

Perseveration—The Clinical Symptoms—In Chronic Schizophrenia and Organic Dementia

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INTRODUCTION

In the controversy over the nature of schizophrenic “dementia” the weight of opinion has fallen on the side that emphasizes the differences which exist between this state and organic cerebral degenerations. While acknowledging these differences, it is important also to draw attention to the similarities between the impairment of chronic schizophrenia and the defect of organic dementia as it occurs in the elderly. We have chosen to compare the extent of perseveration in the two groups because this is a neglected field and because objective tests of such behaviour are readily devised.

The word perseveration has been used to refer to the continuation of an act or a sensation or an idea in consciousness. We can distinguish broadly between two usages of the term. It has been used to refer to features of normal behaviour, and as such a personality trait of perseveration has been postulated. An extensive literature has developed on the experimental investigation of this trait in normal subjects and in psychoneurotics. (Yates, 1961; Vernon, 1953). It has also been used to refer to the abnormal behaviour of patients with disturbance of neural functioning. Perseveration in this sense has been observed in delirium, brain injury, dementia, epilepsy, schizophrenic states, and in normal subjects under conditions of fatigue and under the influence of depressant drugs.

This paper deals only with the second usage, and where the term perseveration is used it is the second sense that is intended.

In spite of statements to the effect that “the perseverating tendency is probably the most

frequently found characteristic of the behaviour of persons with organic brain involvement” (Eisenson, 1954) little attention has been paid to the phenomenon. It is usually regarded as a nuisance in clinical examination and attention is therefore devoted to methods of overcoming the problems which it poses than to the symptom itself.

We have been able to distinguish three types of perseveration. The first type occurs when an act is repeatedly emitted. This can happen when a patient is asked to put out his tongue. He does not merely put it out and put it back but continues to put it out and in for several minutes. This activity stops when other stimuli are introduced. Goldstein (1943) has called this behaviour “primary rigidity” and Luria (1965) has called it “efferent motor perseveration” or “compulsive repetition”. Both authors are agreed that this type of perseveration is associated with lesions of the sub-cortical apparatus.

The second type consists of a response which is elicited under a first stimulus and continues when a second stimulus is offered. Thus, in copying the Bender Cards (Bender, 1938), a patient may copy the dots of card 1 correctly, but then continue to draw dots instead of the circles on card 2. Goldstein (1943) refers to this phenomenon as “secondary rigidity” and Luria (1965) calls it “impairment of switching”. Both authors are agreed that this type is associated with cortical impairment.

In the third type there is an ideational perseveration. This is evident in speech when words or phrases recur, not as in palilalia (which is compulsive repetition) nor in response to further questioning, but spontaneously.

The three types of perseveration can be schematized thus:

	Stimulus	Perseverative Response	Normal Response
1 Compulsive Repetition	Stim. 1	→A A A A	→A
2 Impairment of switching	Stim. 1	→A	→A
	Stim. 2	→A	→B
3 Ideational Perseveration	Stim. 1	→A B C A D E F A G H I J K A L A . . .	→A B C D E F G H I J K L . . .

THEORIES OF PERSEVERATION

(1) All three types can be regarded as release phenomena (Jackson, 1894) which occur when cortical inhibitory influences are in abeyance. Dissolution occurs; there is a regression to a childhood phase before the development of cortical restraints. This is a time when the initial learning of the organism depends largely on repetition of behaviour (Hebb, 1949). Under dissolution, no such adaptive function is served by repetition.

(2) The degree of perseveration may be associated with the amount of effort invested in an act (Eisenson, 1954). Since the effort required for more difficult tasks will be greater, perseveration will be more likely to occur on such tasks.

(3) Both Jaspers (1913) and Goldstein (1943) have also made the observation that impairment of switching occurs when a patient is at his capacity level: in other words when a task is becoming too difficult for him.* Goldstein concludes that the perseveration is motivated by the desire to avoid failure and the consequent catastrophic reaction. Werner (1946) has shown that although this may be the explanation for some perseverative behaviour, it does not account for perseveration which occurs on tasks well within the patient's capacity.

