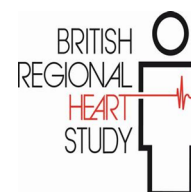


Cognitive assessment

Test Your Memory (TYM)



BRHS 40 year follow-up (Q40)

2018-2019

At the 40 year BRHS follow-up examination participants' cognitive skills were assessed using the Test Your Memory questionnaire (TYM) developed by Brown et al¹ (**Appendix 1**). The TYM questionnaire is a 10-task self-assessment test that covers a broad range of cognitive domains including orientation, copying, semantic knowledge, calculation, fluency, similarities, naming, visuospatial abilities, anterograde memory and executive functioning².

1. Testing

The TYM questionnaire was completed by the BRHS participants while waiting for their physical examination. The TYM's testing instructions (**Appendix 2**) were followed.

2. Scoring

Scoring of the test was done using the TYM's scoring instructions (**Appendix 3**). The last item is scored according to whether the TYM was completed with help from others or not (major = 1 to none = 5). Because the BRHS participants completed the TYM in a controlled setting without assistance, the maximum score of 5 was given to all participants for this item. Total TYM scores range between 0 and 50 with higher scores indicating superior cognitive performance. Upon calculating the total TYM scores, participants were divided into three categories: a normal cognitive ageing group, a group with MCI and one with SCI. Cut-offs for the respective categories were based on the original TYM scores^{1,3}. Specifically, scores below 33 were considered consistent with Severe Cognitive impairment(SCI), while scores between 33 and 45 (if older than 80 years of age) or 46 (if younger than 80 years of age) were considered to be indicative of Mild Cognitive Impairment(MCI)².

Cognitive performance group	TYM Score range
0 = Severe Cognitive Impairments (SCI)	Total TYM score below 33
1 = Mild Cognitive Impairments (MCI)	Total TYM score between 33 and 45 (if 80+ years of age) or 33 and 46 (if younger than 80 years of age)
2 = Normal Cognitive Ageing	Total TYM score above 45 (if 80+ years of age) or 46 (if younger than 80 years of age)

1. Brown J, Pengas G, Dawson K, et al. 2009. Self-administered cognitive screening test (TYM) for detection of Alzheimer's disease: cross sectional study. *BMJ* 338: b2030

2. Papachristou E, Ramsay SE, Papacosta O, Lennon LT, Iliffe S, Whincup PH, et al. The Test Your Memory cognitive screening tool: sociodemographic and cardiometabolic risk correlates in a population-based study of older British men. *International journal of geriatric psychiatry*. 2015. Epub 2015/10/23.

3. Royal College of Psychiatrists (Rpsych). 2013. Interpreting the TYM [Online]. (**Appendix 4**)
Available :http://www.rcpsych.ac.uk/pdf/TYM_Interpreting.pdf Accessed 26 July 2015; <http://www.tymtest.com/>

Cognitive assessment: Test Your Memory (TYM) - BRHS 40 year follow-up (Q40) 2018-19

TYM Questionnaire variables			Data access
Variable description	BRHS VARIABLE NAME	Category labels/units	
Question		Possible score	
Please write your full name	Q40TYM_score1_Full_name	0-2	yes
Today is DAY	Q40TYM_score2_Today_Day	0-1	yes
Today's date is the ...	Q40TYM_score3_Today_Date	0-3	yes
How old are you ... years	Q40TYM_score4_How_old	0-1	yes
On what date where you born	Q40TYM_score5_Date_born	0-3	yes
Please copy the following sentence	Q40TYM_score6_Copy_sentence	0-2	yes
Who is the Prime Minister (PM)	Q40TYM_score7_PM	0-2	yes
In what year the World War I start?	Q40TYM_score8_WWI	0-1	yes
Sums - score for correct calculations	Q40TYM_score9_Sums	0-4	yes
List four Creatures beginning with S	Q40TYM_score10_Creatures_S	0-4	yes
Why is a carrot like a potato	Q40TYM_score11_Carrot	0-2	yes
Why is a lion like a wolf	Q40TYM_score12_Lion	0-2	yes
Please Name these items on drawing	Q40TYM_score13_Name_items	0-5	yes
Join circles together to form a letter	Q40TYM_score14_Join_circles	0-3	yes
Draw a clock face	Q40TYM_score15_Clock	0-4	yes
Write down sentence copied earlier	Q40TYM_score16_Rewrite_sentence	0-6	yes
Derived variables:			
Total TYM Score	Q40total_tym_score	0-50	yes
TYM score categories	Q40tym_score_3categ	0=Severe Cognitive Impairments (SCI) 1=Mild Cognitive Impairments (MCI) 2=Normal Cognitive Ageing	yes

NOTE: 665 BRHS participants completed the TYM questionnaire. 667 BRHS had a physical examination.

