

GMN:

Neuropsychological Manual

Virtual Battery

Welcome to the Georgia Memory Net Neuropsychological Manual. In this manual you will find necessary information to administer a successful battery via telehealth.

Before your telehealth session begins:

1. Ensure that patient has the correct technology to complete a telehealth visit.
	1. Does the patient have internet access?
	2. Does the patient have access to a computer WITH webcam?
	3. Has the patient been given the necessary Zoom link (or individual platform link used by your healthcare system) and are they able to log in?
	4. Remind the patient that they will need four blank pieces of paper and a pencil.
2. Make sure that you have the necessary materials to complete the Telehealth Neuropsychological Battery:
	1. ***Printed GMN Testing Packet***: You will need to print off a testing packet for each patient. This will be necessary to appropriately record patient responses.
	2. ***GMN Neuropsych Screen Share Docs:*** These are the necessary documents that you will need to share with the patient via screen share. \* Please note only documents required for screen share are included in this document. \*
	3. For test that require screenshots, you will need to have Microsoft Word open for the image to be pasted into.
		* To take a screenshot🡪 press Ctrl + PrtScr
		* To paste the screenshot into your word document. Right click on your mouse and choose the paste option.

# Order of Administration:

MoCA- Montreal Cognitive Assessment (MoCA)

MoCA Notes:

1. Make sure to read the instructions carefully and familiarize yourself with the administration of the assessment.
2. For verbal fluency of the MoCA, read the instructions and record “F” words

on the Verbal Fluency page under the “F” trial.

1. For the delayed recall, GMN does not administer the cued recall.
2. If a patient has an education level of ≤ 12 years, one additional point is added to their score.

# Start sharing your screen

**Administration and Scoring Instructions:** Time to administer the MoCA is approximately 10 minutes. The total possible score is 30 points; a score of 26 or above is considered normal. Changes to instructions due to telehealth administration have been highlighted below.

## Alternating Trail Making:

Administration: The examiner instructs the subject: *"****See the slide on the screen with many numbers and letters. Please say the number-letter sequence aloud. Going from a number to a letter in ascending order. Begin at number 1*** *[point with cursor]* ***and say aloud 1 to A, A to 2 and so on. End here at letter E*** *[point with cursor].*

Scoring: Allocate one point if the subject successfully says the following pattern: 1 -A- 2- B- 3- C- 4- D- 5- E. Any error that is not immediately self-corrected earns a score of 0. ***Mark on your form that trail making was administered orally via telehealth.***

## Visuoconstructional Skills (Cube):

Administration: The examiner gives the following instructions, pointing to the cube[point with cursor]: ***“See the slide on the screen. I want you to get your pen and blank computer paper out for me. Please copy this drawing as accurately as you can on your piece of paper. Tell me when you are finished.”*** After patient is

done drawing, instruct patient to hold drawing up to the screen so you can take a screenshot. Instruct patient to put drawing to the side.

Scoring: One point is allocated for a correctly executed drawing.

* + Drawing must be three-dimensional
	+ All lines are drawn
	+ No line is added
	+ Lines are relatively parallel, and their length is similar (rectangular prisms are accepted)

A point is not assigned if any of the above criteria are not met.

## Visuoconstructional Skills (Clock):

Administration: The examiner gives the following instructions, ***“Now we are on a new slide. I want you to get your pen and another sheet of blank computer paper. Like the instructions say on the screen, I want you to draw a clock. Put in all the numbers and set the time to 10 after 11. Tell me when you are finished.”*** After patient is done drawing, instruct patient to hold drawing up to the screen so you can take a screenshot. Instruct patient to put drawing to the side.

Scoring: One point is allocated for each of the following three criteria:

* Contour (1 pt.): the clock face must be a circle with only minor distortion

acceptable (e.g., slight imperfection on closing the circle);

* Numbers (1 pt.): all clock numbers must be present with no additional numbers; numbers must be in the correct order and placed in the approximate quadrants on the clock face; Roman numerals are acceptable; numbers can

be placed outside the circle contour

* Hands (1 pt.): there must be two hands jointly indicating the correct time; the hour hand must be clearly shorter than the minute hand; hands must be centered within the clock face with their junction close to the clock center.
* A point is not assigned for a given element if any of the above criteria are not met.

