Rivermead Behavioural Memory Test - Third Edition (RBMT-3)

Overview

The *Rivermead Behavioural Memory Test – Third Edition (RBMT-3)* is the latest edition of the popular memory test developed by Barbara Wilson and colleagues. This test has continued the tradition of ecologically valid assessment and provides an updated version of the test which includes more contemporary materials, more difficult items than the *RBMT-II*, a new subtest and new normative data and scoring studies.

Features

- Ecologically valid tool which gives information about everyday memory problems
- 2 versions of tool allowing retesting
- New subtest 'Novel Task' which assesses new learning
- New easel-bound Stimulus Book which contains instructions for ease of administration
- Rehabilitation chapter to help you think about possible interventions with your client
- Improved Record Form with a Subtest Scaled Score Profile to help you understand a person's strengths and weaknesses
- New scoring examples included for subtests to aid scoring
- Normative data on a demographically representative sample of the UK matched by Age and Education
- Scoring studies mean that subtest raw scores can be converted to scaled scores with a mean of 10 and a standard deviation of 3. An overall General Memory Index can also be derived which has a mean of 100 and standard deviation of 15
- New tests of reliability and validity demonstrate the utility of the tool

Description of the test

The *RBMT-3* includes 14 subtests assessing aspects of visual, verbal, recall, recognition, immediate and delayed everyday memory. Additionally prospective memory skills and the ability to learn new information are measured. It takes approximately 30 minutes to complete and retesting can be completed with Version 2 of the tool.

Please see overleaf for descriptions of the subtests

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Subtest	Task
First and Second Names - Delayed Recall	The examinee is shown two photographic portraits and asked to remember the first and second names of both people in the photographs at a later point.
Belongings - Delayed Recall	Two possessions belonging to the examinee are borrowed and hidden. The examinee is required to remember where these have been hidden at a later point.
Appointments - Delayed Recall	An alarm is set. The examinee is required to ask some specified questions when the alarm sounds.
Story - Immediate Recall	A story is read to the examinee and they have to recall it immediately
Story - Delayed Recall	The examinee is asked to recall the story that they heard earlier.
Picture Recognition - Delayed Recall	The examinee is shown a set of pictures and then is asked to recognise them from a further set of pictures at a later time in the testing session
Face Recognition - Delayed Recall	The examinee is shown a set of faces and then is asked to recognise them from a further set of faces at a later time in the testing session
Route - Immediate Recall	The examiner shows the examinee a route to walk around the room and then asks the examinee to demonstrate it
Route - Delayed Recall	The examinee is asked to demonstrate the route the examiner took around the room earlier, this time without it being demonstrated to them
Messages - Immediate Recall	The examinee is required to take a message and book with them when they demonstrate the route and put them in the same place that the examiner did
Messages - Delayed Recall	The examinee is required to take a message and book with them when they demonstrate the route again and put them in the same place that the examiner did
Orientation	The examinee responds to a number of questions relating to person, time and place
Novel Task - Immediate Recall	The examinee uses different coloured pieces to make a shape as demonstrated by the examiner
Novel Task - Delayed Recall	The examinee uses different coloured pieces to make the same shape at a later time in the testing session, this time without demonstration from the examiner

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Case Study

Mrs B: a woman with particular difficulties in visual memory functioning

Mrs B was a 60-year-old woman who suffered a right-hemisphere stroke 18 months prior to the assessment. She had been working as a librarian at the time. At the time of the assessment she reported ongoing problems with memory. On Version 1 of the *RBMT-3* she showed mild problems with several of the *RBMT-3* subtests, but her scores on the Picture Recognition - Delayed Recognition subtest, Face Recognition - Delayed Recognition subtest, Route subtests (Immediate and Delayed Recall), and the Novel Task subtests (Immediate and Delayed Recall) were particularly low. On the Route - Immediate Recall, she only managed to score 2 points and remembered nothing after a delay. She failed to score on the Face Recognition - Delayed Recognition, saying that she had not seen any of the faces before. She was unable to learn the Novel Task (see Figure 1).

