NACC UNIFORM DATA SET

Instructions

For the T–Cog Neuropsychological Battery (Form C2T)

C2T

UDSv4.0, January 2025

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This publication was funded by the National Institutes of Health through the National Institute on Aging (Cooperative Agreement U24 AG072122).

Revisions made to the Instructions for the T-Cog Neuropsychological Battery since release (January 2025)

Date yyyy-mm-dd	Description	Test(s) affected
2025-02-03	Moved RAVLT test delay recording from after List B to after Trial 6.	Rey Auditory Verbal Learning Test (RAVLT)
2025-10-09	Changed "church" to "school" in CERAD J7 Word List Recognition to avoid interference with the MoCA	CERAD Verbal Learning - Delayed Recognition
2025-12-10	Clarified instructions that C2T is only meant to be done via Telephone. Please use C2 for video or in-person visits	N/A

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DETAILED INSTRUCTIONS

Blind/Telephone MoCA 13

Administration time: 10 minutes

Version of the original 30-item MoCA adapted for use over the telephone or for individuals with low or no vision.

Craft Story 21 Recall — Immediate 18

Administration time: 5 minutes (20-minute delay)

The Craft Story 21 Recall (Immediate) assesses the ability to recall a short story. The examiner reads the story to the participant in a clear voice. Immediately after hearing the story, the participant is asked to retell the story from memory. The story should be read with adequate volume and clarity for the participant to understand during the presentation. No repetitions are permitted. After a 20-minute delay, the participant is asked to repeat the story. The participant is cued to remember the story for later.

Number Span Forward and Backward 23

Administration time: 5 minutes

Number Span is a test of working memory. Numbers for both forward and backward span tests are presented, with sequences in ascending order of difficulty. Two trials are administered at each sequence length. There are two scores: total number of correct trials and longest sequence repeated correctly prior to failing two consecutive trials of the same length.

Rey Auditory Verbal Naming Test Immediate 26

Administration time: 7 minutes (20- to 30-minute delay)

The RAVLT assesses immediate memory span, new learning, susceptibility to interference, and recognition memory. A list of 15 words (List A) is read aloud for five consecutive trials, and each trial is followed by a free-recall test. After the fifth trial, an interference list of 15 different words (List B) is presented, followed by a free-recall test of that list. The words of List A and List B are presented at the rate of one word for every 1.5 to 2 seconds. Immediately afterward, delayed free recall of List A is tested (Trial 6).

CERAD Verbal Learning Immediate 29
Administration time: 5 minutes

Brief measure given to assess participants' ability to remember newly learned information. To ensure that participants are familiar with and attend to each word, they are asked to read the words printed on separate cards in the CERAD "flip" book. The ten words on the flip cards are presented at a constant rate of 1 word every 2 seconds, and then the participant is immediately asked to recall as many as possible. There are three trials, each of which presents the words in a different order.

Category Fluency 31
Administration time: 5 minutes

Category Fluency is a measure of semantic memory. The participant is asked to name various items of a given semantic category (animals or vegetables), and the number of unique responses named is scored. Participants are given 60 seconds to generate as many distinct responses as they can.

CERAD Verbal Learning Delayed 36
Administration time: 5 minutes

Brief measure assessing ability to recall words given during CERAD Verbal Learning Immediate task.

After a 5 minute delay, participants are asked to recall as many words as they can. Allow the participant a maximum of 90 seconds. Number each word in its corresponding block on the response sheet in the order it is recalled. Score the number of words correctly recalled.

Oral Trail Making Test (Optional) 39
Administration time: 5 minutes

Brief measure assessing mental sequencing and switching.

Craft Story 21 Recall — Delayed 42
Administration time: 2 minutes

The Craft Story 21 Recall (Delayed) is administered 20 minutes after the immediate recall. This is a test of delayed recall (episodic memory) of the story that was read to the participant at the beginning of the testing session, during the immediate recall.

Verbal Fluency 46
Administration time: 5 minutes

Verbal Fluency is a measure of speeded word retrieval to phonemic cues. The participant is asked to name items that begin with a certain letter of the alphabet (F and L). The number of unique responses named is scored. Participants are given 60 seconds to generate as many distinct responses as they can.

Rey Auditory Verbal Naming Test Delayed Recall and Recognition (Optional) 51
Administration time: 2 minutes

After a 20- to 30-minute delay, another free recall and recognition trial is administered. The participant is asked to recall List A again. After the delayed free recall trial is complete, a recognition page is given, and participants are asked to say "Yes" to words they recognize from the first list (List A).

Verbal Naming Test (Optional) 55
Administration time: 10 minutes

Fifty-item auditory naming test requiring participants to name a specific item after hearing a description.

The current need for phone-based cognitive assessment

CONDITIONS OFTEN ARISE WHEN ADRC participants cannot meet face-to-face with staff for interviews or assessments. Failure to collect key data from participants in a timely fashion could severely compromise our research. Needed are alternative methods of data collection that yield valid information. Telephone administration of cognitive tests and questionnaires is an approach that has been used successfully in other studies.

The modified telephone version of the UDSv4 cognitive battery is intended to support continued data collection. While the core UDSv4 neuropsychological battery is largely preserved, measures that have visual stimuli, including the Benson Complex Figure Copy, MoCA, Trail Making Test, and MINT cannot be administered by telephone. In this battery, these items were removed, leaving the MoCA Test Blind, Craft Story 21 Recall (Immediate and Delayed), Number Span Forward and Backward, Category Fluency, Verbal Fluency, and the Geriatric Depression Scale (UDS Form B6). While not detailed here, the participant form of the CDR, along with proxy measures including the NACC Functional Assessment Scale (UDS Form B7), CDR® Plus NACC FTLD (Form B4), and NPI-Q (Form B5), can also be administered by telephone.

Optional tests are suggested, not as replacements for the tests removed, but as possible supplements to the shortened battery, including the Oral Trail Making Test and the Verbal Naming Test.

Advantages of telephone-based testing

There are several advantages to telephone cognitive testing:

- The participant can be tested in their own home or some other place convenient to them.
- Testing can be scheduled at the convenience of the participant, which may also improve data completeness.
- Telephone-administered testing can be a cost-efficient method to reach a larger number of individuals.
- This assessment methodology can enable a study to reach a broader geographic representation of participants.
- Measurement error can be reduced in multi-site studies if the telephone batteries are administered centrally by a core of well-trained examiners, compared to training individual assessors at each site.

Limitations of telephone-based testing

There are limitations to using telephone-based cognitive assessments.

- Not all cognitive functions can be assessed. Psycho- and visuomotor tasks (e.g., Trail Making Test) or tasks requiring a visual stimulus (e.g., Multilingual Naming Test, Benson Complex Figure Copy Test) cannot be administered. Alternate tests may be substituted, though they should not be presumed equivalent. The Telephone MoCA, Oral Trail Making Test, and the Verbal Naming Test are examples of potential substitutes.
- Participants' hearing difficulties may present a problem. Also, different receiver devices (land lines, cell phones, computers) may introduce additional challenges, such as poor sound quality, desynchronized exchanges, and unreliable connections. Using the telephone may be awkward for some participants due to physical limitations or fatigue.
- The quality of the interpersonal interaction between examiner and participant could also be poorer when using telephone testing.
- Some participants may rely on aids like clocks, calendars, notepads, or other persons. In order to lessen the likelihood that participants use these aids, they can be told that the tests have built-in indicators of test and performance validity, and examiners have ways to monitor adherence to instructions.

While there are no perfect solutions to these potential limitations, there are steps one can take to mitigate their impact on the quality of the test data.

Questions on administration and scoring

If questions arise about the administration or scoring of the T-Cog on tests that are part of the standard UDSv4 cognitive battery, please refer first to the standard instructions provided for those tests and/or consult with the ADRC neuropsychologist at your Center. For issues regarding supplemental tests, or which cannot be resolved by your neuropsychologist, please first review the ***Frequently Asked Questions for T-Cog*** document on the NACC website. Send any remaining questions to NACC at naccmail@uw.edu, and they will be reviewed and answered on a regular basis by the Clinical Task Force.

Recommendations for UDS v4.0 telephone-administered testing

Getting set up

- Use a telephone headset with built-in earphones and a microphone to remain hands-free for typing or writing. Voice clarity is better, too.
- Arrange a mutually agreeable time to conduct the testing with the participant, asking them to reserve 1 hour for the call.
- When you call the participant, please re-introduce yourself and remind them where you are calling from and the purpose of the call. Confirm their identity with name and date of birth.
- Make it clear to the participant at the very beginning of the call what you will do if the call is interrupted (typically, an immediate call-back by the examiner).
- Work with the participant to determine the best way to use their phone during testing. Options might include holding it, using the speaker phone, or using earphones or ear buds with a built-in microphone. If the participant is hands-free, there is less risk of inadvertent disconnection by accidental pressing of cell phone buttons.
- Instruct the participant to position themselves close to the microphone at all times. If you cannot hear them clearly, instruct the participant to speak directly into the microphone. You may need to remind them throughout the call.
- For examiners who wish to record their session, using speaker phone is recommended so that both participant's and examiner's voices can be recorded.

Examiner's physical environment

- Examiner's environment should be quiet and free of distracting voices or sounds. This can be challenging. Posting signs on office doors that testing is under way and discussing noise-reduction strategies with officemates may be necessary.
- The examiner's space should be acoustically favorable. Large open rooms do not convey sound as well as closed-in areas.
- Have materials ready before testing to reduce extraneous noise and save time.
- Participants with dementia may benefit from having a proxy or care partner assist them with setting up the telephone. After the participant and tester have successfully initiated the call, the care partner should be asked to leave the room.

Participant's hearing

Assess participant's hearing with questions and then a hearing task. Below is a script:

"Before we begin, I have a few questions about your hearing to make sure you can hear me well enough over the telephone."

"Do you usually have trouble hearing over the phone?" ☐ **No** ☐ **Yes**

"Can you hear me well enough?" ☐ **No** ☐ **Yes**

"Do you use a hearing device?" ☐ **No** ☐ **Yes**

If YES … *"***Is it in place?"** ☐ **No** ☐ **Yes**

If NO … *"***Would you please put it on?"** ☐ **No** ☐ **Yes**

"Would you please repeat the following statement: 'I have a cat, so all I need is a dog.'"

Did participant correctly repeat statement? ☐ **No** ☐ **Yes**

If NO, then repeat the sentence: **"I have a cat, so all I need is a dog."**

Did participant correctly repeat sentence? ☐ **No** ☐ **Yes**

If YES, proceed with testing.

If NO, but you think from your interaction up to this point his/her poor hearing can be compensated for, proceed with the testing; however, speak as loudly and distinctly as possible.

If NO, and you think hearing will severely bias the cognitive test results, DO NOT continue with testing. Inform the participant that you will not be performing the testing:

Thank you very much, Ms. / Mr. _____, but you may not be able to hear me well enough to complete the memory tasks over the telephone, so I will not continue at this time. On behalf of the _____ study team, thank you for taking time to speak with me today.

Participant's physical environment

- Testing should be done with the participant alone in a room, although a proxy may initially be present in order to assist the participant with any technical difficulties encountered.
- If someone else is there you should ask that person or the participant to leave the space.
- If other people enter the participant's space, you may have to temporarily interrupt testing to ensure that they give the tasks their full attention.
- Ask the participant to ensure that they are comfortable and if the testing environment is as free of distractions as possible, as in this script:

"Are you in a quiet place where you will not be disturbed for about _____ minutes?" ☐ **No** ☐ **Yes**

Core tests: 30 minutes
Core + Word List Recall tests: 45 minutes
Core + all optional tests: 1 hour

"Do you have pets that need to be taken care of before we begin?" ☐ **No** ☐ **Yes**

If YES, allow the participant to take care of their pet(s) before beginning

"Other than the phone you are using, do you have a cell phone, TV, radio, or computer turned on in front of you?" ☐ **No** ☐ **Yes**

If YES … **"Can you to turn them off so they won't distract you while we're working together?"**

"Do you have anyone nearby?" ☐ **No** ☐ **Yes**

If YES … **"Can you please ask them to move to another room, as we don't want you distracted during the interview."**

"Do you need to use the bathroom or get a drink of water?" ☐ **No** ☐ **Yes**

If YES, allow the participant time to use the restroom or get a drink of water

"These tasks should only be done in your head. Do you have any pencils, pens, or paper in front of you now?" ☐ **No** ☐ **Yes**

If YES … **"I need you to remove them since we'll only be using the phone to talk for these tasks."**

"Do you have any calendars or newspapers in sight or a watch with a date feature?" ☐ **No** ☐ **Yes**

If YES … **"I need you to put them out of sight for me."**

- Ask about permission to record:

As part of this research study, your voice will be recorded using a digital recorder while performing some of the cognitive tests. This is to assure accuracy as we record your answers. You will not be able to inspect, review, or approve the content of the digital recordings. You may request the recording be stopped at any time, and you can withdraw your consent to use the digital recording before any information is transcribed. All recordings may be kept and stored indefinitely and may be analyzed for research purposes. May I record the interview?" ☐ **No** ☐ **Yes**

"Good, _____, I think we are ready to get started. Are you ready?"

