THE DIAGNOSTIC AND PREDICTIVE ACCURACY OF THE MODIFIED WORD LEARNING TEST IN PSYCHIATRIC PATIENTS OVER 65

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IN a previous paper the results of a two-year follow-up study were reported (Walton, 1958). This study showed that when the Wechsler Memory Scale was administered four times to each patient of a series suffering from a memory defect, significant differences emerged between those patients subsequently diagnosed as brain-damaged or as non-brain-damaged, in respect of the degree of improvement in their performance. The results were of considerable diagnostic and predictive importance. In spite of this, however, the method would be an uneconomical method for routine diagnosis. A shorter test involving the same principle of successive opportunities to learn appeared necessary. Additional analysis of the final Memory Scale results also showed that present learning ability was more impaired in the organic group than in the non-brain-damaged group, whilst scores based on retentivity questions produced many misclassifications. The results strongly suggested that a test of dementia should consist of a measure of present learning ability and that opportunities to learn could best be provided by successive repetitions of the particular test.

A word-learning test developed by Nelson (1953) and Shapiro and Nelson (1955), to test Babcock's theory that a significant discrepancy between past and present learning ability was consistent with dementia, appeared relevant to this problem. The Terman-Merrill vocabulary test was administered until there were five consecutive failures. The subject was required to learn and retain the meanings of these five previously unknown words.

It has always appeared to the author that the New Word Learning Test was too easy to be useful in the detection of brain damage and that its usefulness could be increased by retaining the principles on which the test was developed, while increasing its level of difficulty. The principle of successive opportunities to learn had previously been applied in the use of the Rorschach and Goldstein tests for the detection of brain damage. Since, however, these tests and others were influenced by intelligence, a crucial test of the validity of this principle was not possible (Diers and Brown, 1951; Yates, 1954; Walton, 1955; Shapiro and Nelson, 1955). In the New Word Learning Test, where the patient was required to learn at a level supposedly consistent with his intelligence, this distorting variable was expected to be minimized. Shapiro and Nelson (1955) did find that this was not generally so and were forced to conclude that the ability to learn and retain new words was also dependent in part on level of intelligence. The test failed to differentiate significantly between brain-damaged and non-brain-damaged patients. A study which has just been completed, however, has shown that vocabulary level in normals, as measured by

the Mill Hill, was generally lower than potential intellectual capacity, as indicated by the Progressive Matrices performance (Walton and Black, 1958). It was not impossible, therefore, that in the Shapiro and Nelson study the patients were required to learn at a level lower than their intelligence, this producing the misclassifications. A study was then planned in which the subjects were asked to learn the meanings of ten rather than five new words and as such to be learning at a level supposedly more consistent with their intellectual capacity. The results were consistent with the prediction that important differences should be demonstrated between brain-damaged and non-brain-damaged conditions in respect of their speed of learning when level of intelligence was more adequately controlled (Walton and Black, 1957; Walton, 1958).

Although the diagnostic value of the Modified Word Learning Test was unknown at the time of the "Parentrovite" inquiry, its potential value was suggested inasmuch as success on the test appeared superficially to depend on the ability to learn, an ability which appeared to distinguish the functional from the organic patient (Krawiecki, Couper and Walton, 1957). Each of the patients in the "Parentrovite" study was given the Modified Word Learning Test, though the results were not examined in relation to diagnosis until the two-year follow-up study had been completed.

Full details of the method of administration, scoring and normative data of the Modified Word Learning Test are contained in Walton and Black (1957).

Results

Seven of the nine changes in diagnosis in the experimental group were correctly predicted on the basis of the Modified Word Learning Test scores. The optimum cut-off point of 30, established in the earlier inquiry, was used. Using this same cut-off point, the four changes in diagnosis in the control group were correctly predicted. Disregarding the predictive aspects of the study and comparing the final diagnosis (1957) with the M.L.T. completed in 1955, 22 of the 25 people in the experimental group were correctly identified. A cut-off point of 30 was similarly used. Using this same cut-off point all the brain-damaged and non-brain-damaged patients were correctly identified in the control group.

The suggested validity of the scale can be seen by reference to Table III. If the cut-off point is established at 31, than all the non-brain-damaged patients in both the experimental and control group scored less than this. Four of the

Table III

Distribution of M.L.T. Scores for the Brain-Damaged and Non-Brain-Damaged Subjects in the Experimental and Control Groups

M.L.T. Score	Functionals		Organics	
	Experimental	Control	Experimental	Control
1– 5	2		2	
6–10	3	3		
11–15	1	5		
16–20	1	3		
21–25	1	1	1	
26–30	1		1	
31–35			2	2
36–40			2	1
Over 40 ..			8	8
N	9	12	16	11

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twenty-seven brain-damaged patients were misclassified. Of the total sample of 48 cases, four patients were thus misclassified in terms of the final 1957 diagnosis.

Conclusions

The results provide a confirmation of the previously reported work. Important differences were again demonstrated between organic and functional patients in respect of the speed of learning previously unknown verbal material. A high percentage of the organics in the first study were suffering from general cortical damage. In the present enquiry those diagnosed as suffering from senile organic changes presumably were similar in this respect. Both organic groups were the same in showing a great difficulty in learning to the test's required criterion. This difficulty tended not to occur in the functional psychotics of the present enquiry and in the 233 normals and non-brain-damaged psychiatric patients of the first study (Walton and Black, 1957; Walton, 1958).

The testable predictions arising out of the observed correlation between the Memory Scale changes, diagnosis and outcome were therefore confirmed. The Modified Word Learning Test appears of considerable predictive and diagnostic value, particularly with regard to the problem of dementia, when cortical damage is of a general order.

Summary

The Modified Word Learning Test was administered to 48 senile psychotic patients in 1955, though the results were not examined in relation to diagnosis until a two-year follow-up had been completed.

There was a close correlation between changes in diagnosis and learning test scores. Eleven of the thirteen changes in diagnosis were correctly predicted. Comparing the 1957 diagnosis with learning test scores forty-five of the forty-eight cases were correctly identified when an optimum cut-off point of 30 was used.

The Modified Word Learning Test, based on principles suggested from the vitamin study, appears a valid test of brain-damage at least where the emphasis is on general cortical involvement.

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