

# Question by Question Instructions (QxQ) for the Neurocognitive Battery and Neurocognitive Summary Form

## I. MATERIALS

• Card with intersecting pentagons and “Close your eyes” card (MMSE) –5x8	• Incidental Learning Template
• MMSE Scoring Key for Spelling WORLD Backward	• Set of 2 Trail Making Tests (A and B) on card stock per participant. Each card will have the sample on the front and the test on the back.
• Pencil	• Boston Naming Binder
• Wrist watch	• Do Not Disturb Sign for the door during the exam
• 1 Sheet of Paper	• Audio Recorder
• Set of 10 cards for the Delayed Word Recall – 5x8	• Clipboard
• Digit Symbol Substitution Form	• Stop Watch
• Digit Symbol Substitution Scoring Transparency	

## II. GENERAL INSTRUCTIONS

The following table indicates which neurocognitive tests should be administered during different visit types/testing scenarios, including:

- ARIC Visit 9: Full Battery
- ARIC Visit 11: Abbreviated Battery
- ACHIEVE In-Clinic Annual Visits: Full Battery
  - If patient has dementia: Abbreviated Battery
- ACHIEVE Home Annual Visits: Abbreviated Battery
- Gen2 Baseline Visit: WRAT + Abbreviated Battery
  - The WRAT is located on a separate form.

Test	Full Battery	Abbreviated Battery
Ensuring Speech Understanding (ESU)	✓	✓
Mini Mental Status Exam (MMEO or MMEE)	✓	✓
Delayed Word Recall	✓	✓
Digit Symbol Substitution (DSS)	✓	✓
Incidental Learning	✓	✓
Word Fluency (FAS)	✓	✓
Animal Naming	✓	✓
<b>5-MINUTE BREAK</b>	✓	
Logical Memory I	✓	
Digit Span Backwards	✓	
Trails A & B	✓	✓
Boston Naming	✓	
Logical Memory II	✓	

All neurocognitive measures included in the indicated battery are expected on all participants, except when the participant has been diagnosed with dementia by the ARIC Neurocognitive Classification Committee, in which case the Abbreviated Battery should be administered. Those participants with dementia are identified on the Snapshot report. When only neurocognitive measures in the Abbreviated Battery (Ensuring Speech Understanding-ESU, Mini Mental State Exam-MMSE, Delayed Word Recall-DWR, Digit Symbol Substitution-DSS, Incidental Learning, World Fluency/FAS, Animal Naming, Trails A, Trails B) are collected, each lead-in question for the subtests collected only in the Full Battery (Logical Memory I, Digit Span Backwards-DSB, Boston Naming, Logical Memory II) must be set to "Missing" in the field status (they should not be marked as discontinued).

- A. All neurocognitive measures are performed on paper. Affix a participant ID label to the first page of the Neurocognitive Test Battery Examiner's Packet, or complete the header information if labels are not available. Likewise, label all loose response forms (i.e., MMSE pentagons, Digit Symbol Substitution form, Incidental Learning form, Trails A and B).
- B. A trained examiner administers the cognitive function tests in a fixed order, one right after the other, during a single session in a quiet room. If the Full Battery is being completed, a mandatory brief break is offered to each participant after about half of the tests have been completed.
- C. Forms of participants who refuse to do the neurocognitive measures are set to permanently missing in the DMS.
- D. Responses are recorded on the paper test packet by the examiner or by the participant and kept in the participant's folder. Test results are tabulated and scored by the examiner after the participant has completed the tests and left the room.
- E. The testing environment and examiner behavior should be geared toward optimizing the participant's performance on each of the cognitive measures.
- F. Testing should be conducted in a quiet area free of extraneous background noise and interruptions, as these distractions may affect test results. Turn off cell phones, office phones, and place a "Quiet Please" sign on the room where testing is conducted.
- G. Always inquire if the participant uses reading glasses or wears a hearing aid. If so, these items should be worn during testing. Because the materials to be read are printed in large print, all tests should be attempted even if a participant has forgotten to bring his/her glasses. If a participant is hard of hearing, proceed with the testing but make accommodations (speaking in a lower tone is often more effective than trying to speak more loudly). ACHIEVE participants should be wearing their hearing aids for the neurocognitive testing. See NCS16a instruction regarding documenting when a participant is not using their hearing aids.
- H. The testing area (either in the clinic or home) must have a table with sufficient work space and appropriate lighting for the participant to work comfortably.
- I. A good quality stopwatch is necessary to time components of the cognitive function exam. The stopwatch should be simple to use, easy to read, and one that allows the examiner to begin and end timing silently (some stopwatches produce a sound upon starting and stopping).
- J. Timing should always be as discrete as possible to avoid producing anxiety and affecting test results.
- K. Always read scripts exactly as written (all scripts are in bold). The scripts should be memorized where possible so that the delivery is fluid and sounds less formal than reading from a script.
- L. Each participant should be allowed to attempt every task, unless it is determined that the participant cannot do the task due to an obvious physical impairment. Although time limits are set for some tests, the participant should never be told of any time limit on any measure.

- M. With the exception of when a fixed time limit has expired on a task, self-correction is routinely accepted.
- N. Always inquire if the participant uses reading glasses or wears a hearing aid. If so, these items should be worn during testing. Because the materials to be read are printed in large print, all tests should be attempted even if a participant has forgotten to bring his/her glasses. If a participant is hard of hearing, proceed with the testing but make accommodations (speaking in a lower tone is often more effective than trying to speak more loudly). ACHIEVE participants should be wearing their hearing aids for the neurocognitive testing. See NCS16a instruction regarding documenting when a participant is not using their hearing aids.
- O. The testing area (either in the clinic or home) must have a table with sufficient work space and appropriate lighting for the participant to work comfortably.
- P. A good quality stopwatch is necessary to time components of the cognitive function exam. The stopwatch should be simple to use, easy to read, and one that allows the examiner to begin and end timing silently (some stopwatches produce a sound upon starting and stopping).
- Q. Timing should always be as discrete as possible to avoid producing anxiety and affecting test results.
- R. Always read scripts exactly as written (all scripts are in bold). The scripts should be memorized where possible so that the delivery is fluid and sounds less formal than reading from a script.
- S. Each participant should be allowed to attempt every task, unless it is determined that the participant cannot do the task due to an obvious physical impairment. Although time limits are set for some tests, the participant should never be told of any time limit on any measure.
- T. With the exception of when a fixed time limit has expired on a task, self-correction is routinely accepted.
- U. Participants are often curious as to how well they did. Although scoring does not take place during testing, the interviewer should reassure each participant who asks that he/she did about as well as many others who have taken the tests. Do not indicate to the participant whether specific responses are correct or incorrect or whether scores are high or low. Participants who express concern that they may have performed poorly on the tests may be reassured that the tests are designed to be difficult enough that very few people get all of the questions correct.
- V. Most participants will feel challenged; however, some may feel insecure and others possibly hostile. It is important for the examiners attitude to be friendly, non-threatening, reassuring and supportive throughout the testing. Examiners should be sensitive to provide positive reinforcement (e.g., “you’re doing fine”) as appropriate throughout testing.
- W. Due to the nature of the studies we conduct, it’s inevitable that our psychometrists will encounter participants with cognitive impairment. Doing cognitive testing with such participants can be difficult, if not impossible, at times. Many times, the examiner will need to utilize clinical judgement as to if/when a test should be discontinued due to cognitive impairment. Of course as the discontinuation code B notes—if the participant gets frustrated or does not understand the instructions, then the task should be discontinued due to task difficulty. However, some cognitively impaired ppts may not verbalize or exhibit any frustration. And, it may not be clear if they do/do not understand the instructions. In cases like these, the examiner may ask the participant to repeat the instructions to see if the participant understands the task. If the participant cannot explain what they are to do, then the task can be discontinued due to task difficulty. In addition, if the examiner notices that the participant is staring blankly at them and clearly not understanding what is being asked of them, then the examiner may discontinue to task due to task difficulty, since it is clear that the participant is too impaired to complete the task.