Examiner voice clarity

- Speak a bit slower than you would face-to-face. The pace newscasters use is good. You need to give yourself time to say each word clearly and completely. As such, some test instructions have been modified slightly (see RAVLT instructions).
- Enunciate each word. Some sounds are not heard as clearly over the phone or are difficult to distinguish from different sounds. You may need to exaggerate a bit certain letters or syllables. Over time you may develop a list of very commonly misheard words and decide to give credit for them. Of course, the first action should be to speak more clearly and crisply.
- If you speak with an accent, you may need to adjust your speech for some words. You can practice with a person who does not speak your native tongue until you are ready. Whenever possible, use native speakers for the language of administration.

Ensuring data fidelity

- If you audio-record each telephone interview, the recording can be used to check administration errors and scoring accuracy as well as in discussions among team members about specific responses.
- If interviewers are encouraged to discuss challenging situations with each other, then you can better decide as a team on any administration or scoring rule adjustments. For example, if a particular word on a word list learning task is repeatedly misunderstood, the team may decide to accept it if it is consistently reported by the participant incorrectly in the same way.
- Audio recordings of telephone administrations can be used for periodic recertification of examiners.
- Inform the participant of your wish to record the interview and seek consent. Individual ADRCs may need to modify this statement to match the language in their own informed consent documents. Here is an example:

  "As part of this research study, your voice will be recorded using a digital recorder while performing some of the cognitive tests. This is to assure accuracy as we record your answers. You will not be able to inspect, review, or approve the content of the digital recordings. You may request that the recording be stopped at any time, and you can withdraw your consent to use the digital recording before any information is transcribed. All recordings may be kept and stored indefinitely and may be analyzed for research purposes. May I record the interview?"

Ensure uniformity in data collection and scoring. This is essential for all portions of the interview. To this end:

- Administer all tests in the order in which they are presented. The sequence of tests is important.
- Provide all instructions to the participant verbatim, both sample and actual test instructions.
- If the participant did not hear you or asks for clarification, you may repeat the instructions verbatim.
- Be sure to gain and hold the participant's attention as items are administered.
- Do not assume that partial answers or misstatements are correct. When in doubt about the acceptability of a response, refer to the manual.

Avoid missing data. Every reasonable attempt should be made to administer all performance items and all tests. Note that if an item is administered and the correct response is not made, the response should be scored as an error.

Record the participant's responses on the test forms as they are given. Audio recording each full test administration is strongly encouraged. This allows for cross scoring, which should be done routinely as part of quality assurance. Never depend on your memory to record the participant's responses after the test session is over.

Some sites may have concern about participants using aids such as newspapers, clocks, or pencils to help them answer questions via telephone. In this case, examiners can remind participants about the requirement that they not use these items, stating: **"These tests have built-in indicators that help us know whether you provide answers in accordance with testing rules and guidelines — that is, that you not write things down or use other aids. If we feel that we are not receiving accurate data, it is likely that we will not be able to use this information for research diagnostic purposes."**

Additional instruction may be needed to emphasize the benefit of genuine effort without the assistance of aids during

the testing. This instruction can be given in the introduction or during the administration, especially particularly difficult tasks. One example of optional instruction is:

"M_____, one of the most important parts of our work is protecting the quality of the information we collect. If the data we collect from these tests I am about to give you and questions I will ask you are in any way compromised, then the conclusions we draw from them will be wrong and could mislead us and other researchers trying to find effective treatments for memory problems and Alzheimer's. With telephone interviews we must trust that participants will not use aids to make their performance appear better. We have had people admit after our calls to cheating by writing things down they shouldn't. Can I count on you to perform these tasks to the best of your ability without using any aids or other things that would distort your data? Thank you for working hand-in-hand with us."

Validity of participant's responses

At the end of testing, have the examiner record their impression of whether hearing or other factors significantly influenced test results. It can be difficult to judge sometimes, but knowing that such an influence may have been present is helpful in adjudication and data analysis. Here is an example:

How valid do you think the participant's responses are?	☐ 1 Very valid, probably accurate indication of participant's cognitive abilities **(END FORM HERE)** ☐ 2 Questionably valid, possibly inaccurate indication of participant's cognitive abilities **(CONTINUE)** ☐ 3 Invalid, probably inaccurate indication of participant's cognitive abilities **(CONTINUE)**
What makes this participant's responses less valid? (Select all that apply.)	☐ 1 Hearing impairment ☐ 2 Distractions ☐ 3 Interruptions ☐ 4 Lack of effort or disinterest ☐ 5 Fatigue ☐ 6 Emotional issues ☐ 7 Unapproved assistance ☐ 8 Other (SPECIFY): _____

Establishing rapport

Establish rapport is essential to the interview in general and the assessment of cognitive function in particular. The participants are volunteers who will typically have little experience with cognitive assessment procedures. Cognitive testing has the potential to be an uncomfortable or even threatening experience, particularly over the telephone, where they lack non-verbal cues from the examiner. This may be particularly relevant to older adults who have less familiarity with technology and may have physical challenges.

The following considerations will help to establish and maintain rapport:

- Provide a brief orientation to the testing procedures at the beginning and answer any questions the participant may have. An introduction similar to this may be used: **"I am going to ask you to complete some memory and thinking tests. Some of the questions I ask you may be very easy and some of the questions are very hard. No one gets everything correct, I just want you to try the best you can on these tests. Do you have any questions?"**
- It is important to convey appreciation for the time and effort being volunteered. Remember that the participants are people (not sources of data) who are donating their time. The interviewer should convey respect for the participant, interest in the interview process, and sensitivity to the needs and concerns of the participant.
- The participant will respond to the interviewer's emotional state. If the interviewer seems anxious, unsure, or uninterested, the participant will often respond in kind. Therefore, it is critical that the examiner be thoroughly trained and confident about test administration. Participants will be most cooperative and at ease with an interviewer who is secure in their role and who has a firm command of test administration, delivering instructions in a fluent, clear, and practiced manner with proper inflections.
- Avoid subtle coaching or cheerleading. Your job is to administer each item as specified and obtain a response that can be scored. Do not provide either explicit or implicit verbal or non-verbal responses that could influence the participant's responses beyond what is permitted. For example, do not convey surprise, pleasure or disapproval to any answer. The examiner's role is to obtain honest, uninfluenced responses to the questions.
- You may offer generic phrases of encouragement during testing when needed (e.g., **"You're doing just fine. Some of these tests are very challenging and some are easier"**) but do not offer any information on the correctness of a particular response. If participants ask how they are doing, explain that you are not permitted to give feedback. However, you should thank them for their effort and convey appreciation for participating in the study
- It may be more difficult to observe the participant for signs of strain or stress (e.g., becomes nervous, puts less effort into tasks, and starts making excuses) because you cannot observe them face-to-face; however, continue to help the participant relax with generic reassurances and encouragement (e.g., **"These tasks are designed to be challenging. Just do the best you can"**). If you continue to notice signs of stress or anything unusual during the testing (especially interruptions or technological issues), note this information.

Order of test administration

The UDSv4 cognitive battery contains six core and two optional tests, including a choice of verbal learning test. Table 1 provides the suggested order of administration if using the Rey AVLT, and Table 2 provides the suggested order if using the CERAD. **See naccdata.org for full information on NACC UDSv4 neuropsychological tests and norms.**

TABLE 1. Order of administration with Rey AVLT verbal learning test

1. MoCA-Blind
2. Craft Story 21 Recall – Immediate
3. Number Span – Forward and Backward
4. Rey Auditory Verbal Learning Test (RAVLT) – Immediate
5. Category Fluency – Animals and Vegetables
6. Oral Trail Making (Optional)
7. Craft Story 21 Recall – Delayed
8. Verbal Fluency – F and L
9. Additional questionnaires or forms (e.g., GDS, medications, etc.) that do not interfere with recall to meet RAVLT delay time
10. Rey Auditory Verbal Learning Test (RAVLT) – Delayed Recall and Recognition
11. Verbal Naming Test (optional)

TABLE 2. Order of administration with CERAD verbal learning test

1. MoCA-Blind
2. Craft Story 21 Recall – Immediate
3. Number Span – Forward and Backward
4. CERAD Verbal Learning - Immediate
5. Category Fluency – Animals and Vegetables
6. CERAD Verbal Learning - Delayed
7. Oral Trail Making (Optional)
8. Craft Story 21 Recall – Delayed
9. Verbal Fluency – F and L
10. Verbal Naming Test (Optional)

MoCA–BLIND

DESCRIPTION

The Montreal Cognitive Assessment (MoCA)–BLIND is an adapted version of the original MoCA, a rapid screening instrument for mild cognitive dysfunction. The MoCA–BLIND assesses different cognitive domains: attention and concentration, memory, language, conceptual thinking, calculations, and orientation. It contains the same items as the original MoCA except those requiring visual abilities have been removed. Time to administer the MoCA–BLIND is approximately 5–10 minutes. The total possible score is 22 points; a score of 18 or above is considered normal. This cutoff score is suggestive as it has not been validated thus far.

SOURCE

All information on this test, including publications and norms and cut-off scores, appears on http://www.mocatest.org.

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See also: Wittich W, Phillips N, Nasreddine ZS, Chertkow H. Sensitivity and specificity of the Montreal Cognitive Assessment modified for individuals who are visually impaired. Journal of Visual Impairment and Blindness. (2010); 104 (6): 360-368.

ADMINISTRATION

Time to administer the MoCA–BLIND is approximately 5-10 minutes. The examiner is permitted to repeat each item once, if asked. Following are detailed instructions.

1. **Memory**

   The examiner reads a list of five 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 participant produces on this first trial. When the participant indicates that they have finished (have 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 participant recalls after the second trial.

   At the end of the second trial, inform the participant that he/she 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."**

2. **Attention**

   FORWARD DIGIT SPAN: Give the following instructions: **"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: Give the following instructions: **"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.

   VIGILANCE: The examiner reads the list of letters at a rate of one per second, after giving the following instructions: **"I am going to read a sequence of letters. Every time I say the letter A, tap your hand once. If I say a different letter, do not tap your hand."**

   SERIAL 7S: The examiner gives the following instructions: **"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 these instructions twice if necessary.

3. **Sentence repetition**

   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."** Space is also provided (MoCA notes page) to record responses.

4. **Verbal fluency**

   The examiner gives the following instructions: **"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."** Space is also provided (MoCA notes page) to record responses.

5. **Abstraction**

The examiner asks the participant 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 participant answers in a concrete manner, then say only one additional time: **"Tell me another way in which those items are alike."** If the participant 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.

6. **Delayed recall**

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. If the participant fails to freely recall one or more, proceed to cueing, as indicated below.

Following the delayed free recall trial, prompt the participant with the semantic category cue provided below for any word not recalled. Make a check mark (✓) in the allocated space. If the participant does not recall the word after the category cue, give him/her a multiple choice trial. For example, if the word FACE was not freely recalled with the category cue, ask, **"Which of the following words do you think it was, NOSE, FACE, or HAND?"** Use the following category and/or multiple-choice cues for each word, when appropriate:

	Category cue	**Multiple choice**
FACE	part of the body	nose, face, hand
VELVET	type of fabric	denim, cotton, velvet
CHURCH	type of building	church, school, hospital
DAISY	type of flower	rose, daisy, tulip
RED	a color	red, blue, green

7. **Orientation**

The examiner gives the following instructions: **"Tell me the date today."** If the participant does not give a complete answer, then prompt accordingly by saying: **"Tell me the [year, month, exact date, and day of the week]."** Then say: **"Now, tell me the name of this place, and which city it is in."**

ADDITIONAL INSTRUCTIONS FOR ADMINISTERING THE MOCA–BLIND

- The MoCA–BLIND need not be administered by the clinician who is administering the rest of the UDS battery, and it need not be administered in the same session as the other tests (it can be administered one to seven days before the rest of the battery).
- **MEMORY:** If the participant recalls a word similar to the one on the word list (e.g., "vase" for "face"), enunciate more while reading through the second learning trial. If the participant recalls the same misheard word again, record the misheard word and if the participant recalls the word ("vase") on the delayed recall, then count the recall as correct. If the participant does not recall the alternate word ("vase"), provide the same category and multiple–choice cues for the original word ("face"). Read the words at a slower pace, about 1 word per 1.5 to 2 seconds, rather than 1 per second.
- **ATTENTION (VIGILANCE – LETTER A TAPPING):** Ask the participant to tap the microphone/mouthpiece, instead of their hand. Before starting the trial, ask the participant to tap the microphone to ensure the tap is audible, provide feedback to the participant whether you can hear the tap. Read the letters at a slower rate, at least 1 letter per 2 seconds, to allow for variance in sound transmission over the phone
- **FLUENCY:** Even though verbal fluency for F and L appear later in the battery, it is still necessary to administer the fluency test for the letter F in the language section of the MoCA–BLIND. On the MoCA–BLIND fluency, provide an additional example after the instructions to clarify the letter (e.g., "The letter F, like fox" or "The letter F, like A B C D E F").
- **ORIENTATION:** [PLACE] If you have introduced yourself and identified where you are calling from (e.g., ADRC name, name of building where in-person visits occur) ask the participant to identify that location. [CITY] If the participant lives elsewhere, ask the participant to identify the city where they live.

