Validation of the abbreviated mental test (Hong Kong version)

To the editor—We refer to the interesting article published in the HKMJ (1995;1:207-11) titled "Validation of the abbreviated mental test (Hong Kong version) in the elderly medical patient." We congratulate the authors' efforts to validate a test that has been used for so long without any validation.

One drawback to this study, however, is that there is no mention of the way in which the AMT was administered and scored. This is particularly important for a mental test because changes in administration will change the nature and the cognitive requirement of the task and consequently, the result; the same applies to scoring. A few items in the test have problems in either their scoring or administration. For example, how do you score when the patient recalls only part of the address (42 Shanghai Street), and do you clue the patient if they fail a free recall? Another example is counting backwards from 20: do you lead the patient if they are unable to start counting backwards and how many times do you lead them, how do you score if only a partial answer is given to item 5 (name the place)? These are only a few examples of problems we have encountered in using the AMT. To validate the test, we must first standardise the way it is administered and scored—the authors failed to mention this very important aspect.

Although the DMS III-R provides the operational criteria for the diagnosis of dementia and delirium, it does not mention how these criteria are tested or explain how to diagnose a "disturbance in executive function." Some of these functions are quite difficult to distinguish from other impaired cognitive functions and some are quite subtle.

The result of the study is a bit surprising: there are two items that yield either 100% sensitivity (item 9: name of the present Governor or Chinese leader) or 100% specificity (item 5: name the place). In mental testing (basically a structured neuropsychological examination), it is difficult to find a task that has such a degree of sensitivity or specificity. In our experience, a cognitively intact elderly person may score poorly on item number 5 because they do not know the place or for reasons such as blindness, ignorance, unfamiliarity with the place, etc. Hence, inability to name the place is not necessarily an indication of cognitive impairment (i.e. not 100% specific).

In conclusion, we may need further work on the AMT before we can use the test in a scientific way.

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In reply—We thank Dr CB Law and Dr MH Chan for their interest and personal views on our paper.[1] We do not agree with some of their comments and would like to respond as follows:

Administration and scoring of the AMT

The questions were asked in Cantonese and the raters asked the questions in a uniform fashion. For item number 10 (count from 20 to 1 backwards), we routinely elaborated the question by giving cues from 20 to 18 (i.e. 20, 19, 18). No cue was offered for other items. For scoring, a correct answer yielded a score of one and an incorrect answer yielded score of zero.

Reliability of the AMT score

To assess the variability of the AMT, test-retest and inter-rater reliabilities of the AMT score were evaluated in two other separate samples of geriatric patients in Queen Mary Hospital.

i) Test-retest reliability (n = 26). The AMT was administered twice to the same patient on the same day (at least 3 hours apart) by the same rater. The correlation coefficient between the two AMT scores was 0.98 (P = 0.01, 1-tailed).

ii) Inter-rater reliability (n = 31). The AMT was administered twice to the same patient on the same day (within 8 hours, between 9 a.m. to 5 p.m.) by two raters. The correlation coefficient (r) between the two AMT scores was 0.98 (P = 0.01, 1-tailed).

Clinical diagnoses of normal and abnormal cognitive functions (e.g. delirium and dementia) by DMS-III-R criteria

The DMS-III-R criteria are well-accepted diagnostic criteria and have been used in previously published studies as diagnostic criteria for dementia and delirium.[2-7]

Clinical diagnoses are based on a global clinical assessment, which requires a complete history, physical examination—including mental state examination and neurological examination—a complete blood profile, assessment of electrolytes and glucose levels, renal and liver function tests, and performance of a chest X-ray and ECG. Other blood or radiological investigations (e.g. CT scan) are performed when clinically indicated. The DSM-III-R criteria were followed in making the diagnoses.

For the comment "disturbance in executive function", this is not written in the DSM-III-R criteria for either delirium or dementia. We do not think that this is directly relevant.

Sensitivity and specificity of the items

We did discuss the variation in sensitivity and specificity of the individual question items in our paper. In a published UK study and an Italian study on the validation of the UK and Italian versions of the respective AMTs, similar variations were also noted.[3,4] In the Italian study reported by Rocca et al, the item "5-minute address recall" had 100% sensitivity and 38.5% specificity and the "Name of the present president" also had 100% sensitivity and 39.4% specificity. In our study, item 9 ("Name of the present Governor") yielded a comparable 100% sensitivity and 36% specificity.

Limitations of the AMT

The AMT is meant to be a screening test for cognitive dysfunction and not a diagnostic test. Thus, it should not be compared directly with mental testing "by a structured neuropsychological examination."

The main limitation of the AMT is test failure. We have already commented that 13% of our study group could not complete the test. The reasons included language barrier, deafness, dysphasia/aphasia and poor co-operation. Other possible reasons (although not present in our study sample) would include blindness. Test failure due to these reasons should be excluded from the analysis. If these subjects were not excluded, the specificity of the item would be lowered.

As discussed previously in our paper, a future study may investigate the effect on this test of educational level.

Considering the results of our study as well as the UK and Italian studies, we conclude that our study result is scientifically valid. The AMT (including the Hong Kong version) is a valid cognitive function screening test in the elderly population. The cut-off scores do differ, however, in different cultures or countries.

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