

# **A STANDARDIZED EVIDENCE-BASED APPROACH FOR ASSESSING COGNITION IN OLDER PERSONS**

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# INTRODUCTION

## **A Standardized Evidence-Based Approach for Assessing Cognition in Older Persons**

Two years ago, the Cognitive Assessment Tools' (CAT) Group, comprised of a variety of disciplines and organizations from the Central South region of Ontario, met to address concerns that *there was no standardized approach for assessing the cognitive status of older clients*. The Group identified inconsistencies in the types of cognitive assessments performed both within organizations and between organizations, and the unnecessary repetition of testing procedures for clients. These concerns prompted the decision to develop best practice guidelines for administering and utilizing cognitive assessment tools with older clients among organizations in our region.

Our initial project has focused on the cognitive screening process. The CAT Group recognized that the first step, in working to improve the health of our clients who often suffer from a variety of chronic illnesses, is to establish an objective and measurable baseline assessment. By screening a person's cognitive status at regular intervals, the clinician may detect cognitive difficulties at an early stage. The results of this screening assessment may then assist the clinician to determine the next step in the process, whether it is ongoing monitoring, client/caregiver interview, or a referral for further investigation.

The CAT Group conducted a comprehensive literature search for these screening tools and based on this literature search is recommending the use of either Molloy's Standardized Mini-Mental State Exam or Folstein's Mini-Mental State Exam, in combination with Shulman's Clock Drawing Assessment.

Included in this package is a copy of a Clock Drawing Assessment that you may use, as well as information on how to obtain a copy of the Standardized Mini-Mental State Examination and a copy of Folstein's Mini-Mental State Examination©. Also in this package is a protocol for administering cognitive assessments and an extensive reference list. This information is also available on the Regional Geriatric Program central website at [www.rgpc.ca](http://www.rgpc.ca)

### Members of the Cognitive Assessment Tools' (CAT) Group include:

Karen Allcroft, Psychogeriatric Resource Consultant, Hamilton; Laurie Biehler, Psychogeriatric Resource Consultant, Brant County; David Jewell, Director, Regional Geriatric Program central; Barb McCoy, Psychogeriatric Resource Consultant, Hamilton; Maureen Montemuro, Clinical Nurse Specialist, St. Peter's; Kathy Moros, Occupational Therapist, St. Peter's; Colleen O'Neill, Occupational Therapist, St. Peter's.

Special thanks to: Julie Berenyi, Esther Coker, Cathy Hyrnick, Gill Joel, Dr. William Molloy, Carmen Murray, Dr. Mary Peat, Laura Rankin, Dr. Ken Shulman, and Jill Woodland for their contributions in planning and developing this project.

# Protocol for Administration of Cognitive Assessments

## Environmental Set Up

1. Allow a minimum of 30 minutes for conducting assessment.
2. Provide a quiet, non-distracting environment.
3. Ensure adequate lighting level.
4. Organize all necessary assessment tools prior to beginning the assessment.
5. Determine whether to proceed with testing after identifying potential barriers that may impact on test results such as language barrier, literacy problems, aphasia, vision or hearing loss.
6. Ensure the person uses his or her prescribed sensory assistive devices during testing (e.g. glasses, hearing aid, etc.).
7. Position yourself to maximize communication and accommodate sensory loss.
8. Establish rapport and obtain consent.

## Test Administration

1. **Follow test administration guidelines in order to avoid compromising the validity of the test.**
2. Provide a simple explanation of the purpose of the test (e.g. *“This test will help me identify some problems that you may be having. Some questions are easy and others are harder. This is not a test of intelligence.”*)
3. Keep instructions brief.
4. Do not “chat” between questions.
5. Write the person’s exact responses and note any observations regarding behaviour that may impact on performance.
6. Be familiar with the scoring procedures prior to administering the assessment.
7. Score test according to guidelines. Do not adjust score to accommodate limitations.
8. Allow the person to complete tasks but note any time limitations in your comments.
9. Consider how to manage request for feedback regarding test results.

## Interpretation of Test Results

1. A positive result on a screening test is never diagnostic but it does indicate the need for further assessment including corroborative information from key informants.
2. Screening tests are very useful for monitoring cognitive change over time and in this way can be helpful in the diagnostic process. As well, screening tests are useful for assessing the impact of specific treatments.