- X. It is important that scores accurately reflect the participant's responses. Examiners should listen carefully and prompt further as needed to clarify a participant's response.
1. If a participant responds, "I don't know" or "I don't know how to do that." The participant has clearly stated he/she does not know the answer and thus no further clarification is needed. Score the item as Incorrect/Don't Know (e.g., on the MMSE).
  2. If a participant responds, "I don't know. I don't want to do that." The participant reports both not knowing and not wanting to do the task. Because the participant first stated, "I don't know," score the item as Incorrect/Don't Know.
  3. If a participant responds, "I don't want to do that; I never could do that kind of thing." The examiner should prompt, **"Will you give it a try?"** or **"Would you give me your best guess?"** If the participant declines to answer, score the item as Not Attempted/Refusal (e.g., on the MMSE).
  4. Scoring can be subjective. In cases where a judgment must be made, record the participant's verbatim response and score after the testing session. Examiners may want to consult with another psychometrist at their site or may contact Dr. Tom Mosley ([tmosley@umc.edu](mailto:tmosley@umc.edu)) or Tiffany Owens ([taowens@umc.edu](mailto:taowens@umc.edu)) at the Jackson Field Center to discuss an item or question.
- Y. If a participant asks what the NCS battery or a specific test is measuring, you can say something like **"A lot of these tests measure things that may change with age like thinking and functioning."** Please do not explain what a test is measuring, as this can affect the results.
- Z. Regarding administration of the battery to individuals who are blind, aphasic, or illiterate, the following subtests can be administered:
1. Blind: MMSE items 1-18, 21, & 24-26, Verbal Fluency, Animal Naming, Logical Memory I & II, & Digits Backward.
  2. Aphasic: MMSE items 22, 23, & 27-30, Digit Symbol Substitution, Incidental Learning, & Trails A & B.
  3. Illiterate: MMSE items 1-13, 19-21, & 23-30, Digit Symbol Substitution, Incidental Learning, Animal Naming, Logical Memory I & II, Digits Backward, & Boston Naming.

### III. DETAILED INSTRUCTIONS FOR EACH TEST

#### A. ENSURING SPEECH UNDERSTANDING (ESU) (Added to Full Battery and Abbreviated Battery)

1. Administration for Trial 1
  - a) Participant will be examined in a quiet room with the examiner facing the participant. Background noise should be minimized.
  - b) Participant should use any sensory aids they would normally use.
  - c) Introduce the test: **"We are going to do a quick exercise to ensure that you can hear me. Listen carefully because I am going to read you several sentences. After I read each sentence try to repeat out loud as much of the sentence as possible."**
  - d) If the participant understands the instructions, say: **"The first sentence is..."**
  - e) Read each sentence from Trial 1 slowly (about 2-3 seconds), articulating clearly with normal inflections. No repetitions are allowed. (If ppt asks for repetition: Say, **"I'm sorry; I can't. Let's try the next one."**)
  - f) If the participant does not understand the instructions, repeat the instructions for Trial 1.

- g) Examiner should read sentences at a pace and volume commensurate with normal neurocognitive testing.
- h) It is important that pace and volume be maintained throughout Trial 1 regardless of the participant's performance.

## 2. Scoring for Trial 1

- a) Circle and sum the CAPITALIZED words that are repeated correctly. Plurals and tense changes are acceptable.
- b) If total score for Trial 1  $\geq 13$  STOP ESU and proceed with neurocognitive testing per protocol.
- c) If total score for Trial 1  $\leq 12$  proceed with Trial 2 using a slightly louder tone of voice.

## 3. Administration for Trial 2

- a) Read each sentence from Trial 2 slowly (about 2-3 seconds), articulating clearly with normal inflections. No repetitions are allowed. (If ppt asks for repetition: Say, **"I'm sorry; I can't. Let's try the next one."**)
- b) Examiner should read sentences at the same pace but in a slightly louder voice. Pace and volume should be maintained throughout Trial 2.
  - (1) For participants with hearing loss, sometimes using a lower tone is more helpful than simply speaking more loudly.

## 4. Scoring for Trial 2

- a) Circle and sum the CAPITALIZED words that are repeated correctly. Plurals and tense changes are acceptable.
- b) If total score for Trial 2  $\geq 13$  proceed with neurocognitive testing using a slightly louder tone of voice.
- c) If total score for Trial 2  $\leq 12$  proceed with neurocognitive testing using a slightly louder tone voice and supplement verbal instructions with written prompts.

# B. **MINI-MENTAL STATE EXAM (MMSE) (Added to Full Battery and Abbreviated Battery)**

## 1. Administration

- a) Introduce the cognitive testing portion of the exam: **"In this next part of the exam I will ask you some questions and give you some short tasks that will require memory and concentration. Some may be a little bit more difficult than others."**

## 2. Blessed Test Items (Questions 0c-0f)

- a) These items have been added to the MME form for efficiency.
- b) Read each question and record responses. One point is given for each correct response.
- c) If unsure whether a response is correct or not, record the participant's response on the scoring sheet and seek clarification after the testing session.
- d) Q0c. First and last name is sufficient for "full name" to be correct.
- e) Q0f. The participant must be within one hour for the "time of day" to be correct.

3. Orientation to Time (Questions 1-5)

- a) Read each question and record responses. One point is given for each correct response.
- b) If unsure whether a response is correct or not, record the participant's response on the scoring sheet and seek clarification after the testing session.
- c) If the participant gives only the last two digits of the year, prompt by saying, **"What is the full year?"** (This prompt also applies to Q0e).
- d) Some leeway is allowed for the correct response to season:
  - (1) Winter: December, January, February, March
  - (2) Spring: March, April, May, June
  - (3) Summer: June, July, August, September
  - (4) Fall/Autumn: September, October, November, December
- e) If the month has just changed (or is about to change), it is correct to say either month (i.e., it is within one "day" of the correct month).
- f) If the participant gives the date when prompted for the day, give credit for date (item 5) if the response is correct, and say: **"Good, and what day of the week is it?"**

4. Orientation to Place (Questions 6-10)

- a) Read each question and record response. One point is given for each correct response.
- b) Q9. The correct answer to **"What is the name of the place where we are right now?"** will obviously vary by Field Center and location (clinic vs. home). Any correct name that is reasonably specific is acceptable (e.g., University Medical Center, ARIC clinic, my home, name of a nursing care facility, etc.). If a generic or vague response is given (e.g., "university" or "hospital"), the examiner should prompt for a more detailed response: **"Can you tell me a more specific name for this place?"**
  - (1) For in-clinic administration: If the ppt has difficulty understanding the question, the examiner may prompt with **"If you were telling someone where you were coming today, what would you tell them?"**
- c) Q10. **"Are we on the ground floor or higher floor of this building?"** can be asked in the clinic, multi-level nursing home or long-term care facilities. An alternative question for home visits would be, **"Is this a one or two story house?"**
- d) Q6. If the ppt responds with "United States of America," the examiner should prompt with **"What specific state are we in?"**

5. Registration (Questions 11-13)

- a) Explain the rules as follows, **"I am going to name three objects. After I have said all three words, I want you to repeat them all back to me. Ready? Repeat these words after me: \_\_\_\_\_ – \_\_\_\_\_ – \_\_\_\_\_. \* Please try to remember what they are, because I am going to ask you to name them again in a few minutes."**
- b) **\*The three words change year to year, so be sure to say the correct words for the appropriate year. There are different versions of the MME form for these different years (MMEO vs MMEE). For visits occurring during even years (e.g., 2024, 2026) the MMEE is completed and the words are "blue – pear – sofa". For odd years (e.g., 2023, 2025) the MMEO is completed and "face – velvet – daisy" are used.**

- c) Score one point for each word repeated correctly on the first attempt. If the participant is unable to recall all three words, give 2 more trials until he/she correctly names all three. If after 3 attempts (initial exposure plus 2 additional trials) the participant is unable to correctly repeat all 3 words, move on to the next question. In this case, items 24-26 (recall) should not be asked and would be scored as “not attempted/refused.” \*Note\* Items 11-13 would also be scored as “not attempted/refused” IF the ppt was unable to hear the words due to ONLY physical impairment (i.e., hearing loss).

