

# PERCEPTUAL ISOLATION AND SCHIZOPHRENIA

By

STANLEY SMITH

H. THAKURDAS

and

T. G. G. LAWES

THE early investigators in the field of perceptual isolation were at McGill University, especially Bexton *et al.* (1954). Since then there have been many subsequent works and papers on the subject. In general, published results of this type of experiment can be divided into two groups. Sometimes marked sequelae to sensory deprivation have been described (Bexton *et al.*, 1954 and Goldberger *et al.*, 1958). Such disturbances included thinking, imagery and time appreciation, together with delusional and hallucinatory phenomena. On the other hand, at Princeton University, Vernon *et al.* (1956), under very carefully controlled experimental conditions, found virtually no sequelae. A paper published from this hospital (Smith and Lewty, 1959) described a silent room which was designed, constructed and standardized to a mean sound pressure level difference of 80 decibels. (Measurements made at  $\frac{1}{3}$  octave intervals from 80–10,000 c./sec.) In this particular room 20 volunteers spent varying periods from 5 hours 50 minutes to 92 hours 20 minutes under conditions of partial and complete sensory deprivation. We used a room so as to mitigate the physical effects of reduced somatic activity and fur gloves were used instead of the more common cardboard cylinders, which after a period of time produce a great deal of skin irritation and indeed abrasions, and introduce a great deal of unnecessary complications into a study of pure sensory deprivation.

It was found in our 20 volunteers that apart from many individual reactions, a general sequence of events seemed to be followed: increased sleep—then restlessness and agitation—thinking difficulties—finally succeeded by panic. No post-isolation phenomena were seen. In this volunteer group were 11 women and 9 men; the average total deprivation of men was 29·24 hours and of women 48·70 hours.

Subsequent to our work done on the 20 volunteers, we decided to follow Harris's work (1959), on sensory deprivation associated with schizophrenia. Harris took 12 subjects and put them in a sound-proof box belonging to the B.B.C., a box which is well known and often used for various games played on the television. His actual period of isolation of these patients varied. In one case it was up to half an hour; in another up to 2 hours; in another up to 3 hours and another had a total period up to 8½ hours. These remarkably short periods of time produced three results:

1. That schizophrenics tolerated it remarkably well;
2. That all under-estimated time;
3. That their hallucinations were less vivid and troublesome during the time in the cubicle.

He concluded that in schizophrenics normal sensory stimuli reinforced hallucinatory experience in contrast to the effect of visual deprivation in mentally healthy individuals, where visual hallucinations can actually be produced.

We decided that as a result of this work it would be interesting to try the effect of perceptual isolation using our own standardized and measured methods on a group of schizophrenics. We defined schizophrenics as patients with illnesses of at least 5 years duration; they all must have had gross thought disorder, showing, for example, asyndesis and metonymy, and must also show impaired affect of one sort or another, as well as delusional and hallucinatory activity. In a word, they were typical long-term nuclear or process schizophrenics. We then felt that we would examine them according to the average total deprivation that we used for normal people, i.e., 29·24 hours in the case of men, and 48·70 hours in the case of women. Since results at the end of this time were non-existent or negligible, it was decided to continue much longer than originally planned. We examined their responses both during and after isolation to the 12 aspects of mentation which we had studied during the time that the normal volunteers were in. We also had varying psychological tests done before and after the period of isolation, and EEGs, also before and after. They were rated for 10 days previously on a Malamud-Sands Scale.

## RESULTS

The following results were obtained in 6 schizophrenics:

### (A) CLINICAL EXAMINATION

#### 1. *Thinking:*

Our findings in normal volunteers showed that this generally became disordered—inability to concentrate to complete disorganization. In 12 it was this that produced panic—"I thought I was going mad".

In the schizophrenics: *No change*. Asyndesis and metonymy remained constant. Occasional further dilapidation noted but never persistent.

#### 2. *Affect:*

One volunteer had a definite depression attack with crying. Others eventually became anxious and panicked.

In the schizophrenics: *No change*. Incongruous or flattened affect remained constant.

#### 3. *Psychomotor Activity:*

Eighteen volunteers became agitated and restless and this seemed to be the forerunner of panic in nine of them.

In the schizophrenics: *No change*.

#### 4. *Time:*

In normals usually *over-estimated* by between  $\frac{1}{2}$  to 3 hours; except in 7 who initially underestimated. *All over-estimated* at end.