INFORMATION ON HOW TO OBTAIN A COPY OF

**MOLLOY'S STANDARDIZED MINI-MENTAL STATE EXAM**

The Standardized Mini-Mental State Examination (SMMSE) was developed by Dr. D. W. Molloy based on the Folstein Mini-Mental State Exam. A sample of the SMMSE is attached. Copies of this form and further information about the SMMSE can be obtained through New Grange Press. The address, phone & fax numbers and website of New Grange Press are listed below:

New Grange Press  
34 Plaza Drive  
P.O. Box 63003  
Dundas, ON  
L9H 6Y3

Website: [www.newgrangepress.com](http://www.newgrangepress.com)  
From home webpage select Books and Videos, then select  
Printable order form, fill out the order form and fax to:  
(905) 628-4901  
Or call (905)-628-0354

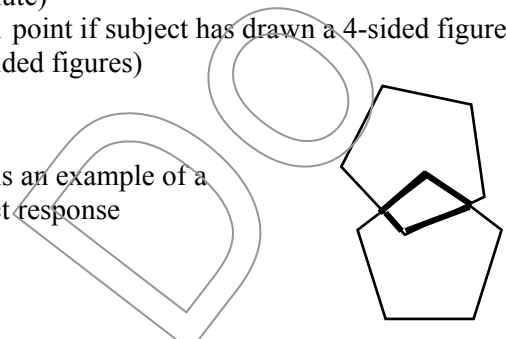
Name: \_\_\_\_\_ Age: \_\_\_\_\_

Years of School Completed: \_\_\_\_\_

**Equipment Required:** Pencil, eraser, blank paper, watch with second hand, "CLOSE YOUR EYES" sheet, copy of two 5-sided figure intersecting, to make a 4-sided figure

STANDARDIZED MINI-MENTAL STATE EXAMINATION (SMMSE)	TEST #1		TEST #2	
	Date:		Date:	
	Time:		Time:	
<b>Section 1 – Orientation</b> (allow 10 seconds for each reply) (Score 1 point for each correct answer)	<b>Response</b>	<b>Score</b>	<b>Response</b>	<b>Score</b>
Say: <i>I am going to ask you some questions and give you some problems to solve. Please try to answer the best that you can.</i>				
1. Ask: <i>What year is this?</i> (Accept exact answer only, taking the last answer given)		/1		/1
2. Ask: <i>What season is this?</i> (During last week of old season or the first week of a new season, accept either season)		/1		/1
3. Ask: <i>What month is this?</i> (On the first day of the month or, on the last day of the month, accept either month)		/1		/1
4. Ask: <i>What is today's date?</i> (Accept previous or next day's date, e.g. on the 7 <sup>th</sup> , accept the 6 <sup>th</sup> or 8 <sup>th</sup> )		/1		/1
5. Ask: <i>What day of the week is this?</i> (Accept exact answer only)		/1		/1
6. Ask: <i>What country are we in?</i> (Accept exact answer only)		/1		/1
7. Ask: <i>What province/state/county are we in?</i> (Accept exact answer only)		/1		/1
8. Ask: <i>What city/town/etc. are we in?</i> (Accept exact answer only)		/1		/1
9. (In Home) Ask: <i>What is the street address of this house?</i> (Accept street name and house number, or equivalent in rural areas)  (In Community or Clinic) Ask: <i>What is the name of this building?</i> (Decide ahead of time what is a reasonable, acceptable answer, and accept that answer only)		/1		/1
10. (In Home) Ask: <i>What room are we in?</i> (Accept exact answer only)  (In Community) Ask: <i>What floor of the building are we on?</i> (Accept exact answer only)		/1		/1