For MoCA conversion equation to the 30–point MoCA, see mocacognition.com/faq/.

SCORING

If any of the individual items cannot be administered, enter the appropriate reason code (95/995 – 98/998) from the key.

1. Memory

For the MoCA–BLIND Total Score, no points are given for Trials One and Two.

2. Attention

FORWARD DIGIT SPAN, BACKWARD DIGIT SPAN: Allocate one point for each sequence correctly repeated. (N.B.: the correct response for the backwards trial is 2 – 4 – 7.) Enter the score for "Attention — Digits" on NACC UDS Form C2T, Question 1e.

VIGILANCE: 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). Enter the score for "Attention — Letter A" on NACC UDS Form C2T, Question 1f.

SERIAL 7S: 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. Enter the score for "Attention — Serial 7s" on NACC UDS Form C2T, Question 1g.

3. Sentence repetition

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.). Enter the score for "Language — Repetition" on NACC UDS Form C2T, Question 1h.

4. Verbal fluency

Allocate one point if the participant generates 11 words or more in 60 seconds. Record the participant's response in the bottom or side margins. Enter the score for "Language — Fluency" on NACC UDS Form C2T, Question 1i.

5. Abstraction

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 traveling, 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

Enter the number correctly answered for "Abstraction" on NACC UDS Form C2T, Question 1j.

6. Delayed recall

Allocate 1 point for each word recalled freely without any cues.

Scoring this section for the MoCA–BLIND Total Score: No points are allocated for words recalled with a cue. A cue is used for clinical information purposes only and can give the test interpreter additional information about the type of memory disorder. For memory deficits 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.

Enter the number of words recalled without a cue for "Delayed recall — No cue" on NACC UDS Form C2T, Question 1k.

<u>Scoring for cued recall</u>

If a category cue was given, enter the number of words recalled; otherwise, enter "88=Not applicable" for "Delayed recall — Category cue" on NACC UDS Form C2T, Question 1l. If a multiple choice cue was given, enter the number of words recalled; otherwise, enter "88=Not applicable" for NACC UDS Form C2T, Question 1m.

The total possible words recalled and entered in Questions 1k, 1l, and 1m should be 5 or less. If a participant remembers all five words on the MoCA–BLIND delayed recall without cueing (i.e., uncued), enter 5 total correct for Question 1k; in this case, the number correct with a category cue and recognition cue (1l and 1m) should be set to "88=Not applicable" because they were not administered.

If a participant does not remember all five words uncued, record the number correct uncued for Question 1k, then provide the category cue for the words that were not recalled without a cue, and enter the number correct with the category cue (if any) for Question 1l.

If the participant did not recall all the words presented with category cue, administer those not recalled using the recognition cue and enter the total correct with the recognition cue (if any) for Question 1m.

7. Orientation

For the MoCA–BLIND Total Score, give one point for each item correctly answered. The participant must tell the exact date and the exact place (name of hospital, clinic, office). No points are allocated if participant makes an error of one day for the day and date. For each item, enter 1 if correct or 0 if incorrect for Orientation on NACC UDS Form C2T, Questions 1n – 1s.

TOTAL SCORE

Sum all subscores listed on the right-hand side of the MoCA–BLIND worksheet. The maximum score is 22 points. A final total score of 18 and above is considered normal.

Enter the uncorrected score for NACC UDS Form C2T, Question 1d. If any of the scored MoCA–BLIND items (1e – 1k, 1n – 1s) were not administered, enter 88=Not applicable for the total score.

Montreal Cognitive Assessment (MoCA)—Blind

MEMORY		FACE	VELVET	CHURCH	DAISY	RED	POINTS
Read list of words, subject must repeat them. Do 2 trials even if 1st trial is successful. Do a recall after 5 minutes.	1st trial						No points
	2nd trial						

ATTENTION

Read list of digits (1 digit/sec.) Subject has to repeat them in the forward order [ ] 2 1 8 5 4

Subject has to repeat them in the backward order [ ] 7 4 2 ___/ 2

Read list of letters. The subject must tap with his hand at each letter A. No point if ≥ 2 errors

[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B ___/ 1

Serial 7 subtraction starting at 100

[ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65

4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt** ___/ 3

LANGUAGE

Repeat: I only know that John is the one to help today. [ ]

The cat always hid under the couch when dogs were in the room. [ ] ___/ 2

Fluency / Name maximum number of words in one minute that begin with the letter F.

[ ] _____ (N ≥ 11 words) ___/ 1

ABSTRACTION

Similarity between e.g. banana - orange = fruit

[ ] train - bicycle

[ ] watch - ruler ___/ 2

DELAYED RECALL	Has to recall words	FACE	VELVET	CHURCH	DAISY	RED	Points for UNCUED recall only	POINTS
	With no cue	[ ]	[ ]	[ ]	[ ]	[ ]		
Optional	Category cue							___/ 5
	Multiple choice cue							

ORIENTATION [ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City ___/ 6

© Z. Nasreddine MD **www.mocatest.org** Normal ≥ 18 / 22

TOTAL ___/ 22

Add 1 point if ≤ 12 yr edu

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Craft Story 21 Recall (Immediate)

DESCRIPTION

The Craft Story 21 Recall (Immediate) assesses the ability to recall a short story. The examiner reads the story to the participant in a clear voice. Immediately after hearing the story, the participant is asked to retell the story from memory. The story should be read with adequate volume and clarity for the participant to understand during the presentation. No repetitions are permitted. After a 20-minute delay, the participant is asked to repeat the story. The participant is cued to remember the story for later.

It is important for the examiner to get a sense of the participant's hearing acuity and modulate their voice accordingly. Please note that for the hard of hearing, it is not necessarily helpful merely to increase the volume. A change in pitch tends to be effective, with a lower-pitched voice more audible than a loud, high-pitched voice. As with all neuropsychological testing, it is best if the examiner projects their voice at the participant, rather than down toward a clipboard.

SOURCE

Craft S, Newcomer J, Kanne S, Dagogo-Jack S, Cryer P, Sheline Y, Luby J, Dagogo-Jack A, Alderson A. Memory improvement following induced hyperinsulinemia in Alzheimer's disease. Neurobiol Aging. 1996 Jan-Feb;17(1):123-30.

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ADMINISTRATION

Making sure you have the participant's attention, read the following instructions aloud. Then read the story slowly, articulating clearly and with normal inflection.

[SAY]: **"I am going to read you a story. Listen carefully, and when I am through, I want you to tell me everything you can remember. Try to use the same words I use but you may also use your own words. The story is …"**

As soon as the story is over, give the recall instruction:

[SAY]: **"Now tell me the story I just told you. Try to remember as much as you can."**

Record the participant's recall, writing between the lines of the story. For rapid and accurate transcribing of the story, use abbreviations as needed, omit filler words and irrelevant verbiage, and if absolutely necessary, say **"A little slower, please,"** rather than miss story elements. Make sure your transcription of the story is legible before proceeding.

Your transcriptions should be an exact replica of the participant's verbal responses. Write legibly, in ink, and leave room between each line for scoring. If it is difficult to write the participant's response, the examiner may prefer to tape-record the participant's response and then transcribe the results after the session; this is acceptable if appropriate consent has been obtained.

After the participant tells the story, you must give the delayed recall cue.

[SAY]: **"Later on, I will ask you to tell me this story again, so try not to forget it."** Note the time so that later you can calculate the time that has elapsed between Craft Story 21 Recall (Immediate) test and the Craft Story 21 Recall (Delayed) test.

SCORING

A. GENERAL INSTRUCTIONS

Scoring can be deferred until after the entire battery is administered but should be performed close to the completion time. Use the score sheets to score the transcription. One sheet is for verbatim scoring and the second is for paraphrase scoring.

The verbatim score is independent of the paraphrase score. Treat each scoring effort separately: they are not additive. Score the story first for verbatim recall and then score it for paraphrase recall.

For verbatim scoring, the story is divided into 44 "bits." All bits contain one "content" word, which is scored. Some bits also contain "non-content" words, which are not considered in scoring. Each bit is demarcated by a slash (/) at the beginning and at the end of the bit (e.g., /Barry/) on the score form.

For the paraphrase scoring, there are 25 bits of information to score.

Separately sum verbatim and paraphrase points earned for each story, for both the immediate and delayed recall conditions. Record all sums, in the appropriate boxes, on the summary scoring sheet.

Remember with verbatim and paraphrase scoring to consider each bit individually. The order that the bits were given does not matter in the scoring system.

B. DEFINITIONS

1. **CONTENT WORDS**: nouns, adjectives, adverbs, verbs, pronouns, prepositions with semantic load. These are considered during the scoring process.
2. **NON-CONTENT WORDS**: conjunctions, articles, helping verbs, prepositions without semantic load. These are not considered during the scoring process.

VERBATIM SCORING

PERFECT VERBATIM RESPONSE (1.0 POINT): Give the participant 1 point for every bit for which content words are recalled exactly and completely. Allowances can be made for variations of verbs (e.g., "likes" for "liked," "join" for "joining") and minor omissions (e.g., "neighbor" for "neighbor's") or changes in number (e.g., "games" for "game"). The content words do not need to be recalled by the participant in the same order they were read to receive credit. The words can appear anywhere in the recall.

Enter the verbatim score on NACC UDS Form C2T, Question 3a. If the test was not completed, enter the appropriate reason code, 95 – 98, and leave the paraphrase score blank.

PARAPHRASE SCORING

PARAPHRASE RESPONSE (1.0 POINT): Give a point for a response that captures the elements of the story although not necessarily with the exact words (see table on page 22). If the participant provides a bit verbatim (e.g., the name), you should give a point for that bit.

Enter the paraphrase score on NACC UDS Form C2T, Question 3b.

Craft Story 21 Recall (Immediate)

INSTRUCTIONS: Making sure you have the participant's attention, read the following instructions aloud. Then read the story slowly, articulating clearly and with normal inflection.

SAY: "**I am going to read you a story. Listen carefully, and when I am through, I want you to tell me everything you can remember. Try to use the same words I use but you may also use your own words. The story is...**"

Maria's / child / Ricky / played / soccer / every / Monday /

at 3:30. / He / liked / going / to the field / behind / their / house /

and joining / the game. / One / day, / he / kicked / the ball / so / hard /

that it / went / over / the neighbor's / fence / where three / large /

dogs / lived. / The dogs' / owner / heard / loud / barking, / came /

out, / and helped / them / retrieve / the ball.

Record time administration ended: ☐

Total story units recalled (VERBATIM SCORING): ___ ___ / 44

Total story units recalled (PARAPHRASE SCORING): ___ ___ / 25

As soon as the story is over, give the recall instruction:

SAY: "**Now tell me the story I just told you. Try to remember as much as you can.**"

Record the participant's recall, writing between the lines of the story above. For rapid and accurate transcribing of the story, use abbreviations as needed, omit filler words and irrelevant verbiage, and if absolutely necessary, say "A little slower, please," rather than miss story elements. Make sure your transcription of the story is legible before proceeding.

After transcribing the story, you must give the delayed recall cue.

SAY: "**Later on, I will ask you to tell me this story again, so try not to forget it.**" Note the time so that later you can calculate the time that has elapsed between Craft Story 21 Recall (Immediate) test and the Craft Story 21 Recall (delayed) test.

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Craft Story 21 Recall (Immediate): Verbatim Scoring

PERFECT VERBATIM RESPONSE (**1.0 POINT**): Give the participant 1 point for every bit for which content words are recalled exactly and completely. Allowances can be made for variations of verbs (e.g., "likes" for "liked," "join" for "joining") and minor omissions (e.g., "neighbor" for "neighbor's") or changes in number (e.g., "games" for "game"). The content words do not need to be recalled by the participant in the same order they were read to receive credit. The words can appear anywhere in the recall.