TEST YOUR MEMORY

The TYM Test

PLEASE WRITE YOUR FULL NAME.....

TODAY ISDAY

TODAY'S DATE IS THE : OF(MONTH) 20.....

HOW OLD ARE YOU?YEARS

ON WHAT DATE WERE YOU BORN? /(MONTH) 19.....

10

PLEASE COPY THE FOLLOWING SENTENCE:

GOOD CITIZENS ALWAYS WEAR STOUT SHOES

.....

PLEASE READ THE SENTENCE AGAIN AND TRY TO REMEMBER IT

2

WHO IS THE PRIME MINISTER ?

IN WHAT YEAR DID THE 1ST WORLD WAR START?.....

3

SUMS

$$20 - 4 = \dots\dots\dots$$

$$16 + 17 = \dots\dots\dots$$

$$8 \times 6 = \dots\dots\dots$$

$$4 + 15 - 17 = \dots\dots\dots$$

4

**PLEASE LIST FOUR
CREATURES
BEGINNING WITH "S"**

e.g. Shark

1 S.....

2 S.....

3 S.....

4 S.....

4

WHY IS A CARROT LIKE A POTATO?.....

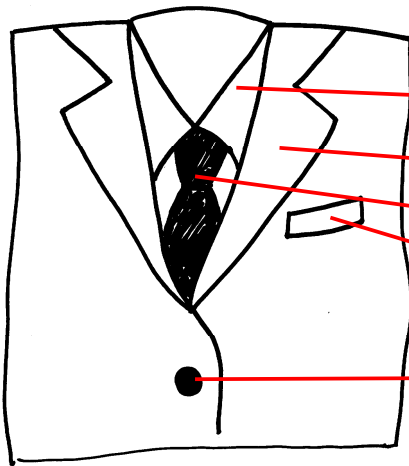
WHY IS A LION LIKE A WOLF?

4

REMEMBER: GOOD CITIZENS ALWAYS WEAR STOUT SHOES

Please Turn Over

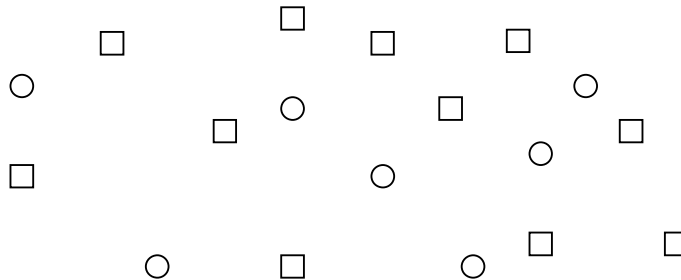
PLEASE NAME THESE ITEMS



1.....
2.....
3.....
4.....
5.....

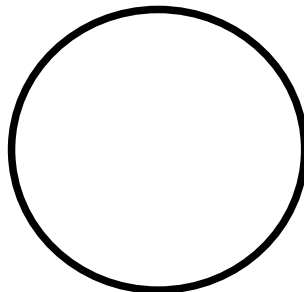
5

PLEASE JOIN THE CIRCLES TOGETHER TO FORM A LETTER (IGNORE THE SQUARES)



3

PLEASE DRAW IN A CLOCK FACE, PUT IN THE NUMBERS 1 – 12 AND PLACE THE HANDS AT 9.20



4

WITHOUT TURNING BACK THE PAGE, PLEASE WRITE DOWN THE SENTENCE YOU COPIED EARLIER :

.....