(4) Werner (1946) discusses the work of Kounin, Lewin and Goldstein. He points out that a response to stimulus 1 may be perseverated to stimulus 2 when there are some identical elements of 1 and 2. The more similar they are the more likely is perseveration to occur.

*We are indebted to Dr. I. A. Cameron of Runwell Hospital, Essex, for drawing our attention to this problem.

This is due to lack of discrimination or differentiation. In some cases, however, a response may be perseverated when there are very few identical elements. Such behaviour is more incongruous and is said to be the result of "functional isolation". Whilst this distinction of types of perseveration is valuable, there seems to be no explanatory value in the term "functional isolation", as appears to be implied.

(5) Perseveration may be regarded in Bleuler's terms as a primary or secondary symptom. Logically there are three possibilities. First, there may be instances in which it is caused by a complex, as was demonstrated by Jung by means of word association tests. Second, there may be instances in which the perseveration is autochthonous and quite unrelated to complexes either in determination or expression. Third, perseveration may occur which is autochthonous but which may be expressed in terms of the content of the complex.

Our problem, then, was to compare a group of patients suffering from organic dementia with a group of chronic schizophrenic patients, to determine the extent of the similarities as well as the differences in perseveration in the two groups, and to examine the theories put forward to account for perseverative behaviour in schizophrenic patients.

METHOD

The tests (described in the Appendix) were devised to elicit all three kinds of perseveration in a standard setting in as many areas of behaviour as possible, including speech, memory, constructional and motor behaviour, sensation, perception and conception. Whether perseveration occurs on a particular test or not

depends on a variety of features of the test as well as on the condition of the patient. Important test variables are: type of material, similarity of items, structure, length and level of difficulty. The aim in devising the tests used in this study was to provide optimum circumstances for perseveration to be manifested.

The tests were administered in the order found in the Appendix. This is important because perseveration may occur between tests as well as within tests. For example, if writing is done before drawing, perseveration of writing may make it impossible to elicit drawing of perseveration of writing. No attempt was made to stress the patient in order to elicit perseveration.

Scoring and Statistical Comparisons

There is rarely any difficulty in identifying perseveration on these tests when it occurs. Although each patient's perseverative behaviour on each test was categorized as compulsive repetition, impairment of switching, or ideational perseveration, no attempt was made to distinguish different degrees of these phenomena.

The tables compiled by Finney, Latscha, Bennett and Hsn (1963) were used in the analysis of results using two-tail tests of significance.

Subjects

The schizophrenic group consisted of 20 patients, with a mean age of 43 years, in whom the diagnosis had been established for many years. None of these patients had coherent and fixed delusions, and most suffered from the disorganized and fragmented cognition which characterizes the hebephrenias. In none was there a question of organic involvement, none had been leucotomized and none had had E.C.T. for the past six months. The group of dementias was made up of 20 patients, with a mean age of 79 years, suffering from degenerative and cerebral arteriosclerotic conditions, and in whom there was no question of previous functional psychosis.

The two groups were selected to provide a good range of degree of deterioration, from minimal to gross, on such indices of dementia as memory, orientation, and speech. Some

patients were unable to complete all the tests because of deficits of eyesight, hearing, comprehension or speech. However no patient did less than 8 of the 16 tests and most could do 14 or more.

RESULTS

(1) If no separation into types of perseveration is made, no differences in extent of perseveration were found between the two groups. The demented patients showed perseveration on an average of 5.8 tests and the schizophrenics on an average of 5.4 tests.

(2) The two groups were compared with respect to the extent of the three types of perseveration. Whilst there were no differences for ideational perseveration, it was found that significantly more senile patients gave evidence of extensive impairment of switching (on three or more tests) than schizophrenic patients ($p < .05$), and conversely that significantly more schizophrenic patients gave evidence of extensive compulsive repetition (on three or more tests) than senile patients ($p < .05$).