Maria's	
child	
Ricky	
played	
soccer	
every	
Monday	
three thirty	
he	
liked	
going	
field	
behind	
their	
house	
joining	
game	
one	
day	
he	
kicked	
ball	

so	
hard	
it	
went	
over	
neighbor's	
fence	
three	
large	
dogs	
lived	
dogs'	
owner	
heard	
loud	
barking	
came	
out	
helped	
them	
retrieve	
ball	
Total	

Scoring

Number of items recalled for verbatim scoring (IMMEDIATE RECALL SCORE): ___ ___ / 44

Guidelines for Paraphrase Scoring, Craft Story 21

Item	General Rule	Alternative 1-point responses	0-point responses	Points
Maria's	"Maria" or a variant of the name	Mary, Marie	Martha, Anna	
child	"child" or a phrase denoting it was a young person	son, kid, boy, teenager, young man	guy, children, daughter	
Ricky	"Ricky" or a variant of the name	Rick, Rich, Richie, Richard, Ricardo	Randy, Rusty, Robert	
played	"played" is required	to play, plays	did (soccer)	
soccer	"soccer" is required	futbol	baseball, volleyball, other sport	
every Monday	"Monday" or an indication that it occurred on a weekday	—	every day, another day of the week	
at 3:30	an indication that the activity took place in the afternoon	after school, every afternoon	after dinner, at night, in the morning	
He liked going to the field	an indication that he went to an outdoor area	went outside, went to the yard, going to the backyard	went to the school, gym	
behind their house	"house" or word denoting a house	home, residence, where they lived	any other building	
and joining	an indication that he participated in a game	played w/ other kids, became part of the team, playing w/the team	watching, played in the park	
the game.	"game" in any context	—	—	
One day	"One day" is required	—	—	
he kicked	indication that he performed the activity with his foot	booted, punted	threw, hit (with no mention of the foot)	
the ball	"Ball" is required	football, soccer ball	baseball, volleyball	
so hard	an indication that force was used	so much force, so strongly, (kicked it) so far	—	
that it went over	"Over" is required	—	—	
the neighbor's	an indication that the person lived in the same area	nearby resident	friend's	
fence	"fence" or a word denoting a fence of some kind	garden wall, wall	property line, street	
where three	"Three" is required	three (boys)	—	
large dogs lived.	an indication that there were dogs present	hounds, doggies	puppies, cats, kittens, other animals	
The dogs' owner	an indication that the person was responsible for the dogs	neighbor (if owner implied and "neighbor" mentioned twice)	a bystander, the police	
heard loud barking	an indication that the dogs were making noise	yelping, baying, yapping, heard the dogs	saw the dogs running around	
came out	a word or phrase indicating that the owner was present	(owner) saw the ball	his mother came out, the dogs came out	
and helped them	a word or phrase indicating that help was provided	assisted, aided, had to help	—	
retrieve the ball.	an indication that they got the ball back	gave him the ball, return the ball, (helped him) get the ball	—	

Number of items recalled for paraphrase scoring (IMMEDIATE RECALL SCORE): ___ ___ / 25 maximum

Number Span Test (Forward and Backward)

DESCRIPTION

This is a test of working memory, and it taps two different working memory constructs. The first, Forward Number Span, measures the capacity for holding information very briefly for the purpose of repeating it exactly. The second, Backward Number Span, measures the ability not only to hold the information but also to manipulate the numbers and reverse the sequence. This test is also referred to as Digit Span.

Numbers for both forward and backward span tests are presented, with sequences ranging from 2 to 9 numbers. Two trials are administered at each sequence length. There are two scores: total number of correct trials; longest sequence repeated correctly prior to failing two consecutive trials of the same length.

SOURCE

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ADMINISTRATION — FORWARD NUMBER SPAN

[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 participant 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?"**

Administer the items in the order indicated on the test form. Write the participant's response on the answer sheet. Continue testing until two number strings at the same length are failed. Record total number of trials correct and longest number sequence repeated correctly prior to the two failed trials.

SCORING — FORWARD NUMBER SPAN

Enter the total forward trials correct on NACC UDS Form C2T, Question 5a. If the test was not completed, enter the appropriate reason code, 95 – 98, from the key, and leave Question 5b blank. If the test was completed, enter the longest span forward that was correct for Question 5b.

ADMINISTRATION AND SCORING — BACKWARD NUMBER SPAN

[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 participant 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?"**

If the participant repeats the numbers in the forward order on either of the first two test items, you may remind them to say the numbers in reverse order by saying, **"Remember, after I say the number sequence, repeat the sequence backwards. Ready?"** Do not give them the number sequence again. Score correct if the participant is able to give the correct reverse order after the prompt. This unrequested reminder of the instructions can only be given once. For all future test items, if the participant repeats the numbers in forward order, score as errors.

Stop testing after two consecutive failures of the same span length. Administer the items in the order indicated on the test form. Write the participant's response on the answer sheet. Continue testing until two number strings at the same length are failed. Record total number of trials correct and longest number sequence repeated correctly prior to the two failed trials.

SCORING — BACKWARD NUMBER SPAN

Enter the total backward trials correct on NACC UDS Form C2, Question 6a. If the test was not completed, enter the appropriate reason code, 95 – 98, from the key, and leave Question 6b blank. If the test was completed, enter the longest span forward that was correct for Question 6b.

Number Span Test: Forward

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 participant gives the wrong answer, say, **"Actually, you would 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.

Span length		Response	Response code *incorrect = 0 correct = 1*
3	1-8-4		_____
	2-7-9		_____
4	4-1-6-2		_____
	8-1-9-5		_____
5	6-4-9-2-8		_____
	7-3-8-6-1		_____
6	3-9-2-4-7-5		_____
	6-2-8-3-1-9		_____
7	9-6-4-7-1-5-3		_____
	7-4-9-2-6-8-1		_____
8	4-7-2-5-8-1-3-9		_____
	2-9-5-7-3-6-1-8		_____
9	6-8-4-1-9-3-5-2-7		_____
	1-3-9-2-7-5-8-6-4		_____
		Total correct:	_____
		Length of longest correct series:	_____

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Number Span Test: Backward

SAY: **"I am 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 participant gives the wrong answer, say, **"Actually, you would 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.

Span length		Response	Response code *incorrect = 0 correct = 1*
2	2 - 5		_____
	4 - 7		_____
3	2 - 9 - 6		_____
	3 - 7 - 4		_____
4	7 - 1 - 8 - 6		_____
	5 - 1 - 6 - 3		_____
5	5 - 2 - 4 - 9 - 1		_____
	9 - 1 - 7 - 3 - 6		_____
6	6 - 8 - 5 - 7 - 9 - 2		_____
	8 - 1 - 6 - 3 - 5 - 9		_____
7	1 - 5 - 2 - 9 - 7 - 3 - 8		_____
	7 - 3 - 1 - 6 - 8 - 5 - 2		_____
8	3 - 6 - 4 - 9 - 5 - 2 - 7 - 1		_____
	6 - 3 - 5 - 7 - 1 - 8 - 2 - 9		_____
		Total correct:	_____
		Length of longest correct series:	_____

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Rey AVLT – Immediate

DESCRIPTION

The RAVLT assesses immediate memory span, new learning, susceptibility to interference, and recognition memory. A list of 15 words (List A) is read aloud for five consecutive trials and each trial is followed by a free-recall test. After the fifth trial, an interference list of 15 different words (List B) is presented, followed by a free-recall test of that list. The words of List A (Trials 1-5) and List B are presented at the rate of one word per second. Immediately afterward, delayed free-recall of List A is tested (Trial 6). After a 20- to 30-minute delay, another free-recall and recognition trial is administered.

SOURCE

Schmidt, M. (1996). Rey Auditory Verbal Learning Test: A handbook. Los Angeles, CA: Western Psychological Services.

For normative data, please see:

Strauss, E., Sherman, E. M. S., & Spreen, O. (2006). A compendium of neuropsychological tests: Administration, norms, and commentary (3rd ed.). Oxford University Press.

Mayo Normative Studies: Regression-Based Normative Data for the Auditory Verbal Learning Test for Ages 30-91 Years and the Importance of Adjusting for Sex

Nikki H. Stricker et al., Journal of the International Neuropsychological Society (2021), 27, 211-226.

ADMINISTRATION

- For immediate recall, read the words at the rate of 1 word per second.
- When reading the recognition word list, if the participant asks for clarification of the word (e.g., "curtain" vs. "person"), a description of the word may help ("Curtain, like what hangs and covers a window").
- For the purposes of this task, "intrusion" refers to an extraneous word offered by the participant that does not appear on the list.

LIST A,TRIAL 1

SAY: **"I am going to read a list of words. Listen carefully, for when I stop, you are to say back as many as you can remember. It doesn't matter in what order you repeat them. Just try to remember as many as you can."** Read List A, at a rate of 1 word per second, then record responses. Note the order of recall for correct responses (i.e., 1, 2, 3, ...); do not record repetitions or intrusions in the order of recall. Use another mark to note repetitions (e.g., "R" or a symbol", and track intrusions in the box at the foot of the table.

LIST A,TRIAL 2–5

SAY: "**I am going to read the same list again, and once again when I stop, I want you to tell me as many of the words as you can remember, including words you have said before. It doesn't matter in what order you say them, just say as many words as you can remember, whether or not you said them before."** Repeat **"Now I am going to read the same list again…"** for Trials 2 through 5 with List A.

LIST B

SAY: **"Now I am going to read a second list of words. This time, again you are to say back as many words of this second list as you can remember. Again, the order in which you say the words does not matter. Just try to remember as many as you can."** Read List B at the rate of 1 word per second, record responses. Note the order of recall for correct responses; do not record order of recall for repetitions or intrusions.

TRIAL 6

SAY: **"Now tell me all the words you remember from the first list."** Record responses. Note the order of recall for correct responses; do not record order of recall for repetitions or intrusions.

SCORING

Give one point for each word correctly recalled. For each trial, the total number of words correctly recalled and total number of intrusions should be entered on NACC UDS Form C2T, questions 6a-6n.

Rey Auditory Verbal Learning Test – Immediate

INSTRUCTIONS:	
List A, Trial 1	**"I am going to read a list of words. Listen carefully, for when I stop, you are to say back as many as you can remember. It doesn't matter in what order you repeat them. Just try to remember as many as you can."** *Read List A, at a rate of 1 word every second, then record responses. Note the order of recall for correct responses (i.e., 1, 2, 3, ...); do not record repetitions or intrusions in the order of recall. Use another mark to note repetitions (e.g., "R" or a symbol", and track intrusions in the box at the foot of the table.*
List A, Trials 2-5	**"I am going to read the same list again, and once again when I stop, I want you to tell me as many of the words as you can remember, including words you have said before. It doesn't matter in what order you say them, just say as many words as you can remember, whether or not you said them before."** *Repeat,* **"Now I am going to read the same list again..."** *for Trials 2 through 5 with List A.*
List B	**"Now I am going to read a second list of words. This time, again you are to say back as many words of this second list as you can remember. Again, the order in which you say the words does not matter. Just try to remember as many as you can."** *Read List B at the rate of 1 word every second, record responses. Note the order of recall for correct responses; do not record order of recall for repetitions or intrusions.*
Trial 6	**"Now tell me all the words you remember from the first list."** *Record responses. Note the order of recall for correct responses; do not record order of recall for repetitions or intrusions.*

List A	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	List B	List B Recall	Trial 6 (List A)	Do Not Repeat
DRUM						DESK			DRUM
CURTAIN						RANGER			CURTAIN
BELL						BIRD			BELL
COFFEE						SHOE			COFFEE
SCHOOL						STOVE			SCHOOL
PARENT						MOUNTAIN			PARENT
MOON						GLASSES			MOON
GARDEN						TOWEL			GARDEN
HAT						CLOUD			HAT
FARMER						BOAT			FARMER
NOSE						LAMB			NOSE
TURKEY						NAIL			TURKEY
COLOR						PENCIL			COLOR
HOUSE						CHURCH			HOUSE
RIVER						FISH			RIVER
TOTAL RECALL						TOTAL RECALL			
INTRUSIONS						INTRUSIONS			

Record the time after recall of Trial 6 (delay begins): ___ ___ : ___ ___ ☐ AM ☐ PM

Administer Delayed Recall 20–30 minutes later.
Do not cue for the delayed recall.