6. Attention and Concentration (Questions 14-18)

- a) Say, **“How do you spell the word, World?”**
- b) If the participant is unable to spell “WORLD” forward, prompt with **“It is spelled W-O-R-L-D”** at the rate of ~ 1 second per letter. Coach only once, then continue with the second part of the question, even if the performance in spelling forward is not perfect.
- c) Ask the participant: **“How would you spell it backwards?”**
- d) Score one point for each letter given in correct order. Allow additional attempts, if requested. If a letter is omitted, score a point for all letters in correct order. Example: DROW would have 4 letters correctly placed. (L was omitted.) Refer to the WORLD scoring sheet for specific scoring examples. \*Note\* If the ppt’s response is more than 5 letters, use the first 5 letters for scoring.
  - (1) For spellings that are not included in the template, use the following 2 rules to score: Omission & Out of Order. Some example scoring are:
    - (a) WLRW would be scored as 3 pts: 2 pts deducted for omission of letter D and O.
    - (b) DLLOW would be scored as 4 pts: 1 pt deducted for omission of letter R.
    - (c) DUOLW would be 2 pts: 1 pt deducted for omission of letter R and 2 pts deducted for out of order letters L & O.
    - (d) ROWD would be 3 pts: 1 pt deducted for omission of letter L and 1 pt for out of order letter D.

### Scoring Key for Spelling WORLD Backwards

5 point	4 point	3 point	2 point		1 point		0 point	
DLROW	_LROW	DELW	D_ROD	DO_LW	_ROLD	DR	12345	R
	DILRW	DL__W	DDW	DOAW	BOWLD	DRAL	4	R8
	DL_OW	DL_LW	DL	DOL_W	D	DRALD	A	RDOLD
	DLDO_W	DL_R	DL_LD	DOLR	D_ORD	DRING	ARHR	RLDO
	DILRW	DLAW	DL_O	DOLRD	D_R	DRL	B	SWALD
	DLO_W	DLDR	DL46	DOLW	DA	DRLA9	BALD	U
	DLODW	DLDRD	DIA	DONRW	DAKL	DRLC	BLD	UOL
	DLOOW	DLDW	DLA7	DORHW	DAY	DRLD	E	W
	DLOUW	DLERO	DLAB	DORLW	DC	DRLO	EAHR	W_RL
	DLOW	DLEW	DLB	DOROL	DD	DRLOD	ELBO	WA_LD
	DLOWD	DLLW	DLD	DORW	DDWOR	DRLWD	ENAOU	WALRD
	DLR_W	DLOIW	DLDO	DOWAB	DE	DRLWO	GB	WARD
	DLRAW	DLOLW	DLDOL	DOWAL	DEALD	DROAL	HO	WARLE
	DLRLO	DLOORO	DLE	DOWE	DEID	DROLD	L	WERLD
	DLRLW	DLORW	DLEM	DOWL	DEIHL	DRWL	LAD	WH
	DLRO	DLOWA	DLES	DOWLD	DER	DRWLD	LD	WHO
	DLROD	DLOWL	DLG	DOWLW	DEWOR	DRWOL	LDO	WIRP
	DLROE	DLOWR	DLL	DOWOL	DO	DWALD	LDORÉ	WL
	DLROL	DLR	DLLD	DOWOR	DOALD	DWL	LDORH	WLDOR
	DLROO	DLR_D	DLLÉ	DOWR	DOD	DWLD	LDORL	WLDR
	DLROR	DLRAD	DLLOR	DOWRE	DOIL	DWLI	LDWLD	WLOD
	DLROY	DLRD	DLLU	DOWRL	DOL	DWLR	LDWO	WLS
	DLRRO	DLRDL	DLM	DR__W	DOLB	DWO	LDWRL	WO_LD
	DLRRW	DLRL	DLNOR	DR_W	DOLD	DWOL	LERD	WOLD
	DLRW	DLRLD	DLO	DRADW	DOLO	DWOLD	LLFA	WOLED
	DLUOW	DLRN	DLOB	DRL_W	DOR	DWOR	LOCBL	WOLRD
	DLVRO	DLRRD	DLOD	DRLRD	DORD	DWORD	LODA	WOR
	DLWOW	DLRUR	DLODL	DRLW	DORDL	DWORL	LOPD	WORAL
	DLWRO	DLRWD	DLODR	DRO	DORL	LDORW	LORD	WORLD
	DOROW	DLRWO	DLOHT	DROD	DORLD	DLOWR	LORL	WRLD
	DR_OW	DLW	DLOL	DROF	DORWD	LDRO	LORLD	WROLD
	DROOW	DLWDW	DLOLD	DROL	DORWL	LDRWO	LRWD	WWWLO
	DROW	DOLOW	DLOLO	DROLO	DORWR	LORDW	LRWO	
	LROW	DOOW	DLOLR	DROR	DOUWL	LOROD	LWD	
	LWROW	DOW	DLOOO	DROU	DOYLD	LORW	M	
		DOWOW	DLOR	DROWL		LOWL	NOLOR	
		DRLOW	DLORD	DRW		LOWR	NORLD	
		DRODW	DLORF	DUW		OLEW	O	
		DROLW	DLORL	DW		RO	OLD	
		DRORW	DLORY	DWOWD		RW	OLDE	
		LDROW	DLPGR	DWROL		WAROR	OLWRD	
		LRO	DLPS	DWROR			ORLD	
		LROR	DLWAD	LDLOW				
			DIDO	LDOW				
			DLWOL	LOW				
			DLWOR	LRDW				
			DLWR	LRW				
			DLY	OW				
			DNLD	ROW				
				ROWLD				



7. Naming (Questions 19-20)

- a) Point to a pencil. SAY, **“What is this called?”** RECORD whether response is correct or not. If the participant gives a function (e.g., you write with it), say: **“Yes, but what is it called?”**
- b) Point to a wristwatch. SAY, **“What is this called?”** RECORD whether response is correct or not.

8. Repetition (Question 21)

- a) Say, **“Repeat this phrase after me: No ifs, ands, or buts.”**
- b) One repetition is permitted at the participant’s request, if the participant has not yet verbalized a response.
- c) Record whether the participant correctly repeats the phrase. One point is given for an exact repetition of the phrase.

9. Writing (Question 22)

- a) Give the participant a pencil and a blank piece of paper and have the participant write a sentence of his or her choice. Correct grammar, spelling, and punctuation are not necessary. Score correct if the sentence contains a subject and a verb. Note dominant hand used.
- b) Say, **“Please write any complete sentence you can think of on this paper.”**
- c) If needed, prompt by saying: **“Write a sentence about the weather.”**
- d) Score 1 point if the participant is able to write a complete sentence (even if not about the weather). A sentence with an implied subject (e.g., “close the door”) is acceptable. If the sentence is illegible, asked the participant to read it aloud for scoring. Greetings or salutations (e.g., “Happy Birthday” or “Good Morning” or “Merry Christmas to you”) are not acceptable.

10. Drawing (Question 23)

- a) Give the participant a pencil, a piece of paper, and the laminated card with the overlapping pentagons. The card should be oriented in the same direction as the drawing shown on the MMSE form.
- b) Say, **“Here is a drawing. Please copy the drawing on this piece of paper.”**
- c) Allow 1 minute for copying. Note dominant hand used for the drawing task.
- d) Score 1 if all sides and angles are preserved and two five-sided figures intersect to form a four-sided figure within 60 seconds. Ignore tremor, rotation, minor gaps, and self-correction.  
\*Note\* Only convex pentagons are admissible; Concave pentagons are considered incorrect.

11. Recall (Questions 24-26)

- a) Say, **“Now, what were those three objects I asked you to remember?”**
- b) RECORD whether or not the three words were recalled. \*Note\* Remember there are alternate words for other versions of the MME form, such as “face, velvet, daisy” on the MMEQ. No hints are given.

