valid in the past for evaluating body image attitudes toward the right and left body sides could not be here utilized because they involve a level of cooperation which would have been difficult for many schizophrenic patients to muster. Also, these techniques have been found to be subject to the influence of practice effects. Therefore, they would have been almost impossible to interpret under the retest conditions associated with the LSD experiment.

However, one may emphasize at this point that it was a theory built upon body image constructs which enabled the successful prediction of disorganization of right-left reactivity patterns in schizophrenic and LSD states. A more specific demonstration of the relationship between disorganized body image and right-left response directionality must await the development of body image measures which are not susceptible to cooperation and repetition effects. Whatever the outcome of future attempts to prove a relationship between body image regression and body gradient disorganization, the fact remains that gradient disorganization is an interesting phenomenon in itself which has not previously been reported. The possibility presents itself that breakdown in the individual is more likely to be reflected in alterations of relationships in levels of reactivity among various body sectors than in gross indices of total body reactivity.

SUMMARY

This study concerned itself with the character of right-left GSR reactivity patterns in disorganized states which presumably disrupt body image integration. It was hypothesized that individuals who were schizophrenic or under the influence of LSD would manifest regressive and immature right-left reactivity patterns to a significantly unusual degree. This hypothesis was clearly supported by the data.

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