CERAD – Immediate

DESCRIPTION

The CERAD Word List Memory, Word List Recall, and Word List Recognition tests assess learning, delayed recall and recognition memory. Three trials of 10 words given in different orders are administered with immediate recall after each trial. After 5 minutes, the delayed free-recall trial is administered. Directly following the delayed recall trial, a recognition test is given where 20 words are shown one at a time (or read to the participant if unable to read), and participants are asked to say "Yes" when they recognize a word from the list and "No" to words that were not on the learned list.

SOURCE

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ADMINISTRATION

J4 WORD LIST MEMORY TASK

To assess participants' ability to remember newly learned information, we administer this free recall task, using 10 common nouns. To ensure that participants are familiar with and attend to each word, they are asked to listen to the words read by the test administrator. The ten words on the word list are read at a constant rate of 1 word every second, and then the participant is immediately asked to recall as many as possible. There are three trials, each of which presents the words in a different order.

The instructions for the first trial are:

SAY: "I am going to read you 10 words. Later I will ask you to recall all 10 words."

Read the words in the first set at the rate of one word every second. After the last word has been read, ask the participant to recall as many words as they can. Note the order of recall for correct responses (i.e., 1, 2, 3,...); do not record repetitions or intrusions in the order of recall. Allow a maximum of 90 seconds.

Continue with the second and third sets of words in the same way, changing your instructions slightly to encourage the participant.

(Exposure time: 1 word every second; Recall time: 90 seconds per trial maximum)

SCORING

J4 WORD LIST MEMORY TASK

The participant's score for each trial is the number of words correctly recalled. Be sure also to record on each trial the number of words that the participant "recalls" that are not on the list (intrusions).

CERAD Neuropsychological Assessment Battery — Word List Tasks

INSTRUCTIONS:

J4 Word List Memory Task

To assess participants' ability to remember newly learned information, we administer this free recall task, using 10 common nouns. To ensure that participants are familiar with and attend to each word, they are asked to listen to the words read by the test administrator. The ten words on the word list are read at a constant rate of 1 word every second, and then the participant is immediately asked to recall as many as possible. There are three trials, each of which presents the words in a different order.

The instructions for the first trial are:

SAY: "I am going to read you 10 words. Later I will ask you to recall all 10 words."

Read the words in the first set at the rate of one word every second. After the last word has been read, ask the participant to recall as many words as they can. Note the order of recall for correct responses (i.e., 1, 2, 3,...); do not record repetitions or intrusions in the order of recall. Allow a maximum of 90 seconds.

Continue with the second and third sets of words in the same way, changing your instructions slightly to encourage the participant. The participant's score for each trial is the number of words correctly recalled. Be sure also to record on each trial the number of words that the participant "recalls" that are not on the list (intrusions).

(Exposure time: 1 word every second; Recall time: 90 seconds per trial maximum)

CHECK EACH WORD AS IT IS RECALLED					
Trial 1		**Trial 2**		**Trial 3**	
Butter	___	Ticket	___	Queen	___
Arm	___	Cabin	___	Grass	___
Shore	___	Butter	___	Arm	___
Letter	___	Shore	___	Cabin	___
Queen	___	Engine	___	Pole	___
Cabin	___	Arm	___	Shore	___
Pole	___	Queen	___	Butter	___
Ticket	___	Letter	___	Engine	___
Grass	___	Pole	___	Ticket	___
Engine	___	Grass	___	Letter	___
Intrusions:		**Intrusions:**		**Intrusions:**	
_____		_____		_____	
_____		_____		_____	
_____		_____		_____	
_____		_____		_____	

Trial 1 Total: ___ ___
Trial 1 Intrusions: ___ ___

Trial 2 Total: ___ ___
Trial 2 Intrusions: ___ ___

Trial 3 Total: ___ ___
Trial 3 Intrusions: ___ ___

Record the time after recall of J4 Word List (delay begins): ___ ___ : ___ ___ ☐ AM ☐ PM

Category Fluency

DESCRIPTION:
This is a widely used measure of semantic memory (verbal fluency, language). The participant is asked to name different exemplars of a given semantic category, and the number of unique exemplars named is scored.

SOURCE:
The procedure is adapted from CERAD administration and scoring procedures for Verbal Fluency (Morris et al., 1989).

ADMINISTRATION

Read the initial instruction:

[SAY]: **"I am going to give you a category and I want you to name, as fast as you can, all of the things that belong in that category. For example, if I say 'articles of clothing', you could say 'shirt', 'tie', or 'hat'. Can you think of other articles of clothing?"**

Allow up to 20 seconds for the participant to produce two responses. Circle the number corresponding to the participant's responses and read the associated instruction.

Next, read the instructions for the Animals category:

[SAY]: **"Now I want you to name things that belong to another category: Animals. You will have one minute. I want you to tell me all the animals you can think of in one minute. Ready? Begin."**

Start timer as you say "Begin." Write actual responses as legibly as possible on the Worksheet for Category Fluency — Animals. Stop the procedure at 60 seconds. One prompt (**"Tell me all the animals you can think of"**) is permitted if the participant makes no response for 15 seconds or expresses incapacity (e.g., "I can't think of any more."). It is also permissible to repeat the instruction or category if the participant specifically requests it. Do not cue the participant about including more than mammals. However, if the participant inquires prior to initiating the response or asks during the test, the examiner is permitted to say "yes."

Next, read the instructions for the Vegetables category:

[SAY]: **"Now I want you to name things that belong to another category: Vegetables. You will have one minute. I want you to tell me all the vegetables you can think of in one minute. Ready? Begin."**

Start timer as you say "Begin". Write actual responses as legibly as possible on the Worksheet for Category Fluency — Vegetables. Stop the procedure at 60 seconds. One prompt (**"Tell me all the vegetables you can think of"**) is permitted if the participant makes no response for 15 seconds or expresses incapacity (e.g., "I can't think of any more."). It is also permissible to repeat the instruction or category if the participant specifically requests it.

SCORING

Defer scoring until after all test administration is finished.

The Animal Total score on the *Worksheet for Category Fluency — Animals* is the number of correct unique animal names produced within the one-minute time limit.

- CREDIT: Breeds (e.g., terriers); male, female, and infant names of a species (e.g., bull, cow, calf); both superordinate and subordinate examples of a species (e.g., both dog and terrier are credited); birds; fish; reptiles, insects.
- DO NOT CREDIT: Repetitions, mythical animals.

The Animal Total score (0–77) should be entered on NACC UDS Form C2T, Question 9a. If the test was not completed, enter the appropriate reason code, 95 – 98, from the key.

The Vegetable Total score on the *Worksheet for Category Fluency — Vegetables* is the total number of correct unique names of vegetables produced within the 1-minute time limit.

- CREDIT: Both superordinate and subordinate responses (e.g., peppers and jalapeños are credited); less specific names (e.g., greens); nuts (e.g., peanuts, acorns); and grains such as corn or rice.
  - Names of vegetables found in other cultures but perhaps unfamiliar to you (e.g., jicama) are acceptable only if they can be verified in the dictionary. After completion of the task, ask the participant to spell the word if you are unsure of the correct spelling.
  - Grains (e.g., rice, wheat, oats, etc.), gourds, sugarcane, herbs, and seaweed are counted as acceptable vegetable responses.
  - Tomato, avocado, and pumpkin are acceptable responses.
  - Legumes are acceptable responses.
  - Nuts are acceptable responses.
- DO NOT CREDIT:
  - Repetitions.
  - Prepared vegetable products (e.g., pickles, tomato sauce, ketchup, etc.) are not acceptable responses.
  - Spices are not acceptable responses.

The Vegetable Total score (0–77) should be entered on NACC UDS Form C2T, Question 9b. If the test was not completed, enter the appropriate reason code, 95 – 98, from the key.

Category Fluency

INSTRUCTIONS:

SAY: **"I am going to give you a category and I want you to name, as fast as you can, all of the things that belong in that category. For example, if I say 'articles of clothing,' you could say 'shirt,' 'tie,' or 'hat.' Can you think of other articles of clothing?"**

Allow up to 20 seconds for the participant to produce two responses. Circle the number corresponding to the participant's responses, and read the associated instruction.

Response code		Instruction
0	(No response)	"You could have said 'shoes' or 'coat' since they are articles of clothing."
1	(One or more incorrect responses, no correct response)	"No, _____is (are) not an article(s) of clothing. You could have said 'shoes' or 'coat' since they are articles of clothing."
2	(One or more correct response, no incorrect responses)	"That's right. You also could have said 'shoes' or 'coat'."
3	(One or more correct responses, one or more incorrect responses)	"_____is (are) correct, but _____ is (are) not an article of clothing. You also could have said 'shoes' or 'coat'."
4	(Two or more correct responses)	"That's right."

Next, read the instructions for the Animals category (worksheet follows this instruction page):

SAY: **"Now I want you to name things that belong to another category: Animals. You will have one minute. I want you to tell me all the animals you can think of in one minute. Ready? Begin."**

Start timer as you say **"Begin."** Write actual responses as legibly as possible on the Worksheet for Category Fluency — Animals. Stop the procedure at 60 seconds. One prompt (**"Tell me all the animals you can think of"**) is permitted if the participant makes no response for 15 seconds or expresses incapacity (e.g., "I can't think of any more"). It is also permissible to repeat the instruction or category if the participant specifically requests it.

Next, read the instructions for the Vegetables category (worksheet follows this instruction page):

SAY: **"Now I want you to name things that belong to another category: Vegetables. You will have one minute. I want you to tell me all the vegetables you can think of in one minute. Ready? Begin."**

Start timer as you say **"Begin."** Write actual responses as legibly as possible on the Worksheet for Category Fluency — Vegetables. Stop the procedure at 60 seconds. One prompt (**"Tell me all the vegetables you can think of"**) is permitted if the participant makes no response for 15 seconds or expresses incapacity (e.g., "I can't think of any more"). It is also permissible to repeat the instruction or category if the participant specifically requests it.

Worksheet for Category Fluency — Animals

1. _____	27. _____	53. _____
2. _____	28. _____	54. _____
3. _____	29. _____	55. _____
4. _____	30. _____	56. _____
5. _____	31. _____	57. _____
6. _____	32. _____	58. _____
7. _____	33. _____	59. _____
8. _____	34. _____	60. _____
9. _____	35. _____	61. _____
10. _____	36. _____	62. _____
11. _____	37. _____	63. _____
12. _____	38. _____	64. _____
13. _____	39. _____	65. _____
14. _____	40. _____	66. _____
15. _____	41. _____	67. _____
16. _____	42. _____	68. _____
17. _____	43. _____	69. _____
18. _____	44. _____	70. _____
19. _____	45. _____	71. _____
20. _____	46. _____	72. _____
21. _____	47. _____	73. _____
22. _____	48. _____	74. _____
23. _____	49. _____	75. _____
24. _____	50. _____	76. _____
25. _____	51. _____	77. _____
26. _____	52. _____	

Worksheet for Category Fluency — Vegetables

1. _____	27. _____	53. _____
2. _____	28. _____	54. _____
3. _____	29. _____	55. _____
4. _____	30. _____	56. _____
5. _____	31. _____	57. _____
6. _____	32. _____	58. _____
7. _____	33. _____	59. _____
8. _____	34. _____	60. _____
9. _____	35. _____	61. _____
10. _____	36. _____	62. _____
11. _____	37. _____	63. _____
12. _____	38. _____	64. _____
13. _____	39. _____	65. _____
14. _____	40. _____	66. _____
15. _____	41. _____	67. _____
16. _____	42. _____	68. _____
17. _____	43. _____	69. _____
18. _____	44. _____	70. _____
19. _____	45. _____	71. _____
20. _____	46. _____	72. _____
21. _____	47. _____	73. _____
22. _____	48. _____	74. _____
23. _____	49. _____	75. _____
24. _____	50. _____	76. _____
25. _____	51. _____	77. _____
26. _____	52. _____	

CERAD – Delayed

DESCRIPTION

The CERAD Word List Memory, Word List Recall, and Word List Recognition tests assess learning, delayed recall and recognition memory. Three trials of 10 words given in different orders are administered with immediate recall after each trial. After 5 minutes, the delayed free-recall trial is administered. Directly following the delayed recall trial, a recognition test is given where 20 words are shown one at a time (or read to the participant if unable to read), and participants are asked to say "Yes" when they recognize a word from the list and "No" to words that were not on the learned list. NACC was given permission to change "church" on the J7 - Word List Recognition task to "school" to avoid interference with the MoCA."

SOURCE

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ADMINISTRATION

J6 WORD LIST RECALL

This task is to determine how well participants can remember the words presented in form J4 **after 5 minutes. Fill the delay with additional tests or tasks that do not involve verbal encoding.** The instructions for this recall task are:

SAY: "A few minutes ago I asked you to learn a list of ten words. Now I want you to try to recall as many of those 10 words as you can. OK, now tell me as many of those ten words as you can remember."