On a number of verbal and prospective tasks (Story - Immediate and Delayed Recall; Names - Delayed Recall; Belongings - Delayed Recall; Appointments - Delayed Recall), Mrs B's scores were in the low average range (see Figure 1). Her General Memory Index was below the 2nd percentile.

Summary of Scores

Subtest	Raw Score	Scaled Score (SS)
First and Second Names – Delayed Recall (N)	3	7
Belongings – Delayed Recall (B)	4	6
Appointments – Delayed Recall (A)	1	6
Picture Recognition – Delayed Recognition (PR)	9	2
Story – Immediate Recall (SI)	5	7
Story – Delayed Recall (SD)	4	7
Face Recognition – Delayed Recognition (FR)	0	1
Route – Immediate Recall (RI)	2	1
Route – Delayed Recall (RD)	0	1
Messages – Immediate Recall (MI)	1	2
Messages – Delayed Recall (MD)	0	1
Orientation and Date (O)	11	5
Novel Task – Immediate Recall (NI)	6	2
Novel Task – Delayed Recall (ND)	2	1
Sum of Scaled Scores		49

Index Score	
Sum of Scaled Scores	49
General Memory Index	55
Percentile Rank	0.1
Confidence Interval	44-65
95% ✓ 90%	

Figure 1.1

Given her relative strengths on the verbal subtests, rehabilitation focused on utilizing these strengths, i.e. visual tasks were turned into verbal tasks as far as possible. Compensatory strategies also emphasized verbal rather than visual skills. For learning new tasks errorless learning and spaced retrieval were used. Mrs B's poor visual memory was probably comprised of perceptual difficulties and a degree of unilateral neglect. Strategies for reducing neglect and improving perceptual functioning should be used in conjunction with the memory rehabilitation strategies.

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Technical Information

Sample Characteristics

The core standardisation sample consisted of 333 people (172 females, 161 males) ranging in age from 16 to 89, with a mean age of 44.3 years (SD = 18.17). The extent to which the standardisation sample matched the general adult population was examined using data from the UK 2001 census. Chi-square goodness-of-fit tests revealed that the actual sample distribution of age, education, gender and ethnicity did not differ significantly from the expected census figures.

In addition to the core standardisation sample, a mixed clinical sample of participants with cerebral pathology was recruited (n=75). All clinical participants completed both versions of the *RBMT-3*. In order to examine possible score differences on the *RBMT-3* for different types of clinical disorder, this sample contained participants from each of the following clinical categories:

- Traumatic Brain Injury
- Stroke
- Encephalitis
- Progressive conditions such as Alzheimer's Disease

Generating norms for the RBMT-3

Raw scores on the 14 *RBMT-3* subtests are converted subtest scaled scores with a mean of 10 and a standard deviation of 3. Percentile ranks for scaled scores are also provided. Subtests take into account an individual's age and data is reported for the following age bands: 16-24 years of age; 25-34 years of age; 35-44 years of age; 45-54 years of age; 55-64 years of age; 65-74 years of age; 75-89 years of age.

In addition to providing scaled scores for the *RBMT-3* subtests, a General Memory Index (GMI), representing overall memory performance, was also created. This index is standardised to have a mean of 100 and a standard deviation of 15. GMI scores are calculated by summing the scaled scores on the *RBMT-3* subtests and then converting this sum to a GMI using the appropriate conversion table. These conversion tables also report the confidence intervals and percentile ranks for each GMI.

Alternate form reliability for each subtest was measured for Version 1 and Version 2 of the sample with the normative and clinical sample combined. Reliability coefficients ranged from 0.57 to 0.86. The reliability coefficient of the GMI was 0.87 for both Versions 1 and 2.

With the exception of the Messages Delayed subtest the inter-scorer reliability for the *RBMT-3* subtests were 0.9 or higher, indicating a high level of agreement between scorers. The lower level of agreement on the Messages Delayed subtest was attributable to only two of the 18 pairs who completed the inter-scorer study and is thought to be due to two examinees whose results were particularly difficult to score on this subtest.