In Harris's group—all *under-estimated* time.

In our 6 schizophrenics—in beginning all *under-estimated*, then a few over-estimated. Then, when rhythm of meals became established, *all* were correct: *N.B.* If time of meal was deliberately varied at this stage, patients *over-estimated* (like normals).

5. *Body Image Disturbance:*

Seven volunteers experienced this, particularly arms and head: "My head is like a spinning cone going away from my body."

In schizophrenics: *No change.*

6. *Somatic Signs and Symptoms:*

Great efforts made to eliminate these by construction of room, etc., and gauntlets. Only 3 volunteers complained; the complaints were of 'socially approved' somatic manifestations of tension-anxiety.

In schizophrenics: *Nothing.*

7. *Irritability:*

Only 2 volunteers expressed irritability—one a heavy smoker; another an aggressive man.

In schizophrenics: *No evidence.*

8. *Sleep:*

Except for 2 volunteers who left the room early, after anxiety-tension within 6 hours, all slept more at beginning. Perfect illustration of Kleitman's theory that "sleep is induced by a decrease in afferent impulses from sensorium, producing a reversible inactivity of highest cortical centres".

In schizophrenics: *No real change in sleep pattern.*

9. *Dreams:*

In 5 normals nightmare quality, especially during anxiety period.

*No schizophrenic admitted to any dreaming.*

10. *Appetite:*

In volunteers appetite good in early stages. Then progressively diminished until, towards end, meals being left untouched.

In schizophrenics: *Invariably good.*

11. *Delusions:*

In volunteers nil, except fleeting paranoid ideas.

*No change in number, type or intensity of those of the schizophrenics.*

12. *Hallucinations:*

Probable illusions only in one volunteer.

In schizophrenics: *No change in number, type or intensity of established hallucinatory phenomena.*

13. *Time in Room:*

No.	Sex	Age	Time in Room (Hours)		
			P.S.D.*	C.S.D.	Total
1	.. M	46	18·51	467·43	486·34
2	.. F	40	20·35	466·50	486·40
3	.. M	31	22·41	409·10	431·51
4	.. M	30	20·52	464·33	485·25
5	.. M	28	19·60	420·10	440·10
6	.. F	40	20·35	466·50	486·40

\* P.S.D.=Partial sensory deprivation (when eating, at toilet, etc.)

C.S.D.=Complete sensory deprivation (complete isolation in room)

Total=A combination of above.

**(B) PSYCHOLOGICAL EXAMINATION**

The difficulty here has been to choose specific tests which might reveal the most significant effects, anomalies or abnormalities in view not so much of lack of theory as of the many theoretical issues involved at several levels.

For example, a simple psychophysical analysis of the *experimental* conditions makes us recognize also that the normal person, under normal conditions, can discriminate only over limited ranges and kinds of energy change in the physical world—in other words, that our *normal* condition is one of partial psychophysical deprivation. At a neurological level the central nervous system, if undisturbed by incoming signals, has been considered as in an ideal state of homeostasis, able to abstract maximum significance from the first “ripples” which pass through it (Grey Walter, 1953).

Perceptually each of the eight great common generalizations (Allport, 1955), obtained from an examination of thirteen major theories of perception, bears upon our experimental situation. Psychological theories of total personality which explain both schizophrenia and normal behaviour under the same set of principles are speculative and controversial.

Fundamental problems over management of the test interviews result from the reduced social stimulation and interpersonal interaction of the experimental experience. These required a test programme which maintained the maximum degree of partial isolation for as long as possible.

Since we have had only a few patients so far, and were not able to have the advantages of a psychologist during our initial volunteer phase, the test results so far can be considered tentative and exploratory.

1. *An Improvement in Response to some Cognitive Tests*

These tests were:

- (a) Mental Control (Wechsler Memory Scale).
- (b) Visual Reproduction (Wechsler Memory Scale)
- (c) Associate Learning (Wechsler Memory Scale).
- (d) Time Appreciation Test (Buck).
- (e) Mill Hill Synonyms.
- (f) Mitchell Vocabulary Scale.
- (g) Progressive Matrices.
- (h) Bender Visual Gestalt Test.