STANDARDIZED MINI-MENTAL STATE EXAMINATION (SMMSE)	TEST #1		TEST #2																																		
	Date:		Date:																																		
	Time:		Time:																																		
<b>Section 1 - Orientation - Score</b>		<b>/10</b>		<b>/10</b>																																	
<b>Section 2 – Registration, Calculation and Short Term Memory</b>	<b>Response</b>	<b>Score</b>	<b>Response</b>	<b>Score</b>																																	
<p><b>11.</b> Say: <i>I am going to name three objects. After I have said all three objects, I want you to repeat them. Remember what they are, because I am going to ask you to name them again in a few minutes.</i></p> <p>(Say them slowly at approximately <u>1 second</u> intervals)</p> <p style="text-align: center;">Ball      Car      Man</p> <p>For repeated use:</p> <p style="text-align: center;">Bell      Jar      Fan Bill      Tar      Can Bull      War      Pan</p> <p>Say: <i>Please repeat the three items for me</i></p> <p>(Score 1 point for each correct reply on the <b>first</b> attempt. Allow 20 seconds for reply, if subject did not repeat all three, repeat until they are learned, or up to a maximum of 5 times, but only score first attempt)</p>		/1  /1  /1		/1  /1  /1																																	
<p><b>12.</b> Say: <i>Spell the word WORLD.</i></p> <p>(Only repeat to a maximum of three times until the subject understands)</p> <p>(You may help the subject to spell it correctly. If the subject cannot spell it, even with assistance, score 0)</p> <p>Say: <i>Now spell it backwards please.</i></p> <p>(Allow 30 seconds to spell backwards)</p> <p>(Score one point for each letter given in the correct <b>reverse</b> order.)</p> <p>Scoring: it is essential to score reliably. Score ORDER not SEQUENCE. Place the last five letters the subject said in spaces under D L R O W. Draw lines between the same letters on the response given and DLROW. These lines MAY NOT CROSS. The subject's score is the maximum number of lines that can be drawn, without crossing over other lines.</p> <p>Examples:</p> <table style="margin-left: 20px;"> <tr> <td style="border: 1px solid black; padding: 2px;">D</td><td style="border: 1px solid black; padding: 2px;">L</td><td style="border: 1px solid black; padding: 2px;">R</td><td style="border: 1px solid black; padding: 2px;">O</td><td style="border: 1px solid black; padding: 2px;">W</td> <td rowspan="2" style="padding-left: 10px;">EQUALS 5 POINTS</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">D</td><td style="border: 1px solid black; padding: 2px;">L</td><td style="border: 1px solid black; padding: 2px;">R</td><td style="border: 1px solid black; padding: 2px;">O</td><td style="border: 1px solid black; padding: 2px;">W</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">D</td><td style="border: 1px solid black; padding: 2px;">L</td><td style="border: 1px solid black; padding: 2px;">R</td><td style="border: 1px solid black; padding: 2px;">O</td><td style="border: 1px solid black; padding: 2px;">W</td> <td rowspan="2" style="padding-left: 10px;">EQUALS 3 POINTS</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">D</td><td style="border: 1px solid black; padding: 2px;">G</td><td style="border: 1px solid black; padding: 2px;">W</td><td style="border: 1px solid black; padding: 2px;">R</td><td style="border: 1px solid black; padding: 2px;">W</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">D</td><td style="border: 1px solid black; padding: 2px;">L</td><td style="border: 1px solid black; padding: 2px;">R</td><td style="border: 1px solid black; padding: 2px;">O</td><td style="border: 1px solid black; padding: 2px;">W</td> <td rowspan="2" style="padding-left: 10px;">EQUALS 3 POINTS</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">L</td><td style="border: 1px solid black; padding: 2px;">O</td><td style="border: 1px solid black; padding: 2px;">W</td><td style="border: 1px solid black; padding: 2px;">R</td><td style="border: 1px solid black; padding: 2px;">W</td> </tr> </table>	D	L	R	O	W	EQUALS 5 POINTS	D	L	R	O	W	D	L	R	O	W	EQUALS 3 POINTS	D	G	W	R	W	D	L	R	O	W	EQUALS 3 POINTS	L	O	W	R	W	D L R O W - - - - -	/5	D L R O W - - - - -	/5
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D	L	R	O	W	EQUALS 3 POINTS																																
L	O	W	R	W																																	
<p><b>13.</b> Ask: <i>Now, what were the three objects that I asked you to remember?</i></p> <p>(Allow 10 seconds for each reply).</p>		/1  /1  /1		/1  /1  /1																																	