Allow the participant a maximum of 90 seconds. Number each word in its corresponding block on the response sheet in the order it is recalled.

(Maximum time: 90 seconds)

J7 WORD LIST RECOGNITION

The instructions for this recognition test are:

SAY: "Now I am going to read you a set of words. Some of the words are from the list you heard earlier and some are words I haven't read to you before. I want you to say YES if the word I read to you is from the list you heard earlier (read the first word). Is this one of the words you heard earlier?"

Repeat the question or say, **"How about this one?"** for each word. Record the participant's response.

(Only YES or NO responses are acceptable.)

SCORING

J6 WORD LIST RECALL

Score the number of words correctly recalled. Also record and score the number of words not on the list (intrusions) that the participant reports.

J7 WORD LIST RECOGNITION

The scores for this test include the number of correctly recognized words previously heard (correct "Yes" responses) and the number of correctly rejected new words (correct "No" responses). Urge participants to give "yes" or "no" responses, since "don't knows" are unscorable.

CERAD Neuropsychological Assessment Battery — Word List Recall

INSTRUCTIONS:

J6 Word List Recall

This task is to determine how well participants can remember the words presented in form J4 **after 5 minutes. Fill the delay with additional tests or tasks that do not involve verbal encoding.** The instructions for this recall task are:

SAY: "A few minutes ago I asked you to learn a list of ten words. Now I want you to try to recall as many of those 10 words as you can. OK, now tell me as many of those ten words as you can remember."

Allow the participant a maximum of 90 seconds. Number each word in its corresponding block on the response sheet in the order it is recalled. Score the number of words correctly recalled. Also record and score the number of words not on the list (intrusions) that the participant reports.

(Maximum time: 90 seconds)

Record the time when delayed recall was initiated (delay ends): ___ ___ : ___ ___ ☐ AM ☐ PM

CHECK EACH WORD AS IT IS RECALLED	
Butter	☐
Arm	☐
Shore	☐
Letter	☐
Queen	☐
Cabin	☐
Pole	☐
Ticket	☐
Grass	☐
Engine	☐
Intrusions:	
_____	
_____	
_____	
_____	
_____	
_____	
_____	

Total recalled: ___ ___

Intrusions: ___ ___

CERAD Neuropsychological Assessment Battery — Word List Recognition

INSTRUCTIONS:

J7 Word List Recognition

The instructions for this recognition test are:

SAY: "Now I am going to read you a set of words. Some of the words are from the list you heard earlier and some are words I haven't read to you before. I want you to say YES if the word I read to you is from the list you heard earlier (read the first word). Is this one of the words you heard earlier?"

Repeat the question or say, **"How about this one?"** for each word. Record the participant's response. The scores for this test include the number correctly recognized words previously heard (correct **"Yes"** responses) and the number of correctly rejected new words (correct **"No"** responses).

Urge participants to give "yes" or "no" responses, since "don't knows" are unscorable.

(Only YES or NO responses are acceptable.)

	CORRECT YES RESPONSE	CORRECT NO RESPONSE
School		1
Coffee		1
Butter*	1	
Dollar		1
Arm*	1	
Shore*	1	
Five		1
Letter*	1	
Hotel		1
Mountain		1
Queen*	1	
Cabin*	1	
Slipper		1
Pole*	1	
Village		1
String		1
Ticket*	1	
Troops		1
Grass*	1	
Engine*	1	

Total YES correct: ___ ___

Total NO correct: ___ ___

*Original word from Word List Memory Task

Oral Trail Making Test (Optional)

DESCRIPTION

Brief measure assessing mental sequencing and switching.

SOURCE

Ricker JH, Axelrod BN, Houtler BD. Clinical validation of the oral trail making test. Neuropsychiatry Neuropsychology and Behavioral Neurology. 1996;9(1):50-53.

For normative data, please see: Strauss, E., Sherman, E. M. S., & Spreen, O. (2006). A compendium of neuropsychological tests: Administration, norms, and commentary (3rd ed.). Oxford University Press.

ADMINISTRATION

PART A

Examiner: **"OK, here is something a little different. I'd like you to count from 1 to 25 as quickly as you can. 1, 2, 3, 4, and so on. Ready? Begin."**

Start timing as soon as you say "Begin." If a mistake is made, stop the participant and have them continue with the series from the last correct number by saying: **"You last said '[specific number],' please continue from there."** Do not stop timing during corrections.

If the participant stops for 5 seconds or more before completing, you may prompt with **"Please keep going."** If the participant does not recall where they are, provide the last correct response by saying: **"You last said '[specific number],' please continue from there,"** and score as an error. After a further delay of 15 seconds or more, discontinue. Enter the appropriate reason code 995-998 from the key and leave total number of errors and correct responses blank. Allow a maximum of 100 seconds for the test. If the participant is not finished by 100 seconds, the score is 100.

Record the time in seconds to complete the series, including the time to offer corrections. Be sure to write down where errors occurred on the score sheet. You will record the total number of errors as well.

PART B PRE-TEST

To ensure that the participant is familiar with the alphabet,

SAY: **"Please tell me the alphabet starting with the letter A."**

A B C D E F G H I J K L

- If the participant makes no errors in saying the alphabet from the letter "A" to "L," continue with the test.
- If the participant makes 3 or more errors in saying the alphabet from "A" to "L," discontinue the test and code as 997.
- If the participant makes 1 or 2 errors in saying the alphabet from "A" to "L," ask them to say the alphabet again. If they make at least one error, discontinue the test and code as 997.

PART B

Examiner: **"Now I'd like you to switch between numbers and letters when you count. So you would say the number 1, and then say the letter A, then number 2, then letter B and so on, as quickly as you can. Let's do a practice trial first. Count to the number 4, switching between numbers and letters. Ready? Begin."**

If participant makes a mistake, say, **"No, that was incorrect, it should be 1, A, 2, B, 3, C, 4."** Allow participant to practice up to three attempts. Repeat instructions with guidance twice. If participant still does not understand, discontinue Part B and go on to the next task. Enter the appropriate reason code, 995 – 998, from the key, and leave total number of errors and correct responses blank.

If participant is able to complete the practice say: **"Now I want you to switch between numbers and letters when you count 1, A, 2, B, 3, C, and so on until you reach the number 13. Ready, begin."**

Start timing as soon as you say "Begin." If a mistake is made, stop the participant and have them continue with the series from the last correct pair by saying: **"You said '[specific number] [specific letter];' Continue from there."** Do not stop timing during corrections. If the participant stops for 5 seconds or more before completing, you may prompt with **"Please keep going."** If the participant does not recall where they are, provide last correct pair by saying: **"You said '[specific number] [specific letter];'continue from there,"** and score as an error. You can remind the participant **"Number-letter"** to keep them on task. After a further delay of 15 seconds or more, discontinue and enter the appropriate reason code, 995 – 998, from the key and leave total number of errors and correct responses blank.

Allow a maximum of 300 seconds for the test. If the participant is not finished by 300 seconds, the score is 300.Record the time in seconds to complete the series, including the time to offer corrections. Be sure to write down where errors occur on the score sheet. You will record the total number of errors as well.

Oral Trail Making Test *(Optional)*

Part A

Examiner: **"OK, here is something a little different. I'd like you to count from 1 to 25 as quickly as you can. 1, 2, 3, 4, and so on. Ready? Begin."**

Start timing as soon as you say "Begin." If a mistake is made, stop the participant and have them continue with the series from the last correct number by saying: **"You last said '[specific number],' please continue from there."** Do not stop timing during corrections.

If the participant stops for 5 seconds or more before completing, you may prompt with "Please keep going." If the participant does not recall where they are, provide the last correct response by saying: **"You last said '[specific number],' please continue from there,"** and score as an error. After a further delay of 15 seconds or more, discontinue. Enter the appropriate reason code 995-998 from the key and leave total number of errors and correct responses blank. Allow a maximum of 100 seconds for the test. If the participant is not finished by 100 seconds, the score is 100.

Record the time in seconds to complete the series, including the time to offer corrections. Be sure to write down where errors occurred on the score sheet. You will record the total number of errors as well.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

Time to completion: _____ (seconds)

Total number of errors: _____

Total number correct: _____

PART B PRE-TEST

To ensure that the participant is familiar with the alphabet,

SAY: **"Please tell me the alphabet starting with the letter A."**

A B C D E F G H I J K L

- If the participant makes no errors in saying the alphabet from the letter "A" to "L," continue with the test.
- If the participant makes 3 or more errors in saying the alphabet from "A" to "L," discontinue the test and code as 997.
- If the participant makes 1 or 2 errors in saying the alphabet from "A" to "L," ask them to say the alphabet again. If they make at least one error, discontinue the test and code as 997.

PART B

Examiner: **"Now I'd like you to switch between numbers and letters when you count. So you would say the number 1, and then say the letter A, then number 2, then letter B and so on, as quickly as you can. Let's do a practice trial first. Count to the number 4, switching between numbers and letters. Ready? Begin."**

If participant makes a mistake, say, **"No, that was incorrect, it should be 1, A, 2, B, 3, C, 4."** Allow participant to practice up to three attempts. Repeat instructions with guidance twice. If participant still does not understand, discontinue Part B and go on to the next task. Enter the appropriate reason code 995-998 from the key, and leave total number of errors and correct responses blank.

If participant is able to complete the practice say: **"Now I want you to switch between numbers and letters when you count 1, A, 2, B, 3, C, and so on until you reach the number 13. Ready, begin."**

Start timing as soon as you say "Begin." If a mistake is made, stop the participant and have them continue with the series from the last correct pair by saying: **"You said '[specific number] [specific letter];' Continue from there."** Do not stop timing during corrections. If the participant stops for 5 seconds or more before completing, you may prompt with "Please keep going." If the participant does not recall where they are, provide last correct pair by saying: **"You said '[specific number] [specific letter];' continue from there,"** and score as an error. You can remind the participant **"Number-letter"** to keep them on task. After a further delay of 15 seconds or more, discontinue and enter the appropriate reason code 995-998 from the key and leave total number of errors and correct responses blank.

Allow a maximum of 300 seconds for the test. If the participant is not finished by 300 seconds, the score is 300. Record the time in seconds to complete the series, including the time to offer corrections. Be sure to write down where errors occur on the score sheet. You will record the total number of errors as well.

Practice 1

1	A	2	B	3	C	4

Practice 2

1	A	2	B	3	C	4

Practice 3

1	A	2	B	3	C	4

Attempt

1	A	2	B	3	C	4	D	5	E	6	F	7	G	8	H	9	I	10	J	11	K	12	L	13

Time to completion:

_____ (seconds)

Total number of errors:

_____

Total number correct:

_____

Craft Story 21 Recall (Delayed)

DESCRIPTION

This is a test of delayed recall (episodic memory) of the story read to the participant at the beginning of the testing session, during Craft Story 21 Recall (Immediate).

SOURCE

Craft S, Newcomer J, Kanne S, Dagogo-Jack S, Cryer P, Sheline Y, Luby J, Dagogo-Jack A, Alderson A. Memory improvement following induced hyperinsulinemia in Alzheimer's disease. Neurobiol Aging. 1996 Jan-Feb;17(1):123-30.

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ADMINISTRATION

Administer this test approximately 20 minutes after Craft Story 21 Recall (Immediate).

NOTE: If 20 minutes have not elapsed, do not add other tests to fill the interval. Some of the time can be used to obtain blood pressure, weight, etc., if need be. Administer Craft Story 21 Recall (Delayed) and record the actual time elapsed.

[SAY]: **"I read you a story a few minutes ago. Can you tell me what you remember about that story now?"**

If the participant does not recall the story or having been told a story, make a note as indicated below and

[SAY]: **"It was a story about a boy. Can you tell it to me now?"**

Record the participant's response on the *Worksheet for Craft Story 21 Recall (Delayed).* Make sure that your written record is legible before proceeding. If the participant asks a question about the story or for repetition of some or all of it, say, **"Please tell me as much as you remember about the story."**

SCORING

Score according to instructions for Craft Story 21 Recall (Immediate) in this instruction book. The examiner may prefer to tape-record the participant's response and then transcribe the results after the session; this is acceptable, if appropriate consent has been obtained.

VERBATIM SCORING

PERFECT VERBATIM RESPONSE (1.0 POINT): Give the participant 1 point for every bit for which content words are recalled exactly and completely. Allowances can be made for variations of verbs (e.g., "likes" for "liked," "join" for "joining") and minor omissions (e.g., "neighbor" for "neighbor's") or changes in number (e.g., "games" for "game"). The content words do not need to be recalled by the participant in the same order they were read to receive credit. The words can appear anywhere in the recall.