## Naming:

Administration: Change to the next slide [each naming slide has 1 animal on it]. Beginning with the first slide, say: ***“Tell me the name of this animal”.*** Repeat for second and third slide.

Scoring: One point each is given for the following responses: (1) camel or

dromedary, (2) lion, (3) rhinoceros or rhino.

# STOP SHARING YOUR SCREEN

## Memory:

Administration: The examiner reads a list of 5 words at a rate of one per second, giving 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”.*** Mark a check in the allocated space for each word the subject produces on this first trial. When the subject indicates that (s)he has finished (has recalled all words), or can recall no more words, read the list a second time with the following instructions: **“*I am going to read the same list for a second time. Try to remember and tell me as many words as you can, including words you said the first time.”*** Put a check in the allocated space for each word the subject recalls after the second trial. At the end of the second trial, inform the subject that (s)he will be asked to recall these words again by saying, **“*I will ask you to recall those words again at the end of the test.”***

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

## Attention:

Forward Digit Span: Administration: Give the following instruction: **“*I am going to say some numbers and when I am through, repeat them to me exactly as I said them”.*** Read the five-number sequence at a rate of one digit per second. Backward Digit Span: Administration: Give the following instruction: **“*Now I am going to say some more numbers, but when I am through you must repeat them***

***to me in the backwards order.”*** Read the three-number sequence at a rate of one digit per second.

Scoring: Allocate one point for each sequence correctly repeated, (*N.B.:* the correct response for the backwards trial is 2-4-7).

Vigilance: Administration: The examiner reads the list of letters at a rate of one per second, after

### giving the following instruction: “Next let’s practice something new together. For the next task I need you to raise your hand when you hear a certain letter. When I say raise your hand, I mean raise it high enough so I can see it on the screen

***like this*** *[demonstrate raising your hand in the screen for the patient].* ***Great job, you are ready for the task. Now I am going to read a sequence of letters. Every time I say the letter A, raise your hand in the screen. If I say a different letter, do not raise your hand”.***

*\*\*\*If patient is unable to raise their hand, establish a consistent form of response (e.g., head nods,sticking out their tongue, etc.) \*\*\**

Scoring: Give one point if there is zero to one errors (an error is a tap on a wrong letter or a failure to tap on letter A).

Serial 7s: Administration: The examiner gives the following instruction: **“*Now, I will ask you to count by subtracting seven from 100, and then, keep subtracting seven from your answer until I tell you to stop.”*** Give this instruction twice if necessary. Scoring: This item is scored out of 3 points. Give no (0) points for no correct subtractions, 1 point for one correction subtraction, 2 points for two-to- three correct subtractions, and 3 points if the participant successfully makes four or five correct subtractions. Count each correct subtraction of 7 beginning at 100. Each subtraction is evaluated independently; that is, if the participant responds with an incorrect number but continues to correctly subtract 7 from it, give a point for each correct subtraction. For example, a participant may respond “92 – 85 – 78 – 71 – 64” where the “92” is incorrect, but all subsequent numbers are subtracted correctly. This is one error and the item would be given a score of 3.

## Sentence repetition:

Administration: The examiner gives the following instructions: **“*I am going to read you a sentence. Repeat it after me, exactly as I say it*** [pause]*:* ***I only know that John is the one to help today.*”** Following the response, say: **“*Now I am going to read you another sentence. Repeat it after me, exactly as I say it*** [pause]*:* ***The cat always hid under the couch when dogs were***

### in the room.”

Scoring: Allocate 1 point for each sentence correctly repeated. Repetition must be exact. Be alert for errors that are omissions (e.g., omitting "only", "always") and substitutions/additions (e.g., "John is the one who helped today;" substituting "hides" for "hid", altering plurals, etc.).