STANDARDIZED MINI-MENTAL STATE EXAMINATION (SMMSE)	TEST #1		TEST #2	
	Date:		Date:	
(Score 1 point for each correct response regardless of order.)	Time:		Time:	
<b>Section 2 – Registration, Calculation and Short Term Memory – Score</b>		/11		/11
<b>Section 3 – Language, Spatial Orientation and Coordination</b>	<b>Response</b>	<b>Score</b>	<b>Response</b>	<b>Score</b>
<b>14.</b> (Show wristwatch) Ask: <i>What is this called?</i> (Allow 10 seconds for each reply) (Score 1 point for correct response) (Accept only <u>wristwatch</u> , <u>watch</u> , or <u>timepiece</u> )		/1		/1
<b>15.</b> (Show pencil) Ask: <i>What is this called?</i> (Allow 10 seconds for each reply) (Score 1 point for correct response. Accept “pencil” only)		/1		/1
<b>16.</b> Say: <i>I’d like you to repeat this phrase after me: “no ifs, ands or buts”</i> (Allow 10 seconds for reply) (Accept exact repetition only)		/1		/1
<b>17.</b> (Hand subject the paper with ‘CLOSE YOUR EYES’ on it.) Say: <i>Please read the words on this paper and then do what it says.</i> (Allow 10 seconds. Repeat instructions up to three times if necessary) (Score 1 point only if subject closes eyes)		/1		/1
<b>18.</b> (Hand subject a pencil and paper.) Say: <i>Write any complete sentence on that piece of paper for me.</i> (Allow 30 seconds.) (Score 1 point if sentence contains a subject, verb and object, and makes sense. Ignore spelling errors).		/1		/1
<b>19.</b> (Place design, pencil, eraser and paper in front of subject.) Say: <i>Copy this design please.</i> (Allow multiple tries until subject is finished. Allow up to one minute) (Score 1 point if subject has drawn a 4-sided figure between two 5-sided figures)		/1		/1
<p>This is an example of a correct response</p> 				
<b>20.</b> (OBSERVE IN WHICH HAND; THE SUBJECT HELD THE PENCIL, or ask if the subject is right, or left-handed. Take a piece of clean, letter-size paper; hold it up in front of				

STANDARDIZED MINI-MENTAL STATE EXAMINATION (SMMSE)	TEST #1		TEST #2	
	Date:		Date:	
	Time:		Time:	
the subject) Say: <i>Take this paper in your right/left hand (opposite to dominant hand), fold it in half once with both hands, and put the paper down on the floor.</i> (Allow 30 seconds). (Score 1 point for each instruction correctly executed, maximum of 3 points)		/3		/3
<b>Section 3 - Language, Spatial Orientation and Coordination - Score</b>		<b>/9</b>		<b>/9</b>
<b>Total Score: (Sections 1 + 2 + 3)</b>		<b>/30</b>		<b>/30</b>
<b>Adjusted: Actual/Possible X 30=</b>		<b>/30</b>		<b>/30</b>
<b>Final Score:</b>		<b>/30</b>		<b>/30</b>
<b>Signature/Discipline:</b>				
<b>Date:</b>				

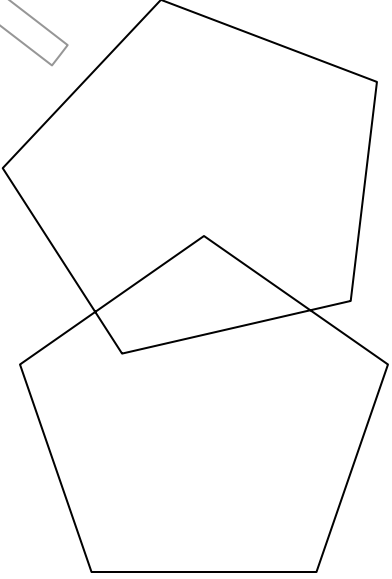
This questionnaire should not be modified or reproduced without the written consent of Dr. D. William Molloy.

To order or obtain additional information on the SMMSE please call: (905) 628-0354 or e-mail at: [idecide@netcom.ca](mailto:idecide@netcom.ca)

**CLOSE YOUR EYES**

Do not copy

Do not copy

Two overlapping pentagons are positioned below the text. The top pentagon is slightly offset to the right and overlaps the bottom pentagon.

## **INFORMATION ON HOW TO OBTAIN A COPY OF FOLSTEIN'S MINI-MENTAL STATE EXAM**

The Mini-Mental State Exam (MMSE) form is published by Psychological Assessment Resources, Inc. (PAR) and is based on the original 1975 conceptualization by Marshal Folstein, Susan Folstein and Paul McHugh, with minor subsequent modifications by these same authors. The MMSE combines verbal and performance tasks, and evaluates several areas of cognitive functioning including orientation, memory, attention, naming, obeying written and verbal commands, writing, and copying a complex figure.