2. *An Alleviation of the Severity of some Signs of their Disorder*

- (a) More alert and involved in what was going on.
- (b) Less stereotyped, less rigid, less disciplined in response.
- (c) M.M.P.I. showed some improvement in validity.

3. *Jung's Word Association Reaction Times*

Slight but definite increase after isolation.

4. It is to be noted that these improvements and changes were not maintained 3 weeks later when tested again.

## (C) EEG EXAMINATION

Four out of six pre-deprivation records were within normal limits. Two showed low medium voltage theta at 4–6 c./sec. and in one case paroxysmal delta at 2 c./sec. in both temporal areas.

Without exception, all records showed widespread slowing after deprivation. Slower frequencies involved alpha and also theta and delta. No paroxysmal activity noted. All records returned to their normal pattern subsequently.

## CONCLUSIONS

These few results do agree with the thesis that schizophrenics can tolerate this type of anxiety provoking stress very well. All patients gave the impression of accepting these lengthy periods of isolation without any difficulties or upset. Such results—meagre though they are, raise a lot of questions and assertions.

Are we simply enhancing one of the natural defences used by schizophrenics, i.e. withdrawal in face of anxiety or anxiety-provoking situations, or is it simply another example of schizophrenic indifference in a situation which causes anxiety in normal people?

From a clinical point of view we were unable to confirm the results of Azima *et al.* (1956) who, in mentally-disturbed individuals, including schizophrenics, after 120 to 144 hours in a “single hospital room containing all facilities and situated farthest from the centre of the ward”, found an increase in motivation, socialization and self-assertiveness, although it is to be noted that such changes were in fact found to a limited and non-persistent extent on the psychological tests. If anything, we found the opposite—i.e. almost catatonic stupor and certainly no increase in socialization or motivation. We therefore cannot really confirm his disorganization-reorganization hypothesis based on the use of perceptual isolation in the mentally ill. Neither did we find any evidence of a reduction of hallucinatory activity as observed by Harris (1959).

Normal subjects find great difficulty in adapting to or tolerating the stress of sensory isolation but schizophrenics find no difficulty. It appears to be their natural habitat.

Normal subjects find increasing need for and attempt to obtain extrinsic physical and social stimuli. Schizophrenics have no such need and make no effort to obtain such stimuli.

Such results add little to our knowledge of the causal nature of schizophrenia. Our results in normals likewise do not support the idea that the method produces an experimental model of the schizophrenic syndrome superior to the “model psychosis” of mescaline or LSD, as urged by Rosenzweig (1959).

The unresponsiveness of our schizophrenics (so far admittedly few in number) does suggest that withdrawal as a defence is possible in the face of such stress, but naturally would be untenable in any situation demanding task orientation or reality testing.

## SUMMARY

1. Following upon experiences with normal volunteers in a specially constructed silent room, we tried the effect of such isolation on six chronic or nuclear type schizophrenics.

2. Very few positive results were achieved and it is likely that such perceptual isolation has little or no effect on the withdrawal pattern so characteristic of schizophrenics under stress or anxiety.

## ACKNOWLEDGMENTS

Our thanks are due to Mr. W. Lewty, B.Sc., for his constant supervision of the efficiency of the sound-proof room.

## REFERENCES

1. ALLPORT, F. W., *Theories of Perception and the Concept of Structure*, 1955.
2. AZIMA, H., *et al.*, *Canad. Psychol. J.*, 1956, **1**, 2.
3. BEXTON, W. R., *et al.*, *Canad. J. Psychol.*, 1954, **8**, 70.
4. GOLDBERGER, L., *et al.*, *J. Nerv. Ment. Dis.*, 1958, **127**, 2.
5. GREY WALTER, W., *The Living Brain*, 1953.
6. HARRIS, A., *J. Ment. Sci.*, 1959, **105**, 236.
7. ROSENZWEIG, N., *Amer. J. Psych.*, 1959, **116**, 4, 326.
8. SMITH, S., and LEWTY, W., *Lancet*, 1959, **2**, 342.
9. VERNON, J., *et al.*, *Science*, 1956, **123**, 1074.

STANLEY SMITH, M.D., M.R.C.P., D.P.M., *Consultant Psychiatrist*,  
H. THAKURDAS, M.A., B.Sc., M.B., B.S., *Registrar*,  
T. G. G. LAWES, B.Sc., *Clinical Psychologist*,  
*Moor Hospital, Lancaster*