## Verbal fluency:

Administration: The examiner gives the following instruction: **“*Tell me as many words as you can think of that begin with a certain letter of the alphabet that I will tell you in a moment. You can say any kind of word you want, except for***

### proper nouns (like Bob or Boston), numbers, or words that begin with the same sound but have a different suffix, for example, love, lover, loving. I will tell you to stop after one minute. Are you ready? [Pause] Now, tell me as many words as you can think of that begin with the letter F. [time for 60 sec]. Stop.”

Scoring: Allocate one point if the subject generates 11 words or more in 60 sec.

Record the subject’s response in the bottom or side margins.

## Abstraction:

Administration: The examiner asks the subject to explain what each pair of words has in common, starting with the example: **“*Tell me how an orange and a banana are alike”*.** If the subject answers in a concrete manner, then say only one additional time: **“*Tell me another way in which those items are alike”*.** If the subject does not give the appropriate response (*fruit*), say, **“*Yes, and they are also both fruit.*”** Do not give any additional instructions or clarification.

After the practice trial, say: **“*Now, tell me how a train and a bicycle are alike”.*** Following the response, administer the second trial, saying: **“*Now tell me how a ruler and a watch are alike”.*** Do not give any additional instructions or prompts. Scoring: Only the last two item pairs are scored. Give 1 point to each item pair correctly answered. The following responses are acceptable:

Train-bicycle = means of transportation, means of travelling, you take trips in both; Ruler-watch = measuring instruments, used to measure.

The following responses are **not** acceptable: Train-bicycle = they have wheels; Ruler-watch= they have numbers.

## 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.”*** Make a check mark for each of the words correctly recalled spontaneously without any cues, in the allocated space. Scoring: **Allocate 1 point for each word recalled freely without any cues**.

## Orientation:

Administration: The examiner gives the following instructions: **“*Before answering the next question. Please close your eyes. Now tell me the date today”*.** If the subject does not give a complete answer, then prompt accordingly by saying: ***“Tell me the [year, month, exact date, and day of the week].”*** After

response, instruct subject to open eyes. Then say: ***“Now, tell me the name of the place where you come for your clinic visits, and which city it is in.”***

Scoring: Give one point for each item correctly answered. The subject must tell the exact date and the exact place (name of hospital, clinic, office). No points are allocated if subject makes an error of one day for the day and date.

**TOTAL SCORE:** Sum all subscores listed on the right-hand side. Add one point for an individual who has 12 years or fewer of formal education, for a maximum of 30 points. A final total score of 26 and above is considered normal.

# RAVLT- (Rey Auditory Learning Test)

*\*This test does not require screen sharing\* Test should be administered while looking into the screen at participant. Patient responses are recorded on test form.*

The Rey Auditory Verbal Learning Test (RAVLT) is a list learning task that involves five trials read aloud. After each trial, the participant is asked to repeat as many items as they can, in any order. After the target list has been read aloud five times and the subsequent recalls have occurred, a distractor list, or “list B” is read aloud. The participant recalls words from the list and is then asked to recall words from List A. This list is not read aloud again for this trial. Once you have given the participant an opportunity to recall as many words as they can from the first list, as possible, start your timer for the delay.

***(This test has a delayed recall, 30 mins later. Start timer for 30 minute delay, or record the time in which the 30 min. delay should be administered)***

After 30 minutes have passed, the participant will recall as many words as they can from the first list. You will then present the recognition trial to them. Ask the patient to tell you the words that were on the first list and record them on the recognition form.

Here are a few notes on scoring and administering the RAVLT:

1. The word list should be read at a pace of one word per second, with one second between each word
	1. EXAMPLE Drum (wait one full second)

Curtain (wait one fill second)…….and so on.

1. Make sure to record the participants exact responses on the page. The correct responses should go in the space provided with the false positive or “intrusion” words written at the bottom of the page.
2. On the recognition trial, the score is tallied as “Hits” and “False Positives”
	1. A “Hit” is defined as a word that was endorsed as being on the first

list that **WAS** on the first list.