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Technical Information Continued...

The *RBMT-3* demonstrated good construct and ecological validity (as supported by performance against the Prospective and Retrospective Memory Questionnaire; Smith et al., 2000). In assessing the clinical validity of the tool the results provided strong evidence of the sensitivity of the *RBMT-3* to memory problems.

References

Cockburn, J.M. (1996). Behavioural assessment of memory in normal old age. European Psychiatry, Volume 11, Supplement 4, Page 205s

Efklides, A., Yiultsi, E., Kangellidou, T., Kounti, F., Dina, F., & Tsolaki, M. (2002). Wechsler Memory Scale, Rivermead Behavioral Memory Test, and Everyday Memory Questionnaire in Healthy Adults and Alzheimer Patients. European Journal of Psychological Assessment, Volume 18, Issue 1, Pages 63-77

Elixhauser, A., Leidy, N.K., Meador, K., Means, E., & Willian, M.K. (1999). The relationship between memory performance, perceived cognitive function, and mood in patients with epilepsy. Epilepsy Research, Volume 37, Issue 1, Pages 13-24

Jambaqué, I., Dellatolas, G., Fohlen, M, Bulteau, C., Watier, L., Dorfmuller, G., Chiron C., & Delalande,. O (2007). Memory functions following surgery for temporal lobe epilepsy in children. Neuropsychologia, Volume 45, Issue 12, Pages 2850-2862

Koso, M., & Hansen, S. (2006). Executive function and memory in posttraumatic stress disorder: a study of Bosnian war veterans. European Psychiatry, Volume 21, Issue 3, Pages 167-173

O'Reilly, S.M., Grubb, N.R., & O'Carroll, R.E. (2003). In-hospital cardiac arrest leads to chronic memory impairment. Resuscitation, Volume 58, Issue 1, Pages 73-79

Smith, G. V., Della Sala, S., Logie, R. H., & Maylor, E. A. M. (2000). Prospective and retrospective memory in normal ageing and dementia: A questionnaire study. Memory, 8, 311-321.

Waber, D.P., Pomeroy, S.L., Chiverton, A.M., Kieran, M.W., Scott, R.M., Goumnerova, L.C., & Rivkin, M.J. (2006). Everyday Cognitive Function After Craniopharyngioma in Childhood. Pediatric Neurology, Volume 34, Issue 1, Pages 13-19

Yassuda, M.S., Cid, C.G., Flaks, M.K., Regina, A.C.B., Pereira, F., Viola, L., Camargo., C. H & Forlenza., O.V. (2006). P3-050: Preliminary analyses of the psychometric characteristics of the Rivermead Behavioural Memory Test (RBMT) as an early detection instrument for AD in Brazil. Alzheimer's and Dementia, Volume 2, Issue 3, Supplement 1, Page S387

Listed are a sample of references that cite RBMT-3. We take no responsibility for the content therein.

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Meet the author - Barbara Wilson

Where did you study/what did you study/what are your qualifications?
My bachelor's degree in psychology was awarded by Reading University. I went to university at the age of 30 as a mature student, married and with three school aged children. From Reading I went to the Institute of Psychiatry in London to complete my M.Phil.training in clinical psychology. I also registered for a PH.D at the Institute of Psychiatry and completed this while working full time as a clinical psychologist (it took me six years).

Professional experience?
I have worked in brain injury rehabilitation for over 32 years. I have won several awards for my work, including an OBE for services to medical rehabilitation in 1998 and two lifetime achievement awards: one from the British Psychological Society and one from the International Neuropsychological Society.

In 2011 I will receive the Ramon Y Cahal award from the International Neuropsychiatric Association. I have published 18 books, over 270 journal articles and chapters and 8 neuropsychological tests. I am editor-in-chief of the journal "Neuropsychological Rehabilitation", which I established in 1991. In 1996 I founded the Oliver Zangwill Centre| for Neuropsychological Rehabilitation.