12. Comprehension (Questions 27-29)

- a) Recall dominant hand used for the drawing task.
- b) Say, **“Listen carefully, because I'm going to ask you to do something.”** Hold up a piece of paper in plain view of the participant but out of reach. **“Take this paper in your <non-dominant > hand (pause), fold it in half (pause), and put it on the floor”** (substitute **“Hand it back to me,”** if the participant is disabled or bed-bound or otherwise unable to reach the floor).
- c) After saying the entire command, hold the paper within reach of the participant (but not in favor of either hand). Do not repeat any individual part of the command. One repetition is permitted at the participant's request, but the entire command must be repeated verbatim. If the participant reaches for the paper immediately after hearing the first portion of the command, move your hand away so that the paper is out of reach and continue to state the next two parts of the command without interruption.
  - (1) If the ppt already has the piece of paper in their hand when they ask for a repetition, you may repeat the entire command, but you must first get the piece of paper back from the ppt before doing so.
- d) Q27 - Score 1 point if the participant takes paper in non-dominant hand.
- e) Q28 - Score 1 point if the participant folds the paper in half.
- f) Q29 - Score 1 point if the participant places the paper on the floor.

### 13. Reading (Question 30)

- a) Display laminated card containing the sentence command CLOSE YOUR EYES.
- b) Say, **“Please read this sentence out loud and then do what it says.”**
- c) The participant can be reminded not just to read a sentence, but to perform the action. If the participant is unable to read, read the sentence out loud.
- d) Score 1 point only if the participant closes his/her eyes.

### 14. Scoring (Questions 31-32)

- a) Q31 - CDART will calculate the MMSE total score. The score is calculated as follows:
  - (1) One point is scored for each correct answer.
  - (2) Zero points are scored for:
    - (a) Incorrect or “don't know” responses
    - (b) Items that were not attempted or refused due to task difficulty (i.e., due to cognitive impairment); these should be marked as “incorrect.”
  - (3) Items that are not attempted/refused due to any reason other than cognitive impairment (e.g., vision or hearing problems) are marked as “not attempted/refused” and left blank in the DMS and set to missing via adding a note log. A prorated score is generated for the MMSE in the case where items were not attempted. All other item responses should be entered into the DMS, which will calculate the total score for item 31.
- b) Q32 - Count the number of questions that were “not attempted/refused” due to a physical impairment and enter the total (considering only Q1-Q30). If none, enter 0.

### C. DELAYED WORD RECALL – EXPOSURE (Full Battery and Abbreviated Battery)

#### 1. Administration

- a) Say, **“I am going to show you some words that I'd like you to try to remember. I will read each word first. I would like you to repeat the word I say out loud, and then use it in a sentence – this will help you remember the words. Do not use words from a previous card in your sentence. The first word is...”**
- b) Present each word card to the participant in a fixed order.
- c) Check each word in Column A after the participant has read it aloud and used it in a sentence.
- d) After column A is completed say, **“To help you remember, we'll go through the words again. Just like before, I will read each word first, then I would like you to repeat the word and use it in a sentence. You may use the same sentence you used the first time or make up a different one. The first word is...”** Again present each card to the participant in order.
- e) Check each word in Column B after the participant has read it aloud and used it in a sentence the second time.

#### 2. Prompts

- a) If the participant has trouble forming a sentence or uses word associations (e.g., “smoke” for chimney), the examiner may offer suggestions or make corrections at any point during the procedure. It is acceptable to give the participant a sentence if they are unable to make one up on their own.
- b) Do not correct for homophones (sentence with flour vs. flower) or plurals. For other incorrect suffixes (e.g., “-ing”), politely remind the participant of the correct word. Some participants may not pronounce a word correctly (e.g., “chimley” for “chimney”). That is ok. As long as the participant is consistent and recalls the same mispronounced word later, credit is given. Also, some participants may not know the definition of a word (e.g., “harp”). If needed, you may tell them that it is a musical instrument.
- c) Encourage the participant to form sentences that convey the meaning of the word. For example, do not allow sentences like “The chimney is nice,” but encourage sentences like, “The smoke went up the chimney.”
- d) Each sentence may contain only the word on the card. Sentences linking multiple words from the word list are not allowed. If this occurs, say, **“Please use only one word from the cards in each sentence.”**

#### 3. General

- a) The above corrections are designed to standardize administration of the task. However, to maintain good rapport, do not over-correct. After 3 corrections, allow the participant to continue the task without additional corrections.
- b) This test may be discontinued due to participant refusal, task difficulty (e.g., the participant never fully understood the instructions), or if the examiner determines that the participant is unable to perform the task due to a physical impairment (e.g., severe vision or hearing loss).
- c) If discontinued, the reason is recorded on the Neurocognitive Scoring Summary Form. In this case, the Delayed Word Recall task should not be given and likewise should be scored as discontinued (recorded as the same reason).
- d) If DSS is not administered the examiner should make “small talk” with the SP for 3-4 minutes

to create an equivalent delay before moving to the Recall portion.

#### D. DIGIT SYMBOL SUBSTITUTION (DSS) (Full Battery and Abbreviated Battery)

##### 1. Administration

- a) Hand the participant a pencil without an eraser. Place the digit symbol form in front of the participant, point to the key above the test items and read the script.
- b) Present the instructions deliberately and at a slow pace.
- c) Say, **“This is the digit-symbol task. Look at these boxes across the top of the page. On the top of each box are numbers from one through nine. On the bottom of each box there is a special mark. Each number has its own mark.”**
- d) Point to 1 and its mark, then to 2 and its mark. Say:  
**“Down here are boxes with numbers in the top part, but the bottom part is empty.”**  
Point to the four rows. **“I want you to put the correct mark in each box like this. Here is a 2; the 2 has this mark.”** Point to the first sample item, then to the mark below the 2 in the key. **“So I put it in this box, like this.”** Write in the symbol. **“Here is a 1; the 1 has this mark.”** Point to the second sample item, then to the mark below the 1 in the key. **“So I put it in this box.”** Write in the symbol. **“Here is a 3; the 3 has this mark.”** Point to the third sample item, then to the mark below the 3 in the key. **“So I put it in this box.”** Write in the symbol. **“Now, just for practice, you fill in all the boxes up to this heavy line.”**
- e) If the participant makes an error on a sample item, correct the error immediately and review the use of the key. Continue to help (if necessary) until the seven sample items have been filled in correctly. Do not proceed with the test until the participant clearly understands the task. When the participant fills in a sample item correctly, offer encouragement by saying, **“Yes”** or **“Right.”**
- f) During the sample exercise, look to see if a left-handed participant blocks or partially blocks the key when filling in the marks. If this occurs, fold a separate template so that only the key is exposed and place it next to the participant's worksheet on the participant's right-hand side so that the extra key is aligned with the one blocked by the participant's left hand. Have the participant use the separate key to complete the sample items and to take the actual test.
- g) When the sample items have been completed successfully, say, **“Yes, now you know how to do them.”**
- h) To begin the formal test, say:  
**“When I tell you to begin, start here (point to the first test item) and fill in as many boxes as you can, one after the other, without skipping any. Work as quickly as you can. When you finish one line (sweep finger across the first row), go on to the next one (sweep finger across the second row) keep working until I tell you to stop and remember to work as quickly as you can. Ready? Go ahead.”**
- i) The examiner should begin timing after saying “Go ahead,” not when the participant begins working. Timing should be discrete but also precise. \*Note\* It's important to pause for an indication from the ppt (verbal or non-verbal) that they are indeed ready to begin before saying “Go ahead.”
- j) At the end of 90 seconds, say, **“Stop. That's good, thank you.”**
- k) If DWR was not administered the examiner should make “small talk” with the SP for 1-2 minutes to create an equivalent delay before moving to Incidental Learning.