* 1. A “false positive” is defined as a word that was endorsed as being on

the list that was **NOT** on the first list.

# START SHARING YOUR SCREEN

Rey- Osterrieth Complex Figure

Copy Trial: ***“For this next task, I am going to ask you to draw something.”*** (Ask patient to take out their pencil and blank piece of paper. Ask them to place a “C” in the top left-hand corner of the page. This will help identify the drawing when you screenshot it and begin to score it.)

Pull up the figure on the screen and say:

### “Look at this figure.”

***“I would like you to copy the figure on your blank piece of paper. Copy it so that I know that this is the figure you drew. Do a good job.”*** After patient is done drawing, instruct patient to hold drawing up to the screen so you can take a screenshot. Instruct patient to put drawing to the side. **(Start timer, write down the amount of time it takes the patient to draw the figure. A maximum of 5 minutes should be given**)

(Ask the patient to fold their paper in half, so that the drawing is on the inside, and set the paper on the floor. This will prevent them from looking at it during the immediate recall.)

# STOP SHARING YOUR SCREEN

Immediate Recall:

***“A short time ago, I had you copy a figure. I would like you to draw that figure again, but this time from memory.”*** (Ask patient to take out their 2nd piece of blank paper. Ask them to place a “I” in the top left-hand corner of the page. This will help identify the drawing when you screen shot it and begin to score it.) After patient is done drawing, instruct patient to hold drawing up to the screen so you can take a screenshot. Ask the patient to fold their paper in half, so that the drawing is on the inside, and have them set it to the side (or on floor).

***(This test has a delayed recall, 30 mins later. Start timer for 30 minute delay, or record the time in which the 30 min. delay should be administered)***

# Number Span Test: Forward

*\*This test does not require screen sharing\* Test should be administered while looking into the screen at the participant. Patient responses are recorded on test form.*

### Say: “I am going to ask you to repeat some numbers for me. Wait until I finish saying the numbers and then repeat them in the same order. For example, if I say 1-8-7, you would say 1-8-7. If I say 2-9-8, what would you say?” If the subject gives the wrong answer, say, “Actually, you would say 2-9-8.”

Say: ***“Repeat only the numbers I say each time.”*** Then start with the test items. Before each item, say, ***“Ready?”***

*Stop testing after two consecutive failures of the same span length.* For example, if a patient does not receive credit for 2-7-9 and also does not receive credit for 4- 1-6-2, you would keep going because those are different span lengths. However, if a patient does not receive credit for 4-1-6-2 and also does not receive credit for 8- 1-9-5, you would stop the test because they have the same span length.

Read the numbers on the Number Span Test: Forward form

|  |  |  |  |
| --- | --- | --- | --- |
| Span Length |  | Response | Item Score |
| 3 | 1-8-4 |  |  |
| 3 | 2-7-9 |  |  |
| 4 | 4-1-6-2 |  |  |
| 4 | 8-1-9-5 |  |  |
| 5 | 6-4-9-2-8 |  |  |
| 5 | 7-3-8-6-1 |  |  |
| 6 | 3-9-2-4-7-5 |  |  |
| 6 | 6-2-8-3-1-9 |  |  |
| 7 | 9-6-4-7-1-5-3 |  |  |
| 7 | 7-4-9-2-6-8-1 |  |  |
| 8 | 4-7-2-5-8-1-3-9 |  |  |
| 8 | 2-9-5-7-3-6-1-8 |  |  |
| 9 | 6-8-4-1-9-3-5-2-7 |  |  |
| 9 | 1-3-9-2-7-5-8-6-4 |  |  |

# Number Span Test: Backward

*\*This test does not require screen sharing\* Test should be administered while looking into the screen at the participant. Patient responses are recorded on test form.*

### Say: “I am now going to ask you to repeat some numbers for me but to reverse them from the way I say them. Wait until I finish saying the numbers and then repeat them in reverse order, or backward. For example, if I say 3-7-4, you would say 4-7-3. If I say 7-3-6, what would you say?” If the subject gives the wrong answer, say, “Actually you would say 6-3-7.”