(3) It should be noted that when any of these three phenomena occurred there were no qualitative differences between the two groups. That is to say, the test records of the two groups were indistinguishable. Thus, all three types of perseveration can occur in both groups in exactly the same form.

(4) An attempt was made to find out whether perseveration on one test was associated with perseveration on another. For each group separately and for the two combined, a 2×2 contingency table was set up for each pair of tests, for each of the three types of perseveration. For example, the following table shows the degree of association on compulsive repetition in the demented patient group on tests 2 and 4.

There were few differences which achieved significance at $p < .05$, and these are probably the ones to be expected by chance. The finding here, then, is that there is virtually no association between the tests for any of the three types of perseveration. In other words, there is no evidence for a unitary trait of perseveration. Perseveration is apparently specific to each test. Thus it is probably less appropriate to

		Test 2		Not Significant
		No Repetition	Repetition	
Test 4	No repetition	4	7	
	Repetition	3	1	

speak of perseveration in general than of a particular type of perseveration in a particular test situation. It follows that broad generalizations about perseveration based on the use of a single test situation will usually be misleading.

(5) Abundant evidence was available from the material collected during this study to show that impairment of switching can occur on items which are well within the patient's capacity level. These findings support the view of Werner (1946) on this point.

(a) In several of the tests given it was possible to reverse the order. Thus, if a person perseverated on Bender card 2 by making dots instead of circles after doing card 1 first, he could at a later session be given card 1 after doing card 2 first. If he then perseverated on card 1 by making circles instead of dots, this would be evidence that both tasks were within the patient's capacity. Five patients provided such evidence.

(b) In the vocabulary test (test 11) one would expect (if impairment of switching is related to level of difficulty) that perseveration would not occur on words which are clearly within the capacity of the patient. However, when the vocabulary protocols were scored, eight patients gave evidence of perseveration on words which were well within their capacity.

(c) 27 patients produced impairment of switching in the Rorschach which cannot be said to be related to the level of difficulty.

In all these instances Goldstein's theory of avoidance of catastrophe is obviously inapplicable.

(6) Although Jung (1907) held that perseveration in schizophrenic patients can be regarded as a secondary symptom (Bleuler 1911), the evidence from the data of this study indicates that in some instances perseveration in

the schizophrenic group can be a primary symptom. This view is based on the consistency and extensiveness of the phenomena and the nature of the test material. The supporting data are as follows: compulsive repetition on tests 2, 4, 6 and 7; impairment of switching on tests 2, 3, 4, 5, 7, 9, 13, 14 and 15; and ideational perseveration in naming animals (test 12).

DISCUSSION

Compulsive repetition was shown to be more characteristic of the schizophrenic group than of the demented group. Indeed there is evidence which suggests that this kind of perseveration may be involved in many aspects of schizophrenic behaviour. Its role in accounting for the results of some tests of overinclusive thinking in schizophrenic patients has recently been discussed by Gathercole (1965), who showed that one of the factors contributing to a high over-inclusion score on these tests was the patients' inability to restrain an action once started.

In drawing attention to some of the shortcomings of the theories advanced to account for perseverative behaviour, we have shown that it is necessary for detailed clinical description to precede theory construction. There are still clinical features to be further explored. For example, we find that perseveration may occur coincidentally with the correct response. In test 13, for instance, one patient localized tactile stimulation on the cheeks when it had been transferred to the hand, but indicated by pushing his hand forward that in some way he was aware of the correct location. Another example of this is given by a patient drawing a watch after having drawn a man on test 6. The examiner asked her what she was drawing and she said: "It's a watch. That's a face, there's a nose. These are the works." Clearly the two tasks had become fused for this patient.

