

## A Neologism Learning Test

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Shapiro and Nelson (1955) suggested that an important factor in the cognitive impairment of psychiatric patients was a diminution of present learning ability. They devised a new test in which the subject had to learn and retain the meanings of five previously unknown words. Walton and Black (1957) developed this technique in their Modified Word Learning Test (MWLT). In this test, the patient is given the Terman-Merrill Vocabulary until he is unable to recall the meanings of ten consecutive words. He is then told the meanings of these ten words. If, immediately afterwards, he fails to give the definitions of at least six of them, the meanings of all ten words are given again, changing the wording to avoid rote learning.

It is clear from these instructions that the subject has genuinely to learn the meanings of at least six of ten previously unknown words. The test is thus not supposed to be a paired-associate learning task, as in the tests devised by Inglis (1959), Kendrick (1965) and Williams (1967); but is designed to assess whether subjects can form new concepts in the shape of meanings of previously unknown words.

In its present form there are some difficulties with the MWLT. The definitions given to the words in successive lessons are not standardized, so that the quality of the teaching is uncertain. In the case of well-educated subjects, it is difficult to find ten words from standard vocabulary lists which they cannot define. Moreover, the words finally chosen for the subject to learn are not necessarily completely unknown to him. Although he may not be able to define them, he may well have a vague idea of what some of them mean, and may even recognize a Latin or Greek root which may greatly help him to recall the definition later. Names of concrete objects are easier to define than names of abstract concepts, irrespective of whether they are known to the subject. Thus the

word "phrontistery", which means a thinkery or a place to think in, may well be unknown to the subject. But it is easy to define and remember once the meaning has been given. On the other hand the word "fascinate", which may well be familiar to the subject, continues to be difficult to define.

These difficulties may be overcome by having the subject learn the meanings of a specially prepared list of neologisms. The same list can be used for everyone, there is no risk that any will be known to the subject, and the words can be carefully constructed for easy pronounceability, suitable length, and degree of difficulty of meaning.

### METHOD

#### *The test material*

A list of ten neologisms was compiled consisting of four nouns, three adjectives and three verbs. All are easy to pronounce, and each has a meaning comprising two ideas. For example:

*Banty* means irregularly rounded;

*Direnniment* means food left over;

and *Gebinate* means to take things apart carefully.

Five standard definitions were made up for each neologism (see Appendix 1).

The subject is taught the meanings of the neologisms in a series of ten lessons, for each of which the subject has a list of the neologisms in front of him. In order to avoid serial order effects, the words are presented in a standard but different random order for each lesson (see Appendix 2). For the first five lessons the five standard definitions of each word are used in turn. These definitions are then used again for the second five lessons. There are ten presentation sheets with the neologisms printed in the standard order for each of the ten lessons. The appropriate sheet is handed to the subject for each lesson.

*Instructions*

The subject is seated comfortably within easy hearing distance of the psychologist. The psychologist hands him the first Presentation Sheet on which is duplicated the list of neologisms in the correct order for the first lesson. He says:

"Here is a list of words which you will not find in the dictionary because they have all been invented specially for the test. Each word has been given a definite meaning which I am now going to teach you. It is unlikely that you will remember many of them to start with, although later you will begin to learn what some of them mean."

The psychologist then reads out the first standard definition for each neologism. Immediately afterwards the subject is asked to recall the definition of each word in turn, in the same order as they appear on the Presentation Sheet which he still holds. If the subject gives a correct definition, the psychologist says: "Good! That's right!". If the subject gives a partially correct answer, he is told that it is nearly but not quite right, and he is asked to try and improve on it. He is not allowed to guess. If the subject gives a wrong definition, he is told that it is wrong, but he is not told the correct answer.

At the end of the first lesson and the subsequent recall, the subject exchanges the first Presentation Sheet for the second, and he is then taught the second standard definition for each word in the order that it appears on the sheet. At this stage it can be explained to the subject that he is being taught the meanings of the same words, but in a different order, and with the meanings expressed in a different way. This procedure is followed with subsequent Presentation Sheets until the patient correctly recalls a total of six definitions or has had ten lessons, whichever happens first.

