

Inability to Concentrate

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Introduction

"I can't concentrate, doctor" is a common complaint among psychiatric patients. The phrase is usually applied in a general sense to describe a state in which the patient has ceased to read the newspapers or watch the television and can no longer cope adequately with his work. In clinical practice the performance of the "serial sevens" test has been thought to give an indication of impairment of this function, whatever it may be (Mayer-Gross, Slater and Roth, 1960). As the symptom is so common, a measure of its severity may be of some value. This paper describes an attempt to develop such a measure and discusses the possible implications of its failure.

Method

Four methods of assessment of concentration were applied to 22 subjects, 10 male and 12 female, mean age 41.7 years, range 18 years to 56 years. Two of these methods attempted to assess the patients' own opinion of their degree of impairment. First, as a result of a clinical interview, the ability to concentrate was classed as "Good", "Fairly Good", "Fair", "Poor" or "Bad", ranked from 1 to 5. Second, the patient was asked to place a cross on a line to indicate his opinion of his ability to concentrate. This line was 10 cm. long, the left hand end was marked "completely unable to concentrate", the right hand end, "No difficulty". The patient's score was the distance in millimetres between his cross and the left hand end of the line. Apart from a difference in wording, the test is identical with a simple general measure of well-being which has been shown to be reliable and sensitive to individual differences (Clarke and Spear, 1964). At the clinical interview an assessment was also made of the presence or absence of subjective retardation and of the

adequacy of the recorded clinical diagnosis. Patients were classified as suffering from Reactive Depression (7 patients), Endogenous Depression (7 patients), Anxiety State (4 patients), and Schizophrenia (4 patients).

The second two methods of assessment were carried out independently (R.G.) and generated six sets of scores. First, patients were instructed to carry out the "serial sevens" test. Two scores were obtained: total time taken (T) and number of mistakes made (M). The number of mistakes was taken to be the number of errors in individual subtractions.

Our second test was to ask our patients to record all the odd numbers in a series of random digits played over a tape recorder at a rate of two digits per second. This technique was chosen on the assumption that the main feature of tasks requiring concentration is sustained attention to a limited stimulus. Scores on this test were obtained for duration and accuracy of performance. Two scores for each aspect were obtained by taking the time and number of errors made before five consecutive errors (T_1 & M_1) and total time and number of errors made (T_2 & M_2). The experiment was stopped after five minutes, whether or not the patient made five consecutive errors. Only eight patients persisted for the full five minutes. The results of these tests were compared with those on the subjective assessments of concentration, and all the assessments of concentration were related to age, diagnosis, and the presence or absence of subjective retardation.

RESULTS

Four patients refused to attempt the "serial sevens" test, three claimed inability to do so, while one refused on the grounds that she had been asked to do this test too often. The results of the part of the investigation using this test are

therefore based on 18 subjects. There were no significant relationships between any of the scores and diagnosis.

The correlations between the various tests are presented in Table 1.

Patients who reported subjective retardation made significantly fewer mistakes on "serial sevens" (7-M.) ($t=2.21$, $df=16$, $P<0.05$) and significantly more errors in recording digits for as long as possible (M_2) ($t=2.35$, $df=20$, $P<0.05$).

DISCUSSION

The correlation between the two methods of subjective assessment seems adequate to suggest that they are, to some extent, measuring the same thing. It is therefore of some interest to find that only one of the experimental tests bears a significant relationship to them (M_1 with subjective concentration; $\rho=0.44$) and that to only one assessment. The intercorrelations of the scores obtained on recording a series of digits are probably mostly related to the methods used.

Although the number of subjects was very small, these results must cast doubt on the value of serial sevens as a test of concentration in the clinical situation where the performance in effect is to be compared with an hypothetical norm. To be valid in this situation, individual

differences need to be fairly gross, and should therefore show significant correlations even in small samples.

However, it seems probable that these tests of concentration, although superficially meaningful, have little relevance to the patients' complaint of difficulty in concentration. Nonetheless, the patients' description of the effects of impairment of concentration suggests that our tests are reasonable attempts to approach the phenomenon. Difficulty in reading the newspaper is often described, and if related to a failure to maintain attention might well be related also to our tests. If this argument be accepted, there must be something in the test situation which modifies the behaviour. We suggest that this might be the experimenter's request to carry out the test, thus providing an external stimulus. It seems probable that the condition described as inability to concentrate is in fact apathy. This could be tested by some sort of observational technique, but it would be essential that the patient remained unaware of the experimental situation.

The results related to subjective retardation are more in keeping with the usual impression of that concept. People who are slow may well be more accurate than others when working at their own pace, but make more errors when forced to keep up with a pacemaker. Similarly,

TABLE I
Intercorrelations of Assessments of Concentration and Age

	Age	Subjective Concentration							
		Verbal	Line	7sT	7sM	T ₁	T ₂	M ₁	
Subjective Concentration	Age								
	Verbal	0.004(R)							
	Line	-0.24	0.50(R)*						
	7sT	0.14	0.17(R)	-0.30					
	7sM	0.44+	0.17(R)	0.20	-0.07				
	T ₁	0.17+	0.34(R)	-0.04	0.21+	-0.13			
	T ₂	-0.07	0.33(R)	0.23	0.10	-0.24	0.69+++		
	M ₁	0.06	0.44(R)+	-0.14	-0.05	0.01	0.83+++	0.72+++	
	M ₂	0.01	0.11(R)	-0.22	0.30	-0.07	-0.04	0.66+++	0.21

* (R) = rank correlations (rho)
 + = $P<0.05$ (1 tailed)
 ++ = $P<0.01$ (1 tailed)
 +++ = $P<0.001$ (1 tailed)

the relationship between errors on "serial sevens" and age is in keeping with the use that has been claimed for this test in examining patients for evidence of dementia. Unfortunately, on our data, the spread of scores was so small that it would be impossible to claim that a score was significantly abnormal, but failure to complete the test may be meaningful.

SUMMARY

Two subjective and six experimental assessments of what might be described as "ability to concentrate" were made on 22 psychiatric patients. The findings were related to each other, to age, presence of subjective retardation, and psychiatric diagnosis. The subjective assessments of concentration correlated significantly with each other, but only one of them correlated significantly with any of the experimental tests. Intercorrelations between the experimental tests were considered to be largely related to the test structure. Age correlates significantly with errors on the "serial sevens" test. Patients

reporting subjective retardation make significantly fewer errors on "serial sevens" and significantly more errors when recording digits spoken aloud. It is suggested that inability to concentrate as reported by patients is related to a failure of motivation, and that the phenomenon may be much reduced by the external stimulus of the test situation.

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