## 2. Prompts

- a) If the participant omits an item or starts doing only one type (e.g., only the 1's), say, **"Do them in order. Don't skip any."** Point to the first item skipped and say, **"Do this one next."** Do not stop timing.
- b) Do not intervene if the participant fills in a wrong symbol, but if the participant has clearly lost focus as to what to do (e.g., starts filling in something other than symbols), you may give the following reminder: **"Remember, you are to fill in the mark that goes below each number, as indicated in the key up above."**
- c) If the participant pauses at the end of a row or stops working, encourage him/her to continue, saying, **"Good, keep going."** Point to the beginning of the next row, if necessary.
- d) Give no further assistance except to remind the participant to continue until instructed to stop if necessary.

## 3. Scoring

- a) After the participant has left the room, the examiner scores the DSS. Using the DSS scoring transparency, record 1 point for each correctly drawn symbol completed within the 90-second time limit and record in the DMS Neurocognitive Scoring Summary Form.
- b) A response is scored as correct if it is clearly identifiable as the keyed symbol, even if it is drawn imperfectly (e.g., "v" instead of "u") or if it is a spontaneous correction of an incorrect symbol.
- c) Credit is not given for items completed out of sequence (e.g., doing all the 1's). Credit is given for a skipped item that is completed after being pointed out. Blank spaces between completed items receive no credit.
- d) If there is more than one symbol in the box, and one is correct, give the participant credit. The seven sample items are not included in the participant's score.
- e) The DSST may be discontinued due to participant refusal, task difficulty (e.g., the participant never fully understood the instructions), or if the examiner determines that the participant is unable to perform the task due to a physical impairment such as a tremor or significant visual impairment. If discontinued, the reason is recorded on the Neurocognitive Scoring Summary Form.

## E. DELAYED WORD RECALL (Full Battery and Abbreviated Battery)

### 1. Administration

- a) Say, **"A few minutes ago, you read and made a sentence with several words that were on those cards. Please tell me all of the words you can remember in any order."**
- b) Allow 60 seconds. Use the stopwatch discreetly to avoid creating anxiety or a sense of time pressure.

### 2. Prompts

- a) Some encouragement may be necessary because participants may spontaneously report fewer words than they actually could recall with further effort.
- b) When the respondent indicates that he/she cannot remember any more words (or after a pause of 10 seconds), provide one prompt for more words: **"Can you think of any more words?"** If the

participant responds that they can't think of any more words, the examiner should say, **"That's okay, keep trying. I will tell you when to stop."** Continue timing and stop the task after the time limit has passed (60 seconds). However, if the ppt is frustrated/agitated and clearly has no more recall, the test may be stopped at 20 seconds to maintain rapport. This needs to be noted in the test booklet and Q16a on the NCS as: SP was agitated & only had 20 sec on DWR to maintain rapport, J642.

### 3. Scoring

- a) Check off all the words correctly recalled. One point is given for each correct word. Credit is given for plurals. Record the total score at the bottom of the Delayed Word Recall Form and the Neurocognitive Scoring Summary Form.
- b) Note: this test is not given if the exposure trial was not performed.

## F. INCIDENTAL LEARNING

### 1. Administration

- a) The participant's task is to record as many symbols and symbol-digit pairs as he/she can recall from the DSS administered earlier.
- b) Place IL template in front of the participant.
- c) For Part A (symbols), say, **"Now I'd like you to write down all of the symbols you can remember (point to the bottom row of the IL template), in any order, from the task you did a moment ago. Ready? Go ahead."**
- d) Allow 60 seconds. Timing should be discrete.
- e) For Part B (digit-symbol pairs), say, **"Now I'd like you to fill in the numbers that you think goes with each symbol (point to the top row of the IL template). Ready? Go ahead."**
- f) Allow 60 seconds.
- g) If the ppt pauses before the end of the time limit, you can say **"Can you think of any more?"**

### 2. Scoring

- a) Record 1 point for each correct symbol and record this total at the bottom of the form. If the participant writes a symbol after the initial 60 seconds, credit should not be given for that symbol. The examiner should notate why credit was not given on the incidental learning template. Record 1 point for each correct digit-symbol pair and record this total at the bottom of the form. Both totals are then entered on the Neurocognitive Scoring Summary Form.
  - (1) A symbol is scored as correct if it is clearly identifiable as the keyed symbol, even if it is drawn imperfectly (e.g., "v" instead of "u") or if it is a spontaneous correction of an incorrect symbol. The symbols must be drawn consistently from DSS to IL in order to be given credit.
  - (2) If the ppt writes numbers while writing symbols—if symbol/pairings are correct, score as correct.
- b) This test is not administered if the DSS was not attempted.
- c) The total # of digit symbol pairs should not exceed the total # of symbols.

## G. WORD FLUENCY (Full Battery and Abbreviated Battery)

### 1. Administration

- a) In this task, participants are asked to produce as many words as possible that begin with the letters F, A, and S within a time limit of 60 seconds for each letter while avoiding proper nouns, variations, plurals, and repetitions.
- b) Explain the task to the participant. Say:

**“On this next task, I will say a letter. Then I want you to tell me as many different words as you can think of, as fast as you can, that begin with that letter.**

**Leave out names of people, names of places, and numbers. So, if I were to say ‘T,’ you should not say words like ‘Thomas,’ ‘Texas,’ or the number ‘Ten.’ But you could say words like ‘table,’ ‘take,’ or ‘turtle.’**

**Also, do not use the same word again with a different ending. For example, if you said ‘take,’ then you should not say ‘takes,’ or ‘taking.’ These would all be considered the same word. Are you ready? Tell me as many words as you can think of that start with the letter F. I will tell you when to stop. Ready? Go.”**
- c) Discretely start the stopwatch after saying “Go” and record the participant's responses verbatim.
- d) Record all words produced (use the back of the page if more space is needed).
- e) Do not stop the test before the entire 60 second time limit has elapsed.
- f) After 60 seconds has passed, the examiner stops the test, provides encouragement, and states the next letter. Say, **“Stop. Thank you. Now, tell me as many words as you can think of that start with the letter A. I will tell you when to stop. Ready? Go.”**
- g) Discretely start the stopwatch after saying “Go” and record the participant's responses verbatim.
- h) After 60 seconds has passed, the examiner stops the test, provides encouragement, and states the next letter. Say, **“Stop. Now, tell me as many words as you can think of that start with the letter S. I will tell you when to stop. Ready? Go.”**
- i) After 60 seconds has passed, the examiner stops the test.

### 2. Prompts

- a) If the participant cannot think of any more words, wait quietly for ~ 10 seconds. After 10 seconds of silence, prompt for more words: **“Can you think of any other words that that begin with the letter ?”** If the ppt seems confused, say, **“Tell me all the words that start with...”**
- b) A participant may stop producing words because he/she feels that he/she made an error (e.g., repeated a word or said a proper name). In this instance, prompt the participant to continue: **“That's okay; just go on.”**
- c) If a participant asks if they already said a word, do not say “yes” or “no.” Instead, encourage more responses by saying, **“It's ok; keep going!”** or **“You can repeat words.”**
- d) The examiner should never interrupt the exam to correct sporadic errors. However, if the participant has clearly lost focus or clearly misunderstood the instructions (e.g., begins naming only inadmissible words, such as numbers, or begins to name only variants of a previous word, such as “flower” followed by “rose,” “daisy,” etc.), clarify the instructions after three or more consecutive errors: **“Tell me words that start with F (A or S) but do not include numbers”** (or

people, etc. depending on the error).