*Scoring*

The meaning of the neologism is not regarded as having been learned until both parts of the concept have been recalled at the same time. For example, "Mapple" must be recalled as making a secret sign, not just as making a sign, or doing something secretly. The subject may use any form of words that covers the meaning of the neologism, although these were not used

in the lesson. Thus "joists" would do for "ponticule" or "bacon-rind on the plate" for "dirrenniment", or "hermit-like" for "sackantic". The subject's score is simply the total number of neologisms learned in the ten lessons. If the subject reaches the criterion of six neologisms correctly defined before the ten lessons are completed, he is credited with 10 marks for each lesson not given. In this way subjects who learn quickly are credited for speed of learning (see Table I).

TABLE I  
*Examples of Scoring*

No. of lessons											Total Score
	1	2	3	4	5	6	7	8	9	10	
Case 1	3	5	8*	10	10	10	10	10	10	10	86
Case 2	0	0	1	2	3	5	6*	10	10	10	47
Case 3	0	0	2	2	3	2	4	5	5	5*	28

\* Test terminated at this point.

## RESULTS

The test was given to 20 normal people, 20 psychotics (10 depressed and 10 schizophrenic), 20 neurotics (10 introverted and 10 extraverted) and 20 organic patients (7 localized brain injury, 3 brain tumours, 2 cerebral atrophy, 2 cerebral arteriosclerosis, 1 cerebral haemorrhage, 1 carbon monoxide poisoning, 1 epilepsy, 1 encephalitis, 1 Huntington's chorea and 1 disseminated sclerosis).

Table II gives the mean age and mean Mill Hill Vocabulary score (MHV) of each group, and Table III gives the mean Neologism Learning Test (NLT) score of each group.

TABLE II  
*Mean Ages and Vocabulary Scores*

Group	N	Mean Age	Mean M.H.V. Score
Normal ..	20	30.2	—
Psychotic ..	20	39.7	54.7
Neurotic ..	20	37.3	54.4
Organic ..	20	42.3	47.7

TABLE III  
Mean N.L.T. Scores

Group	N.	Mean	S.D.
Normal .. ..	20	83.3	12.40
Psychotic .. ..	20	60.8	22.36
Neurotic .. ..	20	72.6	23.98
Organic .. ..	20	29.8	6.49

The ranges of the scores in each group are given in Table IV.

TABLE IV  
Range of N.L.T. Scores

Range	Normal	Psychotic	Neurotic	Organic
91-100	5	2	4	
81-90	8	2	5	1
71-80	3	3	5	1
61-70	3	3	3	1
51-60	1	5		
41-50				
31-40		2		4
21-30		2	2	7
11-20		1	1	2
0-10				4
N	20	20	20	20

#### DISCUSSION

It should be noted that the normal group is significantly younger than any of the other groups, and the organic group is significantly older than any other group except the psychotic. However, the correlation between age and NLT score is only  $-0.37$ , so that this may not be important.

The mean pre-morbid intellectual levels of the psychiatric groups, as measured by the Mill Hill Vocabulary (MHV), are not significantly different. We were not able to give our normal group a vocabulary test, but their occupations were: professional 3, skilled 10, semi-skilled 4, unskilled 3. It may be that the normal group was superior intellectually to the psychiatric groups, but the correlation between the MHV and NLT scores is not high ( $+0.42$ ), so once

again this difference between the normal and psychiatric groups, if present, might not be important.

In choosing organic cases, it was stipulated that they should be between 20 and 60 years of age, and showing no signs of psychosis or pre-senile dementia.

The mean NLT score for the organic group is significantly lower than any other group, and the mean score of the psychotic group is significantly lower than the normal group. All other differences are insignificant (Table III).

If we take 50 as the cut-off for brain damage (Table IV), we get 8 out of 60 (or 13 per cent.) misclassifications of non-organic cases. Of these, 5 are psychotic. It could be that poor scores in these cases were due to thought-disorder, since two were schizophrenic; or to ECT since all five patients had had ECT in the past, although not recently.

There were 3 out of 20 (15 per cent.) misclassifications amongst the organic group. This degree of discrimination between organic and non-organic groups is sufficiently good to warrant further study of this technique.