The importance of clinical description becomes even more apparent if the question is put as to the relationships of perseveration to such phenomena as echo reactions, the assimilatory tendency, distractibility and disorientation in the schizophrenias and organic dementia (Freeman, 1965). A necessary preliminary to the task of answering this question would be to determine whether different tests expose perseveration at different states of dissolution. It is likely that the tests which produced perseveration most often in this study (16, 3, 14, 2, 11, 4—in that order) would be more sensitive to perseveration in the earlier phases of dissolution. There are several ways in which this problem could be studied. For instance, one could test a group of senile patients at regular intervals as their dementia progresses to see which tests show up perseveration in which order; or one could test patients recovering from E.C.T.

In order to delineate the place of perseveration in schizophrenic disorganization, it has been necessary to analyse both the phenomena of perseveration and the theories put forward to explain them. The results indicate that perseverative signs may be either the outcome of structural alterations within the brain or the result of a cognitive disorganization which itself may be based on abnormal cerebral function.

SUMMARY

A group of chronic schizophrenic patients and a group of patients suffering from cerebral degeneration were given 16 tests devised to elicit perseveration. Perseveration of the kind usually associated with organic brain involvement was found in both groups.

Three types of perseveration can be recognized, compulsive repetition, impairment of switching, and ideational perseveration. Although all three were found in both groups of patients, extensive compulsive repetition was more frequent in the schizophrenic patients, and extensive impairment of switching more frequent in the demented. No differences were found in ideational perseveration.

None of the three types of perseveration was found to form a unitary trait.

The findings are related to theories of perseveration, and the implications for the further

study of schizophrenic disorganization are discussed.

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APPENDIX
DESCRIPTION OF TESTS

1. Free conversation for about five minutes was taken down verbatim as far as possible. The patient was encouraged in as non-specific a way as possible. For example, he was asked "Tell me about yourself. What is on your mind just now." Later specific questions were asked, such as "Have you had visitors this week?"
2. The patient was asked to copy the Bender Gestalt cards 1, 2 and 3 (Bender, 1938) on a single sheet of paper.
3. The Stick Test designs of Goldstein and Scheerer (1941) were used (omitting 27, 30, 34). E constructed a design with matchsticks and exposed it for 10 seconds, when S was asked to recall it. Initially S was given designs in the series 1, 5, 9, 16, 22, 25, 33 until he failed one of these. He was then given the tests immediately preceding the failed one.
4. Wechsler's Memory Scale (1945) Visual Reproduction of Designs, 1a, 1b, 1c (right hand figure only) were exposed, each for 10 seconds. A separate sheet of paper was given to the patient for each design.
5. The patient was asked to point to his nose, ear, chin, knee and elbow, and then to those of the examiner.
6. He was asked to draw a man, a watch, and a house; a separate sheet of paper being provided for each.
7. The patient was asked to (1) put out his tongue (2) close his eyes (3) blow out his cheeks (4) tap on the table (5) clap his hands.
8. Patient was asked to write (1) his name (2) his address (3) January. A single sheet was provided for this.
9. A sheet of paper was provided with three rows of the numbers 1, 2 and 8 randomly distributed. He was asked to cross out all the twos in the first line, the eights in the second line, and the ones in the third.
10. The similarities sub-test of the W.I.S.C. (Wechsler, 1949) was given.
11. The Vocabulary test of the W.A.I.S. (Wechsler, 1955) was given.
12. He was asked to say all the names of animals he knew. When he gave up he was encouraged to continue. The test was ended the third time he gave up.
13. The patient, with his eyes closed, was asked to say where he was touched. First he was touched on the hand. This was done three times (with the patient's response elicited each time). Next he was touched on the face. This was repeated three times, and lastly he was touched on the hand, again three times.
14. A series of 9 cards was devised which were shown to the patient one at a time. He had to say what he thought the design on each card was like. Early in the series the design resembled a house, but as lines were added with each successive card the design turned into a ship.
15. The patient was asked to say (1) the alphabet (2) the days of the week (3) count from one to ten.
16. He was shown the ten Rorschach blots and one response per card was elicited.

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