### 3. Scoring

- a) While recording the words, if the examiner cannot keep up with the words produced and misses a word, but is certain that the participant produced an admissible word, place an “X” on the line or write part of the word to indicate the participant should receive credit for the word.
- b) Place a single strike mark through inadmissible words (i.e., proper nouns, names, or places), simple variations (adding “ed” or “ly”), or tense variations (forgive/forgave); plurals or repetitions should only be counted once. Record the number of admissible words for each letter at the bottom of the form and on the Neurocognitive Scoring Summary Form. New examiners should check their word count with an audio tape of the participant’s responses for 2 months after initial certification.
- c) After the participant has left the room, the examiner must proof all the responses for admissibility. The examiner should finish writing out any words that were not completely written out during the exam. Clarify any words that may have been unclear during the time the test was given. If unable to spell the word, write it out phonetically. Check any ambiguous words in the dictionary (only after the participant has left the room).
- d) Some admissible and inadmissible words are included here:
  - (1) Admissible: felt/feelings, free/freedom, fall/fell, season/seasoning, anxious/anxiety, stand/stood, foot/feet, anonymous/anonymity, sun/sunshine, fuse/fusion, sea/seashore, frank (adj), ford (n), French (adj), & august (adj).
  - (2) Inadmissible: fool/foolish, final/finalize, success/successful, fun/funny, fight/fought, sit/sat, say/said, freeze/froze, friend/friendly, & sun/sunny.
    - (a) Aside from the words listed here, words are counted as admissible if they can have different meanings (consult [www.m-w.com](http://www.m-w.com) or [www.dictionary.com](http://www.dictionary.com)).
  - (3) Words like “anyone, anything, and anybody” are counted as separate words. If a word is capitalized (e.g., Santa), it is a proper noun and would not count. Homonyms like “ant” and “aunt” may be counted if given consecutively; otherwise, it is considered a repetition and only counted as one word, unless the ppt indicates (verbally or non-verbally) that the two words are different—then credit is given for both words.
  - (4) Homophones (i.e., words that sound like they are spelled with F, A, or S but actually begin with another letter) are inadmissible.
  - (5) Do not give credit for words that the participant says inadvertently (e.g., “I can’t think of any more words”). Do not give the participant credit for “any” under the letter A.
  - (6) Words from other languages (e.g., apropos) are also counted. However, it is up to the examiner to verify the word in cases where the examiner is not familiar with a given word.
- e) Word Fluency may be discontinued due to participant refusal or task difficulty (meaning the participant never understood the instructions). If discontinued, the reason is recorded on the Neurocognitive Scoring Summary Form.

## I. **ANIMAL NAMING (Full Battery and Abbreviated Battery)**

### 1. Administration

- a) In this task, the participant is asked to name as many different animals as he/she can think of in 60 seconds.



- b) Say, **“Now we’ll try something different. On this task, I want you to tell me as many different animals as you can think of. Name them as quickly as you can. I will tell you when to stop. Ready? Go ahead.”**
- c) Start timing. Allow 60 seconds.
- d) Write down all of the words verbatim in the order in which they were produced. The examiner may also indicate that an acceptable word was produced by simply making an “X” on the form or write part of the word if production is too rapid for verbatim recording. Verbatim words are preferred however.

## 2. Prompts

- a) If there is a pause of 10 seconds or more, repeat basic instructions and give the starting word **“dog.”**
- b) If the participant discontinues before the end of the time period, encourage him/her to try to think of more names. If the ppt seems confused: Say, **“Tell me all the animals you can think of.”**
- c) Prompt participant not to provide given names after 3 consecutive occurrences. Example: The ppt says “Fido, Spot, Lassie”—Say, **“Tell me all the animals you can think of, but do not give their proper names, like Fido.”**
- d) If the ppt asks something like “Have I already said that?” Say, **“It’s ok; keep going. You can repeat words.”**

## 3. Scoring

- a) After the participant has left the room, the examiner totals the valid responses. Credit would be given for prompt 2a (“DOG” noted above) if participant verbalized “dog” back.
- b) Place a single strike mark through repetitions and plurals, these should only be counted once.
- c) Names of extinct, imaginary, or magical animals are admissible (e.g., dragon). Given names for animals like “Fido” or “Spot” are not counted. Credit is given for: “human/homosapien,” breeds (e.g., terriers), male, female, 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, and insects.
  - (1) Examples of admissible animal names: “jack” (male donkey), “pie” (short for magpie, a type of bird), “kite,” “peep,” or “sandpiper” (types of birds), “skate” (type of fish), “burro” (small/wild donkey), and “northern” (short for northern pike fish).
  - (2) Examples of inadmissible animal names: “virus,” “bacteria,” “microbe,” “amoeba,” or “fungus.”
- d) Record the number of admissible animals at the bottom of the form. New examiners should check their count with an audio tape of the participant’s responses for 2 months after initial certification.
- e) Animal Naming may be discontinued, e.g., due to participant refusal or task difficulty (meaning the participant never understood the instructions). If discontinued, the reason is entered in the DMS Neurocognitive Scoring Summary Form.

#### J. 5-MINUTE BREAK (Full Battery Only)

1. If administering the Abbreviated Battery, continue to Trails A and B tests. Do not take a break.
2. During the Full Battery, the participant is given a mandatory 5-minute rest following Animal Naming.
  - a) Give the participant some encouraging words, for example, **“You are doing a great job. Now we’ll take a 5-minute break. After that we’ll try a few more tasks and finish up this part of the exam.”**
  - b) Examiners should take advantage of the break to begin scoring the first half of the battery.

#### K. LOGICAL MEMORY I (Full Battery Only)

##### 1. Administration

- a) This test assesses the participant’s ability to recall a short passage from a story.
- b) Say, **“I am going to read you a little story. Listen carefully, and try to remember as many details of the story as you can. When I am through, I want you to tell me everything you can remember. The story is...”**
- c) Ensure you have the participant’s attention. Read the story on the form slowly, taking approximately 30 seconds to read the entire passage. Articulate clearly and use normal inflections.
- d) After reading the story, say, **“Now, begin at the beginning and tell me everything you can remember from the story.”**
- e) Make a check mark by any words of the story that the participant repeats unchanged. In general, record the participant’s words verbatim between the lines of the story provided on the form. Make sure that the recorded story is decipherable before proceeding.
- f) Allow 90 seconds for recall of the story, but if the participant indicates that he or she cannot recall any more details from the story, there is no need to wait until the 90 seconds are up.
- g) Provide one prompt for more details before going on to the next task: **“Can you think of any more details?”** Allow at least 10 seconds to pass before moving on to Story B.
- h) Introduce the Story B. Say, **“Okay, that was fine. Now I am going to read you another little story. Just like you did with the first story, listen carefully, and when I am through I want you to tell me everything you can remember. The story is...”**
- i) Read the story slowly (~ 30 seconds), articulating clearly, with normal inflections.
- j) Again, make a check mark by any words of the story that the participant repeats unchanged. In general, record the participant’s words verbatim between the lines of the story provided on the form. Make sure that the recorded story is decipherable before proceeding.
- k) Allow 90 seconds for recall of the story. Provide one prompt for more details before going on to the next task: **“Can you think of any more details?”**
- l) After the story has been recalled, let participant know that he/she will be asked to recall the story again. Say, **“Okay, good. Later on I will ask you to tell me this story again, so try to remember them.”**
- m) Allow at least 10 seconds to elapse before beginning the next test.

## 2. Prompts

- a) No repetitions are allowed. If the participant asks you to start over mid-way through the story, say, **“I can only read the story one time”** and continue reading the story. Examiner would note this interruption on the NCS form on Q16.
- b) If the ppt immediately reports not remembering any details, gently encourage them to think a little more before moving on.

## 3. Scoring

- a) Scoring is deferred until after the cognitive battery is completed.
- b) Score one point for each item/story element correctly repeated. For questionable responses, refer to the tables below. New examiners should check their hand-written record with audio tape of the responses for 2 months after initial certification.
- c) Record the total score at the bottom of the form and enter in the DMS.
- d) This test may be discontinued due to participant refusal, task difficulty (e.g., the participant never fully understood the instructions), or if the examiner determines that the participant is unable to perform the task due to a physical impairment (e.g., severe hearing loss). If discontinued, the reason is recorded in the DMS Neurocognitive Scoring Summary Form. In this case, Logical Memory II (the recall task) should not be given and likewise should be scored as discontinued (recorded as the same reason).
- e) Please refer to the Logical Memory Scoring Criteria for general rules and examples of 1-pt & 0-pt responses.