Enter the verbatim score on NACC UDS Form C2, Question 8a. If the test was not completed, enter the reason code, 95 – 98, from the key and leave the paraphrase score (Question 8b), delay time (Question 8c), and cue needed (Question 8d) blank.

PARAPHRASE SCORING

PARAPHRASE RESPONSE (1.0 POINT): Give a point for a response that captures the elements of the story although not necessarily with the exact words (see table on page 35).

Enter the paraphrase score on NACC UDS Form C2T, Question 8b. Enter the delay time, in minutes, on NACC UDS Form C2T, Question 8c. If the delay time is unknown or mis–recorded, enter 99=Unknown. If the cue ("boy") was needed, select 1=Yes for Question 8d; otherwise, select 0=No.

Craft Story 21 Recall (Delayed)

INSTRUCTIONS: Administer this test approximately 20 minutes after Craft Story 21 Recall (Immediate), making note of the time administration of Craft Story 21 Recall (Delayed) began. Note: If 20 minutes have not elapsed, do not add other tests to fill the interval. You may obtain other data, such as blood pressure, weight, etc. Administer Craft Story 21 Recall (Delayed) and record the actual time elapsed.

SAY: "**I read you a story a few minutes ago. Can you tell me what you remember about that story now?"**

If the participant does not recall the story or having been told a story, make a note as indicated below and **Say: "It was a story about a boy. Can you tell it to me now?"**

Maria's / child / Ricky / played / soccer / every / Monday /

at 3:30. / He / liked / going / to the field / behind / their / house /

and joining / the game. / One / day, / he / kicked / the ball / so / hard /

that it / went / over / the neighbor's / fence / where three / large /

dogs / lived. / The dogs' / owner / heard / loud / barking, / came /

out, / and helped / them / retrieve / the ball.

Record time administration began: ☐

Total story units recalled (VERBATIM SCORING): ___ ___ / 44

Total story units recalled (PARAPHRASE SCORING): ___ ___ / 25

Time elapsed since Craft Story 21 Recall (IMMEDIATE): ___ ___ minutes

Cue ("boy") needed: ☐ No ☐ Yes

Craft Story 21 Recall (Delayed): Verbatim Scoring

PERFECT VERBATIM RESPONSE (**1.0 POINT**): Give the participant 1 point for every bit for which content words are recalled exactly and completely. Allowances can be made for variations of verbs (e.g., "likes" for "liked," "join" for "joining") and minor omissions (e.g., "neighbor" for "neighbor's") or changes in number (e.g., "games" for "game"). The content words do not need to be recalled by the participant in the same order they were read to receive credit. The words can appear anywhere in the recall.

Maria's	
child	
Ricky	
played	
soccer	
every	
Monday	
three thirty	
he	
liked	
going	
field	
behind	
their	
house	
joining	
game	
one	
day	
he	
kicked	
ball	

so	
hard	
it	
went	
over	
neighbor's	
fence	
three	
large	
dogs	
lived	
dogs'	
owner	
heard	
loud	
barking	
came	
out	
helped	
them	
retrieve	
ball	
Total	

Scoring

Number of items recalled for verbatim scoring (DELAYED RECALL SCORE): ___ ___ / 44

Guidelines for Paraphrase Scoring, Craft Story 21

Item	General Rule	Alternative 1-point responses	0-point responses	Points
Maria's	"Maria" or a variant of the name	Mary, Marie	Martha, Anna	
child	"child" or a phrase denoting it was a young person	son, kid, boy, teenager, young man	guy, children, daughter	
Ricky	"Ricky" or a variant of the name	Rick, Rich, Richie, Richard, Ricardo	Randy, Rusty, Robert	
played	"played" is required	to play, plays	did (soccer)	
soccer	"soccer" is required	futbol	baseball, volleyball, other sport	
every Monday	"Monday" or an indication that it occurred on a weekday	—	every day, another day of the week	
at 3:30	an indication that the activity took place in the afternoon	after school, every afternoon	after dinner, at night, in the morning	
He liked going to the field	an indication that he went to an outdoor area	went outside, went to the yard, going to the backyard	went to the school, gym	
behind their house	"house" or word denoting a house	home, residence, where they lived	any other building	
and joining	an indication that he participated in a game	played w/ other kids, became part of the team, playing w/the team	watching, played in the park	
the game.	"game" in any context	—	—	
One day	"One day" is required	—	—	
he kicked	indication that he performed the activity with his foot	booted, punted	threw, hit (with no mention of the foot)	
the ball	"Ball" is required	football, soccer ball	baseball, volleyball	
so hard	an indication that force was used	so much force, so strongly, (kicked it) so far	—	
that it went over	"Over" is required	—	—	
the neighbor's	an indication that the person lived in the same area	nearby resident	friend's	
fence	"fence" or a word denoting a fence of some kind	garden wall, wall	property line, street	
where three	"Three" is required	three (boys)	—	
large dogs lived.	an indication that there were dogs present	hounds, doggies	puppies, cats, kittens, other animals	
The dogs' owner	an indication that the person was responsible for the dogs	neighbor (if owner implied and "neighbor" mentioned twice)	a bystander, the police	
heard loud barking	an indication that the dogs were making noise	yelping, baying, yapping, heard the dogs	saw the dogs running around	
came out	a word or phrase indicating that the owner was present	(owner) saw the ball	his mother came out, the dogs came out	
and helped them	a word or phrase indicating that help was provided	assisted, aided, had to help	—	
retrieve the ball.	an indication that they got the ball back	gave him the ball, return the ball, (helped him) get the ball	—	

Number of items recalled for paraphrase scoring (DELAYED RECALL SCORE): ___ ___ / 25 maximum

Verbal Fluency: Phonemic Test

DESCRIPTION

This is a widely used measure of word generation that may be sensitive to dysfunction in the dominant frontal lobe. In this version, the participant is asked to say as many words as possible that begin with the letter "F" in 60 seconds, and then as many words that begin with the letter "L" in 60 seconds.

SOURCE

Reproduced by permission of the author, Argye E. Hillis, MD; do not copy or distribute without author's permission. Form created as part of the FTLD Module to the Uniform Data Set of the National Alzheimer's Coordinating Center, copyright 2013 University of Washington.

ADMINISTRATION

Administration notes: You may need to provide an additional example after the instructions to clarify the letter (e.g., "The letter F, life fox." or, "The letter L, as in like.")

LETTER F

MATERIALS: 1-minute timer

[SAY]: **"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 and biggest.

"Let's begin. Tell me all the words you can, as quickly as you can, that begin with the letter 'F'. Ready? Begin."

Start timer after completing instructions. Write actual responses as legibly as possible. Stop the procedure at 60 seconds.

PROMPTS:

If the participant pauses for 15 seconds:

- **"Keep going."**
- **"What other words beginning with "F" can you think of?"**

If the participant gives three consecutive words that do not start with the designated letter (provide this prompt only once during this condition):

- **"We are now using the letter F."**

LETTER L

MATERIALS: 1-minute timer

[SAY]: **"Now I want you to do the same for another letter. The next letter is L. Ready? Begin."**

Start timer after completing instructions. Write actual responses as legibly as possible. Stop the procedure at 60 seconds.

PROMPTS:

If the participant pauses for 15 seconds:

- **"Keep going."**
- **"What other words beginning with "L" can you think of?"**

If the participant gives three consecutive words that do not start with the designated letter (provide this prompt only once during this condition):

- **"We are now using the letter L."**

GUIDELINES

Record all responses, including repeated words and rule violations. When a rule violation (e.g., proper nouns, words beginning with the wrong letter) occurs on three consecutive responses, examiners should remind the participant of the correct rule. Each rule can be repeated only once per trial.

SCORING

Correct responses

Any word that begins with the specified letter, can be found in a dictionary, is not a proper noun or a number, and is not a repetition within that trial, should be scored as a correct response.

Although scoring of most responses is straightforward, many responses are ambiguous. For example, "frank" can refer to a man's name, a food item, or an adjective. The scoring principle with these sorts of responses is to give the benefit of the doubt and score the item as correct for the first instance of the response in a trial. In some instances, the context in which the response is given can provide clues as to the participant's meaning. For example, the sound "fôr" is ambiguous, and could be a preposition (for), golf term (fore), or number (four). If the word is given along with other numbers (e.g., "four, five"), the response can be interpreted as a number and be scored as a rule violation. If the response is at all ambiguous, however, apply the general principle of giving the benefit of the doubt. If a person self-corrects a rule violation or repetition during the trial, the response should not be counted as an error.

Other types of responses that should be scored as correct include:

- Contractions
- Compound words or conjoined words that convey a single meaning (e.g., ferris wheel)
- Slang words if they can be found in a dictionary
- Proper nouns that are not the names of people or places (e.g., days of the week, months of the year, brand names)

Repetitions

Any response that is repeated verbatim within the 60-second trial should be scored as a repetition.

If a repeated word has more than one meaning (e.g., "still" can be an adjective and a noun) or is a homophone (e.g., "flue" and "flew"), score the second response as a repetition error unless the participant explicitly or implicitly (e.g., with intonation or gesture) indicates that the second response has a different meaning or spelling, or if the context strongly suggests that it is a different word. For example, for the string of responses "felt, feeling, fresh, fabric, felt," the second occurrence of "felt" can be scored as correct since the context implies a different meaning than the first occurrence of "felt."

Grammatical variants should be scored as rule violations, not repetitions (see below).

Rule violations

Any response that reflects a deviation from the rules provided to the participant should be scored as a rule violation.

Several types of responses are potentially rule violations and include:

- Words beginning with letters other than the designated letter. This includes words that have the same initial sound but begin with a different letter (e.g., "phone" for F-words).
- Non-words
- Proper nouns that are names of people or places
- Numbers
- Grammatical variants of a previous response. These include words that are exactly the same as a previous response but with a different ending that represents a plural, altered tense, or other grammatical variant (e.g., present participle; comparatives). It is important to note that the examples in the instructions only explicitly prohibit plurals (e.g., bake, bakes), alteration in tense (bake, baking), and comparatives (big, bigger), and thus only these types of variants should be scored as rule violations.

Responses that are at all ambiguous should not be scored as rule violations. This particularly applies to responses that use the same root word as a previous response, but the addition is not a plural or change in tense. For example, give credit for "bakery," even if "bake" was a previous response.

Repeated rule violations count as repetitions, not rule violations.

On NACC UDS Form C2T, Question 10a, enter the number of correct F-words generated in 1 minute. If the test was not completed, enter the appropriate reason code, 95 – 98, and leave Questions 10b and 10c blank. Enter scores for 10b and 10c, if applicable.

On NACC UDS Form C2T, Question 10d, enter the number of correct L-words generated in 1 minute. If the test was not completed, enter the appropriate reason code, 95 – 98, and leave Questions 10e – 10i blank. Enter scores for 10e and 10f, if applicable. Enter corresponding total scores for 10g – 10i, if applicable.

Verbal Fluency: Phonemic Test

MATERIALS

1-Minute Timer

SAY: **"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 sop. None of the words can be numbers, 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 Barbary, 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."

ADMINISTRATION

Start timer after completing instructions. Write actual responses as legibly as possible. Stop the procedure at 60 seconds.

PROMPTS

1. If the participant pauses for 15 seconds:
   - **"Keep going."**
   - **"What other words beginning with F can you think of?"**
2. If the participant gives three consecutive words that do not start with the designated letter (*provide this prompt only once during this condition*):
   - **"We are now using the letter F."**

Record **F** responses:

1.	11.	21.	31.
2.	12.	22.	32.
3.	13.	23.	33.
4.	14.	24.	34.
5.	15.	25.	35.
6.	16.	26.	36.
7.	17.	27.	37.
8.	18.	28.	38.
9.	19.	29.	39.
10.	20.	30.	40.

SCORING Number of correct **F-words** generated in 1 minute (0–40) ____ ____

Number of **F-words** repeated in 1 minute (0–15) ____ ____

Number of **non-F-words** and rule violation errors in 1 minute (0–15) ____ ____

SAY: "**Now I want you to do the same for another letter. The next letter is L. Ready? Begin."**

Start timer after completing instructions. Write actual responses as legibly as possible. Stop the procedure at 60 seconds.

PROMPTS

1. If the participant pauses for 15 seconds:
   - **"Keep going."**
   - **"What other words beginning with L can you think of?"**
2. If the participant gives three consecutive words that do not start with the designated letter (*provide this prompt only once during this condition*):
   - **"We are now using the letter L."**

Record **L** responses:

1.	11.	21.	31.
2.	12.	22.	32.
3.	13.	23.	33.
4.	14.	24.	34.
5.	15.	25.	35.
6.	16.	26.	36.
7.	17.	27.	37.
8.	18.	28.	38.
9.	19.	29.	39.
10.	20.	30.	40.

