

Montreal Cognitive Assessment Basic (MoCA-B) **Administration and Scoring Instructions**

The Montreal Cognitive Assessment (MoCA) was designed as a rapid screening instrument for mild cognitive impairment. The **Montreal Cognitive Assessment – Basic (MoCA-B)** was developed to facilitate the detection of mild cognitive impairment in illiterate and lower educated subjects. The MoCA-B assesses similar cognitive domains as the original MoCA: executive functions, language, orientation, calculations, conceptual thinking, memory, visuoperception, attention and concentration. Time to administer the MoCA-B is approximately 15 minutes. It is scored on 30 points.

All instructions may be repeated once except if otherwise specified.

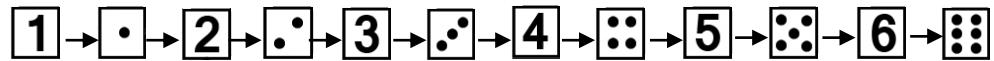
START TIMING: The examiner writes the time (hour-minutes-seconds) in the right-hand column of the test sheet prior to administrating the first task (Executive Functions).

1. Executive Function (Alternating Trail Making)

The task is upside down to reduce manipulation of the test sheet; the examiner simply slides the test sheet across the table to the subject (the numbers should be upright for the subject).

Administration: The examiner gives the following instructions: “*Please draw a line alternating between a square with a number and a square with dots in increasing order. Begin here* [point to the square with the number 1] *and draw a line from the square with the number 1 to the square with one dot* [point to the square with one dot]. *Then draw a line to the square with the number 2* [point to the square with number 2] *then to the square with two dots* [point to the square with two dots] *and so on. End here* [point to the square with six dots].”

Scoring: The correct pattern is as follows:



- 1 point is allocated if the subject successfully draws the correct pattern on the first attempt without any errors or self-corrections.
- No points are allocated if the subject draws an incorrect pattern or makes an error, even if it is immediately self-corrected.

2. Immediate Recall

Administration: The examiner gives the following instructions: “*This is a memory test. I am going to read a list of words that you will have to remember now and later on. Listen carefully. When I am through, tell me as many words as you can remember. It doesn't matter in what order you*

say them." The examiner reads the list of five words at a rate of one word per second. A checkmark is made in the allocated space for each word the subject recalls on the first trial. When the subject indicates that (s)he has finished (has recalled all words or can recall no more words), the examiner gives the following instructions: "*I am going to read the same list a second time. When I am through, tell me as many words as you can remember, including words you said the first time.*" The examiner reads the list a second time and makes a checkmark in the allocated space for each word the subject recalls on the second trial. At the end of the second trial, the examiner informs the subject that (s)he will be asked to recall these words again by saying: "*Try to remember these words as I will ask you to recall these again at the end of the test.*"

Scoring: No points are given for Trials One and Two.

3. Fluency

Administration: The examiner gives the following instructions: "*I want you to name as many FRUITS as you can think of. I will tell you to stop after one minute. Go ahead.* [Begin timing. After 60 seconds say:] *Stop.*"

The examiner records all the words to ensure that repeated words are not scored.

Scoring:

- 2 points are allocated if the subject generates 13 words or more.
- 1 point is allocated if the subject generates 8-12 words.
- No points are allocated if the subject generates 7 words or less.

4. Orientation

Administration: The examiner gives the following instructions: "*Without looking at your watch, tell me approximately what time it is.*" The examiner then says: "*Now, tell me what day of the week it is and what month and year it is.*" "*Tell me the name of this place and which city we are in.*"

Scoring: 1 point is allocated for each correct answer. For the time, an answer within two hours of the actual time is accepted. The subject must give the exact day of the week, month, year, place (name of hospital, clinic, office) and city.

5. Calculation

Administration: The examiner gives the following instructions: "*Pretend you have several 1 dollar coins/bills and 5 and 10 dollar bills in your pocket. Please provide me with the maximum number of combinations to pay for an item that costs 13 dollars. You cannot ask for change.*" If the subject provides a combination that requires change, provide the following prompt once: "*Are there any other combinations?*" The examiner records the subject's answers in the space provided.

Scoring:

- 3 points are allocated if the subject provides 3 or 4 correct combinations.
- 2 points are allocated if the subject provides 2 correct combinations.
- 1 point is allocated if the subject provided 1 correct combination.
- No points are allocated if the subject cannot provide any correct combination.

6. Abstraction

Administration: The subject is asked to provide the category to which a pair of words belongs to. The examiner gives the following example: "*To which category do an orange and a banana belong to?*" If the subject answers in a concrete manner, the examiner gives the following prompt once: "*Can you tell me another category these items belong to?*" If the subject does not respond correctly [Fruits], the examiner says: "*Yes, and they both belong to the category Fruits*". No additional instruction or clarification is given. After the practice trial, the first trial is administered: "*Now, tell me which category do a train and a boat belong to?*" If the first response given is concrete, the examiner gives the following prompt once: "*Can you tell me another category these items belong to?*" The second and third trials are administered using the same instructions as the first trial (with one prompt permitted per item upon a concrete response).

Scoring: The practice item is not scored (only the last three items are scored). 1 point is given for each category correctly identified. The following responses are acceptable:

- train-boat : means of transportation, travelling, vehicles.
- north-south: cardinal directions, cardinal points, directions, hemispheres, regions.
- drum-flute: musical instruments.