#### SUMMARY

In order to avoid certain problems arising with the use of word learning tests, neologisms were substituted for dictionary words. This proved a useful test for detecting difficulty in the learning of new concepts in the form of the meanings of previously unknown words. This difficulty is associated with brain damage, and may also be associated with thought disorder.

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## APPENDIX I

## 1. BANTY

(Adjective)

- a. Irregularly rounded.
- b. Unevenly curved.
- c. When something has an oddly curved surface.
- d. Curving up and down.
- e. Rounded, but not smoothly so.

## 2. DIRENNIMENT

(Noun)

- a. Left overs from a meal.
- b. What is left over after a meal is finished.
- c. Food left over.
- d. Uneaten remains of a meal.
- e. Uneaten food, left behind.

## 3. FOMINAL

(Adjective)

- a. Capable of seeing a joke at someone else's expense.
- b. Having a twisted sense of humour.
- c. Seeing the funny side of a mishap.
- d. Easily amused at other people's misfortunes.
- e. Humorously inclined when things go wrong.

## 4. GEBINATE

(Verb)

- a. To take things apart carefully.
- b. To dismantle with care.
- c. To take to pieces slowly.
- d. To take a thing down piece by piece.
- e. To undo something bit by bit.

## 5. NEBOY

(Noun)

- a. A wide brimmed hat.
- b. A large shady hat.
- c. A hat with a large brim.
- d. A large hat that shades the face.
- e. A wide hat with a brim.

## 6. MAPPLE

(Verb)

- a. To make a secret sign.
- b. To nod furtively.
- c. To wink so that others do not notice.
- d. To wave secretly.
- e. To nudge gently.

## 7. PONTICULE

(Noun)

- a. Floor support.
- b. What holds up a floor.
- c. Foundations of a floor.
- d. Underparts of a floor.
- e. What a floor rests on.

## 8. SACKANTIC

(Adjective)

- a. Dislikes being with other people.
- b. Prefers to be alone.
- c. Solitary by choice.
- d. Bashful in company.
- e. Likes to be apart from others.

## 9. TUMANDLE

(Verb)

- a. To push something along.
- b. To trundle an object by heaving and shoving.
- c. To manhandle something.
- d. To pull, push or drag an object.
- e. To haul a thing along by brute force.

## 10. VARDISTY

(Noun)

- a. The act of being rude at a distance.
- b. Being distantly insulting.
- c. Being cheeky at a safe distance.
- d. Insults from someone far away.
- e. When someone is being nasty from the other side of the street.

APPENDIX II

STANDARD RANDOM ORDERS FOR TEN LESSONS

1	2	3	4	5
Banty	Direnniment	Gebinate	Sackantic	Neboy
Direnniment	Gebinate	Sackantic	Neboy	Vardisty
Fominal	Mapple	Banty	Direnniment	Gebinate
Gebinate	Sackantic	Neboy	Vardisty	Tumandle
Neboy	Vardisty	Tumandle	Ponticule	Fominal
Mapple	Banty	Direnniment	Gebinate	Sackantic
Ponticule	Fominal	Mapple	Banty	Direnniment
Sackantic	Neboy	Vardisty	Tumandle	Ponticule
Tumandle	Ponticule	Fominal	Mapple	Banty
Vardisty	Tumandle	Ponticule	Fominal	Mapple

  

6	7	8	9	10
Vardisty	Tumandle	Ponticule	Fominal	Mapple
Tumandle	Ponticule	Fominal	Mapple	Banty
Sackantic	Neboy	Vardisty	Tumandle	Ponticule
Ponticule	Fominal	Mapple	Banty	Direnniment
Mapple	Banty	Direnniment	Gebinate	Sackantic
Neboy	Vardisty	Tumandle	Ponticule	Fominal
Gebinate	Sackantic	Neboy	Vardisty	Tumandle
Fominal	Mapple	Banty	Direnniment	Gebinate
Direnniment	Gebinate	Sackantic	Neboy	Vardisty
Banty	Direnniment	Gebinate	Sackantic	Neboy

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