The MMSE has demonstrated validity and reliability in psychiatric, neurologic, geriatric, and other medical populations. The convenient new "all-in-one" test form includes a detachable sheet with stimuli for the Comprehension, Reading, Writing, and Drawing tasks. The test form also includes alternative item substitutions for administration in special circumstances.

To order or obtain additional information on the MMSE contact:

Psychological Assessment Resources, Inc. (PAR)  
16204 N. Florida Avenue

**Lutz, Florida 33549**

**Phone: 1-800-331-8376**

**Fax: 1-800-727-9329**

**Website: [www.parinc.com](http://www.parinc.com)**



Substitute and score this item only if the examinee refuses to perform the Serial 7s task.

**Spell WORLD forward, then backward.**

Correct forward spelling if misspelled,  
but score only the backward spelling.

(D = 1) (L = 1) (R = 1) (O = 1) (W = 1) (0 to 5)

RECALL

RESPONSE

SCORE  
(circle one)

What were those three words I asked you to remember? [Do not offer any hints.]

- APPLE
- PENNY
- TABLE

_____	0	1
_____	0	1
_____	0	1

NAMING\*

What is this? [Point to a pencil or pen.]

_____	0	1
-------	---	---

What is this? [Point to a watch.]

_____	0	1
-------	---	---

\*Alternative common objects (e.g., eyeglasses, chair, keys) may be substituted and noted.

REPETITION

Now I am going to ask you to repeat what I say. Ready? "NO IFS, ANDS, OR BUTS." Now you say that.  
[Repeat up to 5 times, but score only the first trial.]

NO IFS, ANDS, OR BUTS. _____	0	1
------------------------------	---	---

Detach the next page along the lengthwise perforation, and then tear it in half along the horizontal perforation. Use the upper half of the page (blank) for the Comprehension, Writing, and Drawing items that follow. Use the lower half of the page as a stimulus form for the Reading ("CLOSE YOUR EYES") and Drawing (intersecting pentagons) items.

COMPREHENSION

Listen carefully because I am going to ask you to do something.

Take this paper in your right hand [pause], fold it in half [pause], and put it on the floor (or table).

TAKE IN RIGHT HAND _____	0	1
FOLD IN HALF _____	0	1
PUT ON FLOOR (or TABLE) _____	0	1

READING

Please read this and do what it says. [Show examinee the words on the stimulus form.]

CLOSE YOUR EYES _____	0	1
-----------------------	---	---

WRITING

Please write a sentence. [If examinee does not respond, say: Write about the weather.]

_____	0	1
-------	---	---

Place the blank piece of paper (unfolded) in front of the examinee and provide a pen or pencil. Score 1 point if the sentence is comprehensible and contains a subject and a verb. Ignore errors in grammar or spelling.

DRAWING

Please copy this design. [Display the intersecting pentagons on the stimulus form.]

_____	0	1
-------	---	---

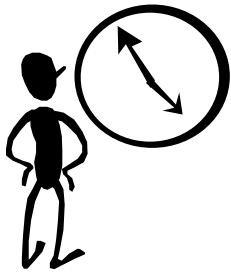
Score 1 point if the drawing consists of two 5-sided figures that intersect to form a 4-sided figure.

Assessment of level of consciousness.

<b>Total Score =</b> _____
(Sum all item scores.) (30 points max.)

Alert/ Responsive	Drowsy	Stuporous	Comatose/ Unresponsive
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**CLOSE YOUR EYES**