Say: ***“Repeat only the numbers I say each time, backward, in reverse order.”***

Then start with the test items. Before each item, say, ***“Ready?”***

Stop testing after two consecutive failures of the same span length. For example, if a patient does not receive credit for 3-7-4 and also does not receive credit for 7- 1-8-6, you would keep going because those are different span lengths. However, if a patient does not receive credit for 7-1-8-6 and also does not receive credit for 5- 1-6-3, you would stop the test because this is two consecutive failures of the same span length.

Read the numbers on the Number Span Test: Backward Form

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Span Length | Read | Correct Response | Participant Response | Item Score |
| 2 | 2-5 | 52 |  |  |
| 2 | 4-7 | 74 |  |  |
| 3 | 2-9-6 | 692 |  |  |
| 3 | 3-7-4 | 473 |  |  |
| 4 | 7-1-8-6 | 6817 |  |  |
| 4 | 5-1-6-3 | 3615 |  |  |
| 5 | 5-2-4-9-1 | 19425 |  |  |
| 5 | 9-1-7-3-6 | 63719 |  |  |
| 6 | 6-8-5-7-9-2 | 297586 |  |  |
| 6 | 8-1-6-3-5-9 | 953618 |  |  |
| 7 | 1-5-2-9-7-3-8 | 8379251 |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 7 | 7-3-1-6-8-5-2 | 2586137 |  |  |
| 8 | 3-6-4-9-5-2-7-1 | 17259463 |  |  |
| 8 | 6-3-5-7-1-8-2-9 | 92817536 |  |  |

# START SHARING YOUR SCREEN

JOLO (Judgement of Line Orientation)

If administering remotely say: ***“Now I am going to share my screen with you. Can you see my screen?”***

**Practice Instructions:**

***“See these two lines at the top of the screen?”*** Use your mouse to orient the participant to the two lines at the top of the screen. ***“Which two lines at the bottom of the screen…”*** Use your mouse to orient the participant to the lines at the bottom of the screen. ***“… are exactly in the same position and point in the same direction as the two lines at the top of the screen? Tell me the number of the lines.”***

A. 1-6

B. 4-8

C. 4-10

D. 7-8

E. 2-4

If error:

***“Let us just look at this line*** (point to one line). ***Which line down here*** (point to the response- choice display with your mouse) ***points in the same direction as this one*** (point to the stimulus line) ***and is also on the same position? That is, it’s on the same side of the page as this line up here.”*** (If the error is made during the practice items, cover one line and have the patient identify one line at a time. If error is made on the actual test, continue to the next item.)

Test Instructions:

### “Now we are going to do more of these, except now the lines which you see up here (point to the upper page) will be shorter, because part of the line has been erased. Tell me (show me) which two lines down here are pointing in the same direction as the lines up here.”

(if no response within 30 seconds, encourage them to respond)

# START SHARING YOUR SCREEN

PHQ-8

Read the instructions for the PHQ-8 listed on the screen. Answers should be based on the last 2 weeks.

# GAD-7

Read the instructions for the GAD-7 listed on the screen. Answers should be based on the last 2 weeks.

# STOP SHARING YOUR SCREEN

RAVLT Delay

Administer trial A7 of the RAVLT. Instructions: “***A short while ago I read a list of words to you several times, and you were trying to learn these words. Tell me the words from the list again.”***

# After administering trial A-7 SHARE YOUR SCREEN

Ask the patient to tell you which words were on the first list and record them on the RAVLT recognition form.

# STOP SHARING YOUR SCREEN

Rey Osterrieth Complex Figure: Delayed Recall and Recognition

Ask patient to take out their pencil and a blank piece of paper. Ask them to place a “D” in the top left-hand corner of the page. This will help identify the drawing when you screen shot it and begin to score it.