6

.....
FOR THE TYM TESTER:

HELP GIVEN: NONE/TRIVIAL/MINOR/MODERATE/MAJOR

TICK BOX IF ANSWERS WRITTEN FOR PATIENT ☐

5

TYM TESTING

Please sit the patient down somewhere quiet and comfortable with a good pen. Please help them *if necessary* with everything but the answers! There is no time limit but encourage them to keep going and not become stuck on one question. They should not go back to questions twice or turn back the TYM test once they have turned it over. Please make sure that they cannot check the date or time eg with a watch.

Please give them test and the introduction.

Please do not allow relatives to sit too close and help.

If the patient is unable to do the Tym test because of physical problems eg unable to write due to a stroke, then please write the answers for them. Please tick the box at the bottom of page 2

If the person has memory or other similar problems and it is clearly a struggle then please write the answers for them.

Please watch the person and check the answers and if they have misunderstood a question or omitted a section then please point this out to them. So missing out box 2 remind them or filling in box 5 with 4 non animal words such as star, sugar then gently correct them. You will need to deduct a point at the end for such reminders.

At the end please record how much help the person needed:

No help: the person completed the test in the right order with no help

Trivial help: the person needed a single reminder

Minor help: the person needed two or more reminders

Moderate help: the person could only do the test if you led them through the Tym test

Major help: you need to do nearly everything for the person to attempt the Tym test

TYM SCORING

Spelling/ abbreviations/punctuation are unimportant if the words make sense (with the exception of box 2). Minimum score on a question is 0

Box 1 2 points for full name, 1 for initials/other minor error

1 point for each space correctly filled in the remainder of the box. If the date is wrong by a day it still scores a point.

Box 2 2 points all correct, 1 point - mistake in 1 word, 0 - mistakes in 2.

Box 3 1 point for first name 1 for surname. 1914 scores 1 point, total 3

Box 4 1 point for each correct sum

Box 5 Any creature is fine bug, fish, bird or mammal. Breeds of dog/cat eg spaniel are fine. Mythical creatures (eg sea monster) and shark not allowed.

Box 6 2 marks for precise word such as “vegetable” or “animal/mammal/hunter/meat eater/pack animal”. Reasonable but less precise answer such as food, four legs or fierce scores 1 point. 2 such statements score 2 eg “grows in ground”, “fierce and four legs” = 2

Jacket naming Answers are collar/lapel/tie/pocket/button, 1 each. Shirt is acceptable for answer 1 and jacker/blazer acceptable once for 2 or 4.

Letter W if traced with no mistakes 3 points, another letter formed 2 points, if all circles are joined 1 point

Clockface all numbers 1, correct number position 1, correct hands 1 each

Sentence Score 1 point for each word remembered up to maximum 6

Please add the score for the amount of help the patient needed:

The definitions of trivial etc are in the Tym testing sheet

None	Score + 5
Trivial	Score + 4
Minor	Score + 3
Moderate	Score + 2
Major	Score + 1

A more detailed scoring sheet is available at www.tymtest.com

INTERPRETING THE TYM

WHAT IS A NORMAL TYM SCORE?

From age 18 years to age 70 years the normal score is 47/50

From age 70 years to age 80 years the normal score is 46/50

Over the age of 80 years the normal score is 45/50

HOW WELL DO PATIENTS WITH MILD ALZHEIMER'S DISEASE (AD) OR MILD COGNITIVE IMPAIRMENT (MCI) DO THE TYM?

The average score for patients with mild AD 33/50

The average score for patients with moderate AD on the TYM is 25/50

Patients with mild cognitive impairment (MCI) – organic memory problems which may or may not progress to Alzheimer's disease may score much better. An average score for the best MCIs is 45/50 with particular problems with recall of the learnt sentence

HOW DO I INTERPRET A SCORE BETWEEN 37 AND 47?

The TYM test is part of the assessment of a patient with memory problems and the TYM score alone cannot be used as a substitute for a clinical opinion but 93% of patients with AD score 42 or less.

CAN YOU USE THE TYM AS A SCREENING TEST?

Yes with some caution. A person in whom you have a low suspicion of organic memory problems who scores well on the TYM is highly unlikely to have AD.

CAN I USE THE TYM AS A DIAGNOSTIC TEST?

No a low TYM score is a sign that a patient needs further assessment but is not a diagnostic test for AD