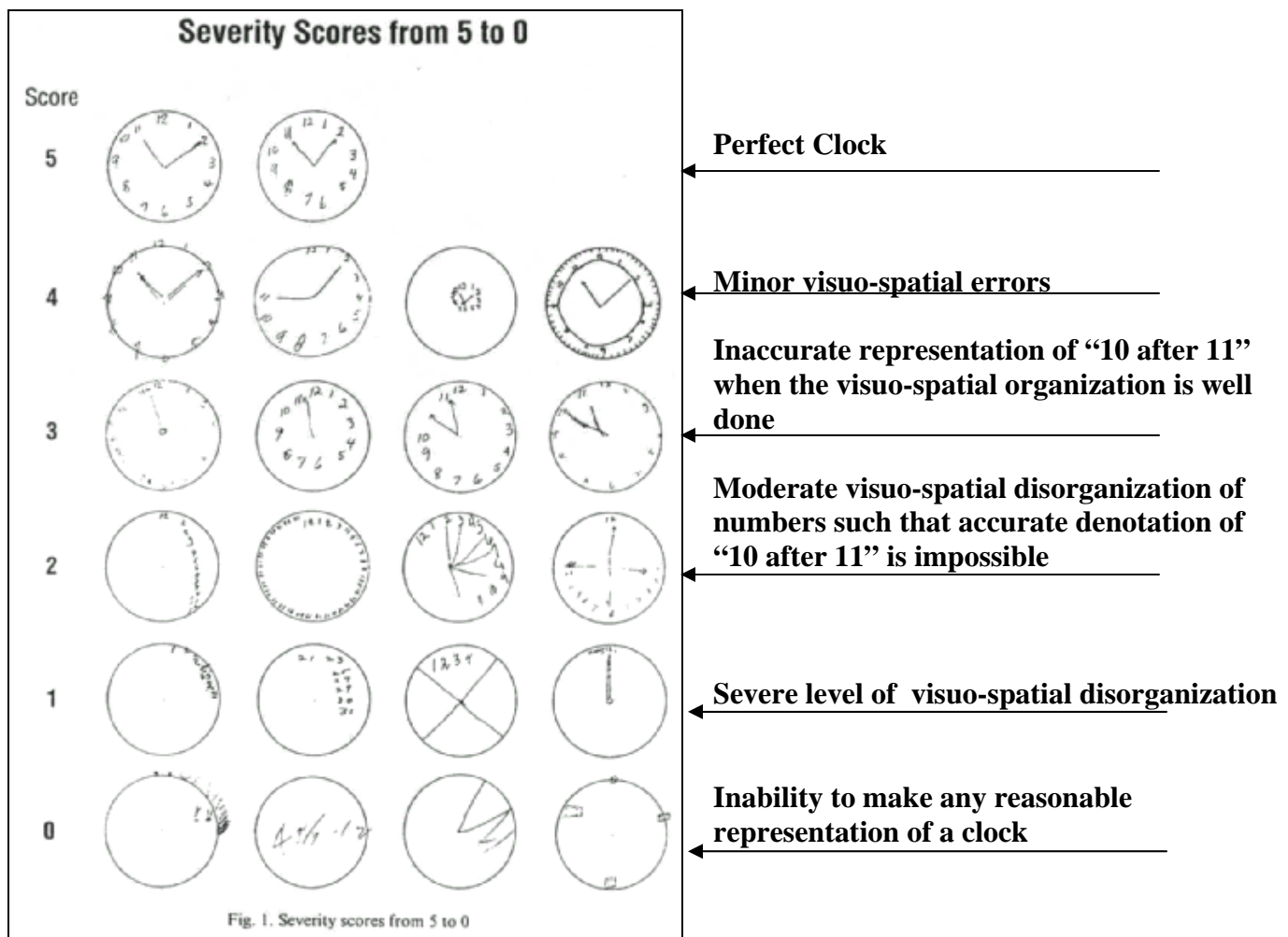


## CLOCK DRAWING ASSESSMENT

**Materials:** White paper with pre-drawn circle □ Pencil with eraser □

**Instructions:**

1. Give the person the pre-drawn circle. **Note:** Ensure the client information section is folded under to minimize distraction.
2. Tell person: “**This circle represents a clock face. Please put in the numbers so that it looks like a clock and then set the time to “ten minutes past eleven”.**”  
**Note:** Do not use the word “hands” when asking for time setting. There is no time limit.
3. Do not photocopy circle on back of this sheet.