This is a centre for people with non–progressive brain injury. It aims to provide high quality rehabilitation for the individual cognitive, social, emotional and physical needs of people with acquired brain injury. It was named after Oliver Zangwill, the founder of British neuropsychology who carried out important work with brain injured soldiers during World War II. A rehabilitation centre in Quito, Ecuador is named after me. It was opened by Drs Martha De La Torre and Guido Enriquez Bravo. It is called CENTRO DE REHABILITACION NEUROLOGICO INTEGRAL CERENI "BARBARA A. WILSON". This centre accepts people with non-progressive brain injury and is staffed by neuropsychologists, physiotherapists, occupational therapists and speech and language therapists.

I am currently president of the Encephalitis Society, Vice president of the Academy for Multidisciplinary Neurotrauma and on the management committee of The World Federation of Neuro Rehabilitation. The Division of Neuropsychology has named a prize after me, the Barbara A Wilson prize for distinguished contributions to neuropsychology. I am a Fellow of The British Psychological Society, The Academy of Medical Sciences and The Academy of Social Sciences.

What are your current projects?
In September 2007 I officially retired. However, I still spend about three days a month at the Oliver Zangwill Centre and another three days a month at The Raphael Medical Centre in Kent. At these two centres I perform a mixture of clinical work, staff training and advising on research projects. I also travel overseas at least once a month to give lectures and workshops on neuropsychological rehabilitation. I am currently writing my memoirs for my grandchildren.

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Meet the author - Barbara Wilson

Who have you worked with?
When I first qualified as a clinical psychologist I worked with children with severe learning difficulties and three excellent psychologists: Janet Carr, Glynis Murphy and Pat Howlin. In 1979 I moved to Rivermead Rehabilitation Centre in Oxford and began my career in brain injury rehabilitation. Soon after this I started working with Alan Baddeley and continued this collaboration for a number of years. I have also worked with Narinder Kapur, Karalyn Patterson and Jonathan Evans. Jonathan was a trainee of mine who came to work with me after training and we worked together for 14 years. Other students and trainees whom I am proud to have known are Nick Alderman, Jane Powell and Linda Clare.

What inspired you to get into this field?
During my clinical training, I was taught neuropsychology by Tony Buffery. I also spent four months completing a clinical placement with him. He was a good teacher and a very funny man (he had once been in the "Cambridge Footlights"). He made neuropsychology fascinating.

I knew I wanted to work in this field but there were no jobs available within commuting distance when I qualified so, instead, I worked in what was then called "mental handicap". Two years later, the post in neuropsychological rehabilitation came up in Oxford. I moved there in 1979 and knew from my first day that this was the work I wanted to do for the rest of my career.

If you weren't a clinical neuropsychologist, what would you be?
For many years I wanted to be a midwife. I think that delivering babies must be a very rewarding job. My pipe dream is to have been musically talented and be a world class cellist.

What do you do away from work? Hobbies? Favourite bands/sports teams/holiday destinations?
My family is important. My eldest daughter, Sarah, died in a white water accident in Peru in May 2000. I have a surviving daughter, Anna, and a son Matthew. I also have four grandchildren. I am involved with The Compassionate Friends, a support group for bereaved parents and siblings.

I travel frequently both for work and for pleasure. I have visited 89 independent countries so far and want to get to 100 before I die. I like challenges. In 2008 I completed the London Marathon and in 2010 my husband and I completed a charity trek in the Transylvanian Alps. I go to the gym and the swimming pool nearly every day.

What's your favourite album, and why?
"Times they are a changin'" by Bob Dylan. This was Dylan's third album. His first came out the year Mick and I were married. This album reminds me of the early years of our marriage, our hippy days, the birth of our first two babies and the optimism we felt about being able to change the world.

Barbara founded the Oliver Zangwill Centre in 1996 and is Visiting Scientist at the MRC Cognition and Brain Sciences Unit|.