### STORY A SCORING

Text for Story A	General Rule	Examples of Alternative 1-Point Response	Examples of 0-Point Responses
<b>Anna</b>	"Anna" or variant of the name	Ann; Annie; Annette	Angela; Allison
<b>Thompson</b>	"Thompson" is required		Thompkins; Thomas
<b>of South</b>	"South" (in any context)	from South; who lived in South; who came from the South	
<b>Boston,</b>	"Boston" (in any context)	who worked in Boston; on a trip to Boston	
<b>employed</b>	An indication that she held a job	worked; had a job as; who was; who earned a living as; hired (as a cook)	who wanted to be;
<b>as a cook</b>	"Cook" or some form of the word is required	who cooked; chef	as a waitress; in the kitchen; food service worker
<b>in a school</b>	"School" is required	at a high school; by a school; university	in a hospital; at a company
<b>cafeteria,</b>	"Cafeteria" is required		lunchroom; dining hall; diner; restaurant; kitchen; cafe
<b>reported</b>	Indication that a formal statement was made to someone in authority (in any context)	filed a complaint; said to the police; made a statement; notified the police; told the police; went (to the police); summoned (the police)	said; told how; police investigated robbery or police were called (no indication that woman called); went to city hall (without indicating police involved)
<b>at City Hall</b>	"City Hall" (in any context)	went to City Hall; called City Hall; Town Hall	
<b>Station</b>	"Station" in any context, or a word or phrase denoting a police station	police station; train station; stationhouse; police headquarters; precinct house; police department	office; building
<b>that she had been held up</b>	An indication that she had been held up (i.e., gun point or knife	that someone held her up; that she was in a stick-up	that she was beaten; she was attacked; that she was robbed; she got mugged; hijacked
<b>on State Street</b>	"State Street" (in any context)	she lived on State Street; on her way to State Street	on some street; State Avenue

<b>Text for Story A</b>	<b>General Rule</b>	<b>Examples of Alternative 1-Point Response</b>	<b>Examples of 0-Point Responses</b>
<b>the night before</b>	Indication that the hold-up occurred the previous night	last night; the previous night	at night; one night; yesterday; the day before
<b>and robbed</b>	Indication that a robbery took place	was robbed; her money was stolen; they took her money; someone took her purse	lost her money; somebody took her things; mugged
<b>of fifty-six dollars.</b>	Indication that an amount of money greater than \$49 but less than \$60 was taken from her	fifty-some dollars; fifty-five dollars; about fifty dollars	sixty-five dollars; a lot of money; the police collected fifty-six dollars for her
<b>She had four</b>	"Four" is required together with an indication that the children were hers	she was the mother of four	she had two; she had some; there were some
<b>small children,</b>	"Children" or a synonym is required	little children; kids; small kids; young children; grandkids	babies; girls; sons; small boys; child
<b>the rent was due,</b>	A phrase indicating that the rent was due	she had not paid the rent; she owed for the rent; the landlord had to be paid; she needed money for the rent; wasn't sure how she'd pay rent; didn't have \$ for rent	she owed money; she needed money; there was no money
<b>and they had not eaten</b>	Indication that her children, or the family, were without food	they had gone without food; they were hungry; there was no food; her kids had nothing to eat; she couldn't feed her family; no \$ to feed kids	there wasn't much food; they had only a little food; she had not eaten; didn't have money to buy food; police took up \$ so she could buy food for her kids
<b>for two days.</b>	"Two days" is required, or a phrase meaning about two days	for a couple of days; for one or two days; for two or three days; few	for days; for several days; for a day; for three days

<b>Text for Story A</b>	<b>General Rule</b>	<b>Examples of Alternative 1-Point Response</b>	<b>Examples of 0-Point Responses</b>
<b>The police,</b>	A word or phrase signifying one or more members of the police department (in any context)	the cops; the policeman; the detectives; the police officer; they (where police is clearly meant)	they (unspecified); some people; her neighbors; somebody; the official (no indication of police)
<b>touched by the woman's story,</b>	An indication that her story evoked sympathy	were touched; felt sorry for the woman; wanted to help her; were sympathetic; were impressed by her story (implying emotional reaction)	listened to her story; helped her; believed her
<b>took up a collection</b>	A phrase indicating that money was collected	chipped in; collected money; donated or collected some food; had a fundraiser; held a benefit; food drive	gave her some money; found some money
<b>for her.</b>	An indication that the money collected was for her or her children	and gave it to her; for her children; for her family; for them; to help her out; (police took up a collection) so she could buy food for her kids	as a gift; to make things better; for food; for rent

### STORY B SCORING

Text for Story B	General Rule	Examples of Alternative 1-Point Response	Examples of 0-Point Responses
<b>Robert</b>	"Robert" or a variant of the name is required	Bob; Rob	Roger; Richard; Rupert
<b>Miller</b>	"Miller" is required		Mills; Mullen
<b>was driving</b>	An indication that Miller was the driver of the truck	drove; was the driver of; was at the wheel of; driver; trucker	was riding in; went in; was going
<b>a ten-ton</b>	"Ten-ton" is required		a half-ton; a two-ton; in a large
<b>truck</b>	"Truck" is required	trailer truck; pick-up truck	vehicle; wagon; car; trailer; van; eighteen wheeler; semi
<b>down a highway</b>	An indication that the truck was being driven on a road (but not an unpaved road) or other intercity or interstate artery	down a road; on a country road; along a turnpike; on a thruway; on a freeway; on a hwy	down a dirt road; down a street; on his way
<b>at night</b>	An indication that it was after nightfall	one night; after dark; one evening; last night	one day; one morning; dark road
<b>in the Mississippi</b>	"Mississippi" (in any context)	along the Mississippi River; in Mississippi; on his way to Mississippi	in the Missouri
<b>Delta,</b>	"Delta" is required	Delta area	riverbank; lowlands; flats; plains; flood land; bayou
<b>carrying eggs</b>	"Eggs" is required together with an indication that they were part of a shipment	with a load of eggs; transporting eggs; freighting eggs; with crates of eggs; delivering eggs; hauling eggs; freight truck w/eggs; full of eggs; 10-ton truck contained eggs	carrying a load of some kind; and he had some eggs; with some eggs
<b>to Nashville,</b>	"Nashville" ( in any context)	on his way from Nashville; he lived in Nashville	to Tennessee
<b>when his axle</b>	"Axle" is required		when his truck; when the wheel; and the tire; the springs

Text for Story B	General Rule	Examples of Alternative 1-Point Response	Examples of 0-Point Responses
<b>broke.</b>	A word or phrase meaning “broke”	snapped; broke down; broke off; went; fell off; failed; threw an axle; (axle) problem	slipped; got stuck; eggs broke
<b>His truck skidded</b>	An expression indicating that the truck was out of control	he skidded; the truck slid; his truck went; it ran; it spun out; he went; swerved; skipped; slipped; jackknifed	he pulled his truck; the truck stopped; he drove his truck; the truck tipped over; he crashed; he had an accident/wreck; he hit
<b>off the road,</b>	An expression meaning that the truck left the road	off the highway; from the road; off; over	across the road; on the highway
<b>into a ditch.</b>	“Ditch” is required, or a word or phrase describing a ditch	down an embankment; into a gully; into a hole; ravine	into the mud; into a field; against a fence
<b>He was thrown</b>	An indication that he was forcibly propelled	he was slammed; he (or some part of him) hit; he bumped; he knocked; he was tossed; got banged up	he fell; he slumped; he crashed
<b>against the dashboard</b>	“Dashboard” or “dash” is required	banged against the dash; into the dashboard; instrument panel	into the windshield; against the steering wheel; out of the truck
<b>and was badly shaken.</b>	A word or phrase indicating that he was jarred or upset, but not indicating injury	was shaken; got shaken up; was shook up; got jarred; was jolted; was upset; was trembling; was in a state of shock; was dazed	and hit his head; cut himself; got hurt; was bleeding; was knocked out; bruised himself; broke his arm; had a concussion; he wasn't hurt
<b>There was no traffic</b>	A statement that no other vehicles were passing by	the road was deserted; no cars or trucks came by; he didn't see any cars; desolate of cars	nobody was around; there were no lights; no one stopped to help him; remote area; lonely road; no one was on the road (no indication of vehicles); hardly any traffic; little traffic