Say: *“****A short time ago, I had you copy a figure. I would like you to draw that figure again, but this time from memory.”*** Record the total time it takes to complete the drawing. After patient is done drawing, instruct patient to hold drawing up to the screen so you can take a screenshot. Instruct patient to put drawing to the side.

# START SHARING YOUR SCREEN

### Present the patient with each of the recognition sheets. Ask them to tell you which items were present, in the same orientation, in the original figure.

### You will circle their responses on the original form in the test packet.

# STOP SHARING YOUR SCREEN

Semantic Fluency- Animals

60 second time limit

### Instructions: “I am going to tell you the names of some things you can find in the kitchen: spoon, knives, forks, plates, faucet. Can you think of other things in the kitchen?”

Allow the examinee to name other things, and correct if he or she produces incorrect responses, explaining the task once again. Then say: ***Now, tell me the names of as many animals as you can. Name them as quickly as possible.***

Allow one minute. If the examinee discontinues before the end of the period, encourage him or her to produce more names. If there is a pause of 15 or more seconds, repeat the instructions and give the starting word “dog.” Start timing immediately after instructions have been given but allow extra time in the period if instructions are repeated.

# Verbal Fluency: Phonemic Test

60 second time limit per trial 

*\*This test does not require screen sharing\* Test should be administered while looking into the screen at participant. Patient responses are recorded on test form*

The instructions for each task are on the protocol forms; however, here are a few notes.

* 1. 60 second time limit per trial. Please use a stopwatch. Start timer after reading the instructions.
	2. Any word that begins with the specified letter, can be found in the dictionary, doesn’t violate a rule violation (numbers, names of people or places) and isn’t a repetition should be scored as correct.
	3. If a patient gives you the word “f-o-r” for the letter “F”, assume it is the word “for” and not the number. Unless “five” was also given.
	4. If a patient pauses for 15 seconds provide the following prompt:
		+ “Keep going” or “What other words beginning with F can you think of?”
	5. If three consecutive words that do not start with the designated letter are given, please provide the following prompt:
		+ “We are now using the letter L”

Instructions:

### “I’m going to say a letter of the alphabet. When I ask you to start, tell me as many words as you can that begin with that letter. You will have 1 minute before I tell you to stop. None of the words can be numbers, or names of people, or places. For example, if I gave you the letter B, you could say brown, bottle, or bake, but you wouldn’t say Barbara, Boston, or billion. Also, please try not to

***give me the same word with different endings. So if you said bake, you wouldn’t also say baked or bakes. And if you said big, you wouldn’t also say bigger or biggest.” “Let’s begin. Tell me all the words you can, as quickly as you can, that begin with the letter F. Ready? Begin.”***

Stop after 60 seconds and say ***“Now I want you to do the same for another letter.***

***The next letter is L. Ready? Begin?”***

# SHARE YOUR SCREEN

MINT (Multilingual Naming Test)

### Say: “I am going to show you some pictures of objects, one at a time. Please tell me the name of each object, that is, tell me what it is called. If you cannot think of the name try to make your best guess. If you don’t know what the object is, I will try to help you. Do you have any questions?”

If administering remotely each object will be presented as a separate slide. Record patient responses and cues on original form in testing packet.

Stop testing after six consecutive failures, either spontaneously or after receiving semantic cues.

\*Please see MINT instruction form for additional information on CUEING/ACCEPTABLE PROMPTS/SCORING CRITERIA.

Additional notes:

1. Allow up to 20 seconds for a response
2. For items 30 and 31 (mortar, pestle) there is only one picture.

 Alternative responses:

|  |  |  |
| --- | --- | --- |
| Item No. | MINT Item | Alternative correctresponses |
| 3 | Lightbulb | Electric bulb, bulb |
| 10 | Seesaw | Teetor-totter |
| 27 | gauge | Manometer, barometer |

If you have not already taken screen shots of the following items, please do so now:

***MoCA***: Cube, Clock

***Rey-O Complex Figure Drawing:*** Copy Drawing, Immediate Drawing, Delay Drawing