SCORING

Number of correct **L-words** generated in 1 minute (0–40) ____ ____

Number of **L-words** repeated in 1 minute (0–15) ____ ____

Number of **non-L-words** and rule violation errors in 1 minute (0–15) ____ ____

TOTAL number of correct **F-words and L-words** (0–80) ____ ____

TOTAL number of **F-word and L-word** repetition errors (0–30) ____ ____

TOTAL number of **non-F/L words** and rule violation errors (0–30) ____ ____

Rey AVLT: Delayed Recall and Recognition

DESCRIPTION

The RAVLT Delayed Recall and Recognition trials assess delayed and recognition memory. List A is asked to be freely recalled again. After the delayed free-recall trial is complete, a recognition page is read, and participants are asked to say "Yes" when they recognize words from the first list (List A).

SOURCE

Schmidt, M. (1996). Rey Auditory Verbal Learning Test: A handbook. Los Angeles, CA: Western Psychological Services.

For normative data, please see:

Strauss, E., Sherman, E. M. S., & Spreen, O. (2006). A compendium of neuropsychological tests: Administration, norms, and commentary (3rd ed.). Oxford University Press.

Mayo Normative Studies: Regression-Based Normative Data for the Auditory Verbal Learning Test for Ages 30-91 Years and the Importance of Adjusting for Sex

Nikki H. Stricker et al., Journal of the International Neuropsychological Society (2021), 27, 211-226.

ADMINISTRATION

Administer this test 20 to 30 minutes after the Rey Auditory Verbal Learning Test – Immediate, making note of the time the delayed recall began.

For delayed recall, read the words at the rate of 1 word per second.

When reading the recognition word list, if the participant asks for clarification of the word (e.g., "curtain" vs "person"), a description of the word may help ("Curtain, like what hangs and covers a window").

After the 20 to 30 minute delay, SAY: "**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 this list again."** Record responses.

Note the order of recall for correct responses (i.e., 1, 2, 3, ...); do not record repetitions or intrusions in the order of recall. Repetitions can be noted by another mark (e.g., "R" or a symbol) and intrusions in the box provided at the foot of the table.

SCORING

For delayed recall, give one point for each word correctly recalled. Enter the total number of words correctly recalled and total number of intrusions should be entered on NACC UDS Form C2T, questions 13a-13b.

For recognition, sum the total correctly recognized as part of the list and the total incorrectly recognized as part of the list (false positives); enter these on Form C2T, questions 13d-13e.

Rey Auditory Verbal Learning Test — Delayed Recall and Recognition

INSTRUCTIONS:

Administer this test 20 to 30 minutes after the Rey Auditory Verbal Learning Test – Immediate, making note of the time the delayed recall began. **Fill the delay with additional tests or tasks that do not involve verbal encoding.** After the 20 to 30 minute delay, say: "**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 this list again."** *Record responses. Note the order of recall for correct responses (i.e. 1, 2, 3,...); do not record repetitions or intrusions in the order of recall. Use another mark to note repetitions (e.g., "R" or a symbol), and track intrusions in the box at the foot of the table.*

Record the time when delayed recall was initiated (delay ends): ___ ___ : ___ ___ ☐ AM ☐ PM

List A *(Do Not Repeat)*	Delayed Recall
DRUM	
CURTAIN	
BELL	
COFFEE	
SCHOOL	
PARENT	
MOON	
GARDEN	
HAT	
FARMER	
NOSE	
TURKEY	
COLOR	
HOUSE	
RIVER	
TOTAL RECALL	
INTRUSIONS	

RAVLT Recognition

INSTRUCTIONS:

SAY: **"I'm going to read to you a list that contains the words from the first list, the one I read several times. If the word was on the first list, say 'yes,' and if it was not on the first list, then say 'no.'"**

TEACHER	☐ Yes ☐ No	COFFEE	☐ Yes ☐ No
RIVER	☐ Yes ☐ No	ROAD	☐ Yes ☐ No
BRIDGE	☐ Yes ☐ No	HAT	☐ Yes ☐ No
FARMER	☐ Yes ☐ No	TURKEY	☐ Yes ☐ No
PEN	☐ Yes ☐ No	MINUTE	☐ Yes ☐ No
FOREHEAD	☐ Yes ☐ No	NOSE	☐ Yes ☐ No
KERCHIEF	☐ Yes ☐ No	SCHOOL	☐ Yes ☐ No
HOUSE	☐ Yes ☐ No	BELL	☐ Yes ☐ No
MOON	☐ Yes ☐ No	FACE	☐ Yes ☐ No
COLOR	☐ Yes ☐ No	GARDEN	☐ Yes ☐ No
BEET	☐ Yes ☐ No	CLASSROOM	☐ Yes ☐ No
CURTAIN	☐ Yes ☐ No	PARENT	☐ Yes ☐ No
FLOOR	☐ Yes ☐ No	CHILDREN	☐ Yes ☐ No
SOLDIER	☐ Yes ☐ No	BROOMSTICK	☐ Yes ☐ No
DRUM	☐ Yes ☐ No	NAIL	☐ Yes ☐ No

TOTAL CORRECT: _____

TOTAL FALSE POSITIVES: _____

Cues for Rey AVLT Recognition

INSTRUCTIONS:

The participant may ask you to clarify the word on the recognition list, due to hearing challenges over the phone. If so, you may use the descriptions below to explain each word. Do not use these descriptions on the learning trials, or immediate and delayed recall.

TEACHER	A person who teaches, especially in a school
RIVER	A large natural stream of water flowing to a sea or lake
BRIDGE	A structure over a river or road
FARMER	A person who owns or manages a farm, raising animals or growing crops
PEN	A writing instrument
FOREHEAD	The part of the face above the eyebrows
KERCHIEF	A piece of fabric used to cover the head
HOUSE	The building people live in
MOON	In the sky at night
COLOR	Like the color blue or red
BEET	The plant that grows in the ground
CURTAIN	A piece of material that covers windows
FLOOR	What you walk on in a room
SOLDIER	A person who serves in an army
DRUM	An instrument
COFFEE	A hot drink made in the morning
ROAD	What cars drive on
HAT	What someone wears on their head
TURKEY	The bird
MINUTE	As in, 60 seconds
NOSE	The part of the face between the eyes
SCHOOL	Where children go to learn
BELL	An instrument that rings
FACE	The part of your head where your eyes and nose are
GARDEN	Where to grow vegetables, herbs, and flowers
CLASSROOM	A room in a school
PARENT	A mother or father
CHILDREN	Kids or a child
BROOMSTICK	What is used to sweep the floor
NAIL	A small piece of metal for holding wood together

Verbal Naming Test (Optional)

DESCRIPTION

50-item auditory naming test requiring participants to name a specific item to a description.

SOURCE

Yochim BP, Beaudreau SA, Kaci Fairchild J, et al. Verbal naming test for use with older adults: development and initial validation. J Int Neuropsychol Soc. 2015;21(3):239–248.

For normative data, please see: Wynn MJ, Sha AZ, Lamb K, Carpenter BD, Yochim BP. Performance on the Verbal Naming Test among healthy, community-dwelling older adults. The Clinical Neuropsychologist. 2019.

ADMINISTRATION

[SAY]: **"Now we are going to do something different. I'm going to describe an object or a verb and I want you to tell me the name of what I am describing."**

After each prompt, allow the examinee 10 seconds to respond. If an incorrect response is given, say, "No, it's something else," and allow the examinee the remainder of the initial 10 seconds to respond. Prompts can be repeated, but keep the stopwatch running and adhere to the 10-second time limit. If no correct response is provided during the initial 10 seconds, provide the phonemic cue, saying "It starts with the sound… (underlined part of word)." If after 10 seconds from the phonemic cue they have not provided the correct word, proceed to the next item.

Continue until the subject fails to name six consecutive items, either spontaneously or after receiving phonemic cues.

Verbal Naming Test *(Optional)*

Examiner: **"Now we are going to do something different. I'm going to describe an object or a verb and I want you to tell me the name of what I am describing."**

After each prompt, allow the participant 10 seconds to respond. If an incorrect response is given, say, **"No, it's something else,"** and allow the participant the remainder of the initial 10 seconds to respond. Prompts can be repeated, but keep the stopwatch running and adhere to the 10-second time limit. If no correct response is provided during the initial 10 seconds, provide the phonemic cue, saying **"It starts with the sound…** (underlined part of word)**."** If after 10 seconds from the phonemic cue they have not provided the correct word, proceed to the next item.

Stop testing after six consecutive failures.

	Say **"WHAT IS THE NAME OF …"** *(can stop saying this after participant gets the nature of the task)*	1 point if correct in 10 seconds	Phonemic cue	1 point if correct in 10 seconds
1	**The part of your shirt that goes around your neck**		**Co**llar	
2	**The thing you hold over your head when it rains**		**Um**brella	
3	**The country where the Great Pyramids are**		**E**gypt	
4	**The animal in the desert with a hump on its back**		**Ca**mel	
5	**What you do when you put your nose up to a flower**		**Sme**ll	
6	**What a ship does if it can no longer float**		**Si**nk	
7	**A structure you drive over to cross a river**		**Br**idge	
8	**A period of ten years**		**De**cade	
9	**A small amount of money left for the waiter at a restaurant**		**Ti**p	
10	**What you use to sweep the floor**		**Br**oom	
11	**A baby cat**		**Ki**tten	
12	**The item of clothing to wrap around your neck in the winter**		**Sca**rf	
13	**A piece of land surrounded by water**		**I**sland	
14	**What you do with a razor**		**Sha**ve	
15	**A large animal in Africa with a trunk**		**El**ephant	
16	**What you use to chop wood**		**A**x	
17	**What you do to water to make it hot and steaming**		**Boi**l	
18	**What you do with your money with charities or the church**		**Do**nate	
19	**What ice does when it gets hot**		**Me**lt	
20	**What you wipe your mouth with when eating**		**Na**pkin	
21	**What you use to measure how many inches something is**		**Ru**ler	
22	**What you put your head on to sleep at night**		**Pi**llow	
23	**A long, severe snowstorm**		**Bli**zzard	
24	**The part of your shirt that covers your arms**		**Slee**ves	
25	**The tool used to collect leaves on the ground**		**Ra**ke	

	Say **"WHAT IS THE NAME OF …"** *(can stop saying this after participant gets the nature of the task)*	1 point if correct in 10 seconds	Phonemic cue	1 point if correct in 10 seconds
26	**A pool of water on the ground**		**Pu**ddle	
27	**The kind of mountain that explodes with lava**		**Vo**lcano	
28	**The animal in Australia that hops around and has a pouch**		**Ka**ngaroo	
29	**The African animal that's like a horse and has black and white stripes**		**Ze**bra	
30	**The person who works at a drugstore to fill prescriptions**		**Pha**rmacist	
31	**A device that measures the temperature**		**Ther**mometer	
32	**A collection of thousands of stars**		**Ga**laxy	
33	**A device used to help you add and subtract numbers**		**Ca**lculator	
34	**A moving set of stairs**		**Es**calator	
35	**What a fish uses to breathe**		**Gi**lls	
36	**What someone sings into to make their voice louder**		**Mi**crophone	
37	**What you do to a pencil or knife when it becomes dull**		**Sha**rpen	
38	**A place people go to gamble money**		**Ca**sino	
39	**A small hill made of sand**		**Du**ne	
40	**What a horse does when it runs really fast**		**Ga**llop	
41	**A toy that has a string and floats in the air when it is windy**		**Ki**te	
42	**A baby cow**		**Ca**lf	
43	**An animal in Africa with a very long neck**		**Gir**affe	
44	**What you wear while cooking that prevents food from getting on your clothes**		**A**pron	
45	**A book that is made up of different maps**		**A**tlas	
46	**A desert plant that has spikes**		**Ca**ctus	
47	**The poison a snake uses to kill its prey**		**Ve**nom	
48	**The document you receive when you graduate from high school**		**Di**ploma	
49	**A kitchen appliance that cleans plates and glasses**		**Di**shwasher	
50	**The river in Egypt that is one of the longest in the world**		**Ni**le	
	TOTAL CORRECT — WITHOUT CUE:		**WITH CUE:**	

Yochim, B. P., Beaudreau, S. A., Fairchild, J. K., Yutsis, M. V., Raymond, N., Friedman, L., & Yesavage, J. (2015). Verbal Naming Test for use with older adults: Development and initial validation. Journal of the International Neuropsychological Society, 21, 239-248. doi: 10.1017/S1355617715000120

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