

# Criterion Validity of the Word Memory Test: An Audit of a Sample of Patients Assessed for Clinical not Litigious Reasons

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## Abstract

**Objective :** Data from a group of clinical patients were audited to determine the frequency of WMT failure and the relationship between failure on the WMT and identifiable external incentives that may be thought to encourage symptom manipulation.

**Participants and Methods:** A sample of 132 consecutive adult patients (aged 16-80, mean age 45 years) with available data was retrospectively audited. These patients underwent neuropsychological assessment as part of their clinical health care, not for the purposes of litigation. The patients were referred for assessment by their treating Neurologist or Neuropsychiatrist working within an acute hospital diagnostic service. The WMT was routinely administered to all patients. The frequency of WMT failure, using the published cut-offs, was determined. Identifiable potential external incentive for each patient was determined from a thorough review of the patient's medical records and information derived from the neuropsychological assessment. The association between external incentive (i.e. a crucial component of Slick's (1999) criteria for possible malingering) and WMT performance was determined.

**Results :** Using the three cut-off scores published for the WMT-IR trial (82.5% correct, 85% correct and 87.5% correct) failure rates amongst this sample of patients were 25.8%, 37.1% and 37.1% respectively. Of the sample 9% had an identifiable potential external financial incentive. Using the three cut-off scores for the WMT in this sub-group failure rates were 50%, 58% and 58% respectively. The conjunction of identifiable external incentive and failure on the WMT occurred in approximately 5% of the total sample.

**Conclusions :** The conjunction of failure on the WMT and presence of an identifiable external incentive for symptom manipulation in a health setting was between 5 and 7.4 times less frequent than failure on the WMT alone. It may be, therefore, that there is a considerable risk of diagnostic false positive error regarding the sub-optimal effort interpretation of WMT failure in this setting.

## Introduction

The WMT is a simple two-alternative forced choice recognition memory test. There is a growing body of evidence suggesting that it is a valid measure of the psychological construct effort, as opposed to memory (Green, 2005). The effort-interpretation of performance on the WMT has been supported by a number of independent data sets reporting the failure and pass rates of various groups of patients (Green and Allen, 1999; Green et al. 2001; Gervais et al. 2004) and simulators (Tan et al. 2002; Green et al. 2002) under a variety of conditions (Flaro et al. 2007) which are thought likely to impact upon the amount of effort put in to the completion of tasks as well as the likely frequency of malingering. These studies generally support the contention that a good deal of variance is shared between performance on the WMT and performance on other tests of cognitive function and that failure on the WMT amongst persons expected to be putting forth maximum effort is rare.

A central component of the validity data required to support the effort-only interpretation of performance on the WMT is the demonstrable insensitivity of this task to brain damage and/or psychological disturbance/psychiatric illness in real clinic patients, as opposed to simulators. Logically if the test were shown to be affected by these factors, in this group, it would be difficult to assert that effort was the *only* potential reason for poor WMT performance.

In the test manual Green (2005) asserts that there are very few false-positive cases of WMT failure (severe dementia) and when present they "should be obvious to the clinician". To date the majority of the data available regarding WMT performance of non-litigating adult clinical cases is available from the test authors' manual and suggests that WMT performance is insensitive to brain damage and/or psychological disturbance/psychiatric illness (Green, 2005).

## Method & Results

A clinical sample of 132 patients was retrospectively analysed. These patients were all assessed for clinical purposes at Frenchay Hospital, a regional neurosciences centre. These patients were referred to two Clinical Neuropsychologists (Bunnage and Newson) from both neurology and neuropsychiatry medical consultants. Approximately two thirds of the patients were referred from neurology consultants and one third from neuropsychiatry consultants. The WMT was administered to all patients referred irrespective of the reason for the referral. WMT immediate recognition trial (WMT-IR) was performed on all patients. Later trials within the test were sometimes performed, usually when patients failed the first trial. The frequency of passing or failing the WMT-IR trial (fail = score below 82.5% correct for the data analysis that follows; failure rates at the higher thresholds were also calculated, see Abstract) was calculated for the group as a whole and for group when divided by referral source, i.e. neurology versus neuropsychiatry. The rates of failure are reported in Table 1 below.

Table 1. Frequency of failing the WMT-IR trial (Score < 82.5% correct) by group.

Group	% Failing WMT-IR
Complete Sample	25.8
Referred from Neurology	23.8
Referred from Neuropsychiatry	29.2

The medical record and neuropsychology record of each patient within the sample was reviewed for evidence pertaining to a possible external incentive for malingering (a necessary first step in meeting Slick's (1999) criteria for possible malingering). A liberal approach was taken whereby anything that could reasonably be considered an incentive was included, irrespective of whether or not it had been highlighted in the case history as being important in relation to the patient's presentation. Examples would include prolonged work absence, being in receipt of social security payments for disability, or legal proceedings such as criminal injuries compensation. All incentives identified were found to be in some way financial. The frequency of potential incentive identified in the groups is reported in in Table 2.

Table 2. Frequency of identified potential external incentive for possible malingering by group.

Group	% Potential Incentive
Complete Sample	9
Referred from Neurology	11
Referred from Neuropsychiatry	6

Cross-tabulating the presence or absence of an external incentive and the passing or failing of the WMT-IR indicates:

Amongst those with an identifiable external incentive there is an equal number of people passing or failing the WMT-IR. Amongst those without an external incentive there is ~ 3 times as many people passing the WMT-IR as failing it, see Table 3 below.

Amongst those passing the WMT-IR trial 6% had an identifiable external incentive. Amongst those failing the WMT-IR trial 18% had an identifiable external incentive. These proportions were significantly different ( $p=0.04$ ), i.e. an external incentive was less likely to be identified amongst those passing the WMT-IR.

Table 3. Cross-tabulation of WMT-IR performance and the presence or absence of an identifiable external incentive.

	External Incentive Absent	External Incentive Present	Total
WMT Pass	92	6	98
WMT Fail	28	6	34
Total	120	12	132

## Conclusion

The results of the present study indicate an appreciable failure rate on the WMT-IR trial (~26%-37%) amongst a large group of non-litigating adult clinic cases.

Fifty percent of those with an identifiable potential external incentive for possible malingering fail the WMT-IR. Twenty three percent of those *without* an external incentive also fail the WMT-IR.

Six percent of those passing WMT-IR had an identifiable external incentive. Eighteen percent of those failing the WMT-IR had an identifiable external incentive.

These results indicate a less than perfect correspondence between passing or failing the WMT-IR trial and potentially meeting, or not meeting, the Slick (1999) criteria for possible malingering.

It remains to be determined, to some extent at least, whether WMT-IR performance is affected by variables other than effort/malingering in groups of non-litigating patients.

It could also be argued, assuming validity of the WMT-IR as a measure of effort (see Bowden et al. 2006, however for a critique), that many patients in routine clinical practice are not applying optimal effort during neuropsychological assessment. Perhaps there is a significant under-appreciation of the myriad of possible secondary gain factors that are present in routine clinical practice which could be motivating such behaviour. Similarly the extent to which patients find their neuropsychological assessment uninteresting and not at all motivating, and/or anxiety provoking, may also be significantly under-appreciated; despite presumptions about the successfulness of rapport building in encouraging and maintaining appropriate engagement. It may be that the 'value' of a neuropsychological assessment is just too intangible for some patients to fully appreciate. Patients may, for example, appear and say they are engaged and motivated in the assessment process more for reasons social desirability (Phillips and Clancy, 1972).

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