The following responses are **not** acceptable:

- train-boat: made of iron, have engines, consume oil, petrol or gasoline.
- drum-flute: made from wood or any other material, produce sound.

7. Delayed Recall

Administration: The examiner gives the following instruction: "*I read some words to you earlier, which I asked you to remember. Tell me as many of those words as you can remember.*" The examiner identifies each word correctly recalled without any cues by making a checkmark (✓) in the allocated space.

Scoring: **1 point is allocated for each word recalled without any cues.**

Cueing: Following the delayed free recall trial, the examiner provides a category (semantic) cue for each word the subject was unable to recall. Example: "*I will give you some hints to see if it helps you remember the words, the first word was a type of flower.*" If the subject is unable to recall the word with the category cue, the examiner provides him/her with a multiple choice cue. Example: "*Which of the following words do you think it was ROSE, DAISY or TULIP?*" All non

recalled words are prompted in this manner. The examiner identifies the words the subject was able to recall with the help of a cue (category or multiple-choice) by placing a checkmark (✓) in the appropriate space. The cues for each word are presented below:

| | | |
|--------|--|---|
| ROSE: | <u>category cue</u> : type of flower | <u>multiple choice</u> : rose, daisy, tulip |
| CHAIR: | <u>category cue</u> : type of furniture | <u>multiple choice</u> : table, chair, bed |
| HAND: | <u>category cue</u> : body part | <u>multiple choice</u> : foot, hand, knee |
| BLUE: | <u>category cue</u> : colour | <u>multiple choice</u> : blue, brown, red |
| SPOON: | <u>category cue</u> : kitchen instrument | <u>multiple choice</u> : fork, spoon, knife |

Scoring: **No points are allocated for words recalled with a cue.** The use of cues provides clinical information on the nature of the memory deficits. For memory deficit due to retrieval failures, performance can be improved with a cue. For memory deficits due to encoding failures, performance does not improve with a cue.

8. Visuoperception

Administration: Pointing to the drawing of the superimposed objects on the complementary work sheet, the examiner says: "*I would like you to look at this drawing and identify as many objects as you can. If you cannot name some of the objects, outline them with your finger or tell me about their function. You may not rotate the picture. You have 1 minute to identify as many objects as you can. Are you ready? Begin.*" [Start timing].

The subject is stopped after 60 seconds. The examiner circles each object correctly identified on the scoring sheet.

Scoring: The drawing is composed of 10 objects: scissors, cup, T-shirt, watch, banana, leaf, lamp, key, candle and spoon.

- 3 points are allocated if the subject can identify 9-10 objects.
- 2 points are allocated if the subject can identify 6-8 objects.
- 1 point is allocated if the subject can identify 4-5 objects.
- No point is allocated if the subject can identify 3 objects or less.

9. Naming

Administration: Pointing to each animal on the complementary worksheet, the examiner says: "*Tell me the name of this animal.*"

Scoring: 1 point is awarded for each correct answer:

- ZEBRA (Horse and donkey are **not** accepted.)
- PEACOCK (Bird, chicken or other kind of birds are **not** accepted.)
- TIGER (Cheetah, leopard and black tiger are **not** accepted.)
- BUTTERFLY (Insect or other kind of insects are **not** accepted.)

10. Attention

Numbers with White Background

Administration: Pointing to the row of numbers with a white background on the complementary worksheet, the examiner says: "*Looking at the row of numbers with a white background, please read out loud the numbers in the CIRCLES only. Do not read the numbers in the squares or triangles. Start here [point to the beginning of the row (1)] and end here [point to the end of the row (5)].*"

Scoring:

- 1 point is allocated if the subject completes the task with 1 error or less.
- No point is allocated if the subject completes the task with 2 errors or more.

An error is defined as follows: Reading a number which is **not** in a circle, omitting to read a number in a circle or reading numbers in the incorrect order (example: returning to a previous number). The number of errors is recorded in the space provided on the scoring sheet.

Numbers with Black Background

Administration: Pointing to the row of numbers with a white background on the complementary worksheet, the examiner says: "*Looking at the row of numbers with a dark background, please read out loud the numbers in the CIRCLES and SQUARES. Do not read the numbers in the triangles. Start here [point to the beginning of the first row (3)], go through both rows [run your finger across the top then bottom row from left to right] and stop here [point to the end of the second row (5)].*"

Scoring:

- 2 points are allocated if the subject completes the task with 2 errors or less.
- 1 point is allocated if the subject completes the task with 3 errors.
- No point is allocated if the subject completes the task with 4 errors or more.

An error is defined as follows: Reading a number which is **not** in a circle or a square, omitting to read a number in a circle or a square or reading numbers in the incorrect order (example: returning to a previous number). The number of errors is recorded in the space provided on the scoring sheet.

TOTAL SCORE: Sum all sub-item scores listed in the right-hand column of the scoring sheet. The maximum score is 30 points.

- To correct for any residual education bias, 1 point is added to the total score of subjects with less than 4 years of education (if score is <30).
- To correct for literacy, 1 point is added to the score of subjects considered illiterate, regardless of the participant's education level (if score is <30). Illiteracy is defined as the inability to read or write fluently in daily living.