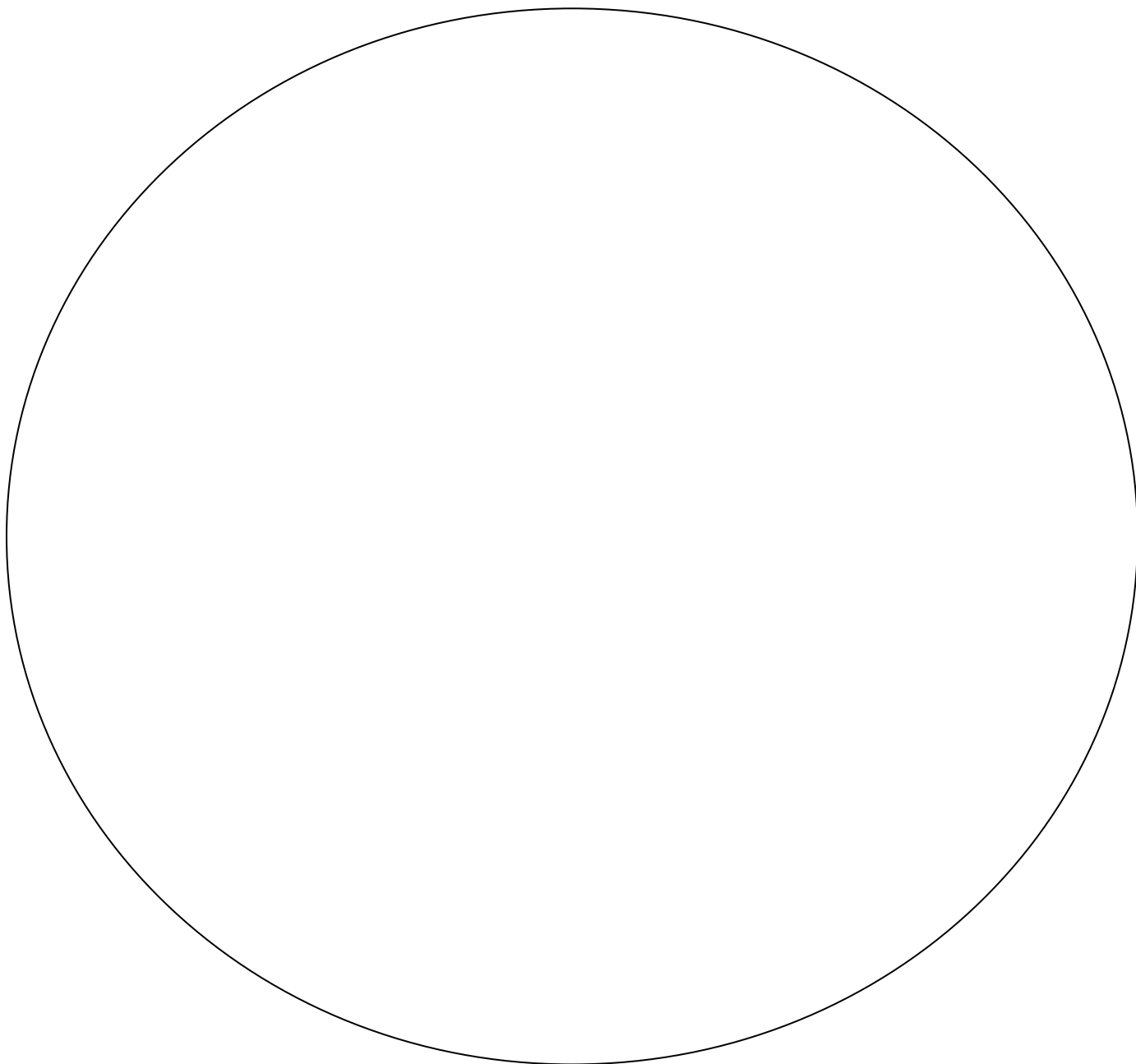
**Scoring interpretation:** *Score of 5 or 4 (normal)*  
*Score of ≤ 3 (impaired)*

**DO NOT PHOTOCOPY CIRCLE ON  
BACK OF THIS SHEET**

Assessment Date:
Score:    /5   Normal <input type="checkbox"/> Impaired <input type="checkbox"/>
Name/ Designation:
Signature:



*Fold under to prevent distraction*



# Reference List for Cognitive Screening Tools

## **MMSE**

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## **Clock Drawing Test**

- Agrell, B., & Dehlin, O., (1998). The Clock-Drawing test. *Age and Aging, 27*: 399-403.
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- Brayne, C., & Calloway, P. (1990). The Association of Education and Socioeconomic Status with the Mini-Mental State Examination and the clinical diagnosis of dementia in elderly people. *Age and Ageing, 19*: 91-96.
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## **\* RECOMMENDED READING**

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