Text for Story B	General Rule	Examples of Alternative 1-Point Response	Examples of 0-Point Responses
<b>and he doubted that help would come.</b>	A phrase expressing doubt that someone would assist him	and he didn't think that help would arrive; he didn't expect any help; he figured help was unlikely; he was sure no one would come; he doubted anyone would find him	and there was no way to get help; he couldn't get any help; he was out of luck; there was no garage around; he thought he was stuck/stranded
<b>Just then his two-way radio</b>	An indication that he has a (two-way) radio, telephone, or cell/wireless phone	suddenly his C-B; then his radio; he had a two-way radio; he radioed for help; phone; cellphone	beeper
<b>buzzed.</b>	Any word or phrase indicating that an audible signal of any type was received (sound or voice)	He heard someone/something; someone said; received a call; came on; sounded, turned on; squawked; beeped; signaled; called; came through; paged	lit up; flashed; became active
<b>He quickly answered,</b>	An expression signifying that he responded by voice/ responded to the situation	he answered; Grasshopper answered; he said; he grabbed the mike and said; he replied; he quickly announced; he called for help; he notified; he got on his radio	his radio said; the C-B answered; somebody quickly replied; he quickly pressed the button
<b>"This is Grasshopper."</b>	"Grasshopper" in any context	"I'm Grasshopper"; "Calling Grasshopper"; "Grasshopper here"; "Is this Grasshopper?"; Grasshopper answered	"This is Alligator"; "I need help"; "Mayday"; "This is Hopper"; Hopper-Grass
<b>*NOTE* If the participant says "truck driver" or "trucker" during Story B recall, you would give credit for "truck" and "was driving." If the ppt says "he radioed for help" during Story B recall, you would give credit for "Just then his two-way radio" and "he quickly answered."</b>			

## L. DIGIT SPAN BACKWARDS (Full Battery Only)

### 1. Administration

- a) In this task, the participant is read a list of numbers and asked to repeat them in the reverse order.
- b) Say, **"Now I am going to say some numbers. When I stop, I want you to say them backwards. For example, if I say: 1-2-3, what would you say?"**
- c) If the participant responds correctly (3-2-1), say, **"That's right"** and proceed to item 1.
- d) If the participant fails the practice trial, say, **"No, you would say 3-2-1. I said 1-2-3, so to say those numbers backwards, you would say: 3-2-1."** Proceed to the first item on the form. Say, **"Now try these numbers."**
- e) Read the digits clearly and at a rate of 1 per second. You should say the numbers in a monotone (like a robot), with voice inflection dropping slightly on the last digit. Administer both trials of each item.
- f) The test is discontinued after two consecutive errors of the same length item (i.e., after failing trials A and B of any item set). Note: this is not recorded as a "discontinuation" on the Neurocognitive Scoring Summary Form because the task was fully attempted and a real score was produced.

### 2. Prompts

- a) From #2 and beyond, introduce sequence each saying, **"Here's another."** Each trial may be presented only once.
- b) On Trial 1a, the ppt repeats the numbers in the same order (i.e., they say "5-1"). *For the first item ONLY, the ppt can be reminded to say the digits backwards, in reverse order.* If the ppt correctly says "1-5" after the reminder prompt, the item should be scored as correct.
- c) If the ppt asks you to repeat a trial: Say, **"I'm sorry, but I can't repeat it. Just try your best."**

### 3. Scoring

- a) Record responses verbatim. Score 1 point for each completely correct trial (no partial credit is given). Record the total correct responses at the bottom of the form and enter into DMS Neurocognitive Scoring Summary Form.
- b) This test may be discontinued due to participant refusal, task difficulty (e.g., the participant never fully understood the instructions), or if the examiner determines that the participant is unable to perform the task due to a physical impairment (e.g., severe hearing loss). If discontinued, the reason is recorded in the DMS Neurocognitive Scoring Summary Form.

## M. TRAILS A (Full Battery and Abbreviated Battery)

### 1. Administration

- a) Place SAMPLE A on the table in front of the participant. Give the participant a pencil.
- b) Say, **"On this page (point) are some numbers. Begin at number 1 (point to 1) and draw a line from 1 to 2 (point to 2), 2 to 3 (point to 3), 3 to 4 (point to 4), and so on, in order, until you reach the end (point to the circle marked "end"). Try not to lift the pencil as you move from one number to the next. Draw the lines as fast as you can. Ready? Go ahead."**
- c) If correct, say, **"Good. Let's try the next one"** and Proceed to TESTA.

- d) If the participant makes an error, mark through the line, go back to the point where the error was made, and say, for example, **"You were at number 2. What is the next number?"** Wait for the participant's response. If he/she indicates 3, say, **"Correct, please start here and continue."** If the participant indicates any other numbers say, **"The next number would be 3. Please start here and continue."**
- e) If the participant cannot complete the sample and clearly does not comprehend the task, do not administer Test A or Trail B (code both as not attempted due to task difficulty).
- f) After Sample A is completed, flip the page over to reveal TEST A.
- g) Say, **"On this page are numbers from 1 to 25. Do this the same way: Begin at number 1 (point to 1) and draw a line from 1 to 2 (point to 2), 2 to 3 (point to 3), 3 to 4 (point to 4), and so on, in order, until you reach the end (point to end). Try not to lift the pencil as you move from one number to the next. Remember, work as fast as you can. Ready? Go ahead."**
- h) Start timing after examiner says "go ahead," not when the participant starts drawing. Allow 4 minutes.
- i) At the end, say, **"That's fine,"** or **"very good."**
- j) The test is stopped if the participant makes 5 errors (if the participant self-corrects an error do not count it as an error) or exceeds 4 minutes and time and errors are recorded. Note: In this case, this is not recorded as discontinued due to refusal, task difficulty or impairment.

## 2. Prompts

- a) Call all errors to the participant's attention immediately (draw a small dash through the incorrect line) and have the participant proceed from the point the mistake occurred. Say, **"That one was not correct."** Point to the last correct number and say, **"Please start here and continue."** Do not stop timing.
- b) If the participant is covering any of the numbers with his/her hand, make sure all numbers are visible before starting the timer.
- c) If, during the task, the participant covers a number with his/her hand and reports having trouble finding a particular number, you can say something like, **"All the numbers are there"** or **"Try not to cover the page with your arm."**
- d) If the participant asks "Is this right?" or "Do I go to 7 next?" on timed test: Say, **"I will let you know if you make a mistake."**

## 3. Scoring

- a) Record the time to completion and the number of errors at the bottom of the form and on the Neurocognitive Scoring Summary Form.
  - (1) If the participant makes 5 errors, then the errors should be recorded as 5 and the time should be recorded as 4 minutes, no matter how long it took the participant to make 5 errors.
  - (2) If the participant exceeds 4 minutes, the test is stopped and the time is recorded as 4 minutes. Errors are recorded as the actual # of errors the participant made in that 4 minutes.
- b) Participants may draw atypical lines or make self-corrections that could confuse QA/QC. When scoring the test, the examiner should write notes in the margins

explaining any confusing lines.

- c) This test may be discontinued due to participant refusal, task difficulty (e.g., the participant never fully understood the instructions), or if the examiner determines that the participant is unable to perform the task due to a physical impairment (e.g., tremor). If discontinued for these reasons, record this on the Neurocognitive Scoring Summary Form.

## N. TRAILS B (Full Battery and Abbreviated Battery)

### 1. Administration

- a) Place SAMPLE B on the table in front of the participant. Give the participant a pencil.
- b) Say, **“On this page are some numbers and letters. Please take the pencil and draw a line, alternating in order between the numbers and letters. Start at number 1 (point to 1), then go to the first letter, A (point to A), then go to the next number, 2 (point to 2), then the next letter, B (point to B), and so on until you reach the end (point to end). Remember, first you have a number, then a letter, then a number, then a letter, and so on. Try not to lift the pencil as you move from one number or letter to the next. Draw the lines as fast as you can. Ready? Go ahead.”**
- c) If the participant makes an error, mark through the line and go back to the point where the error was made and say, for example, **“You were at number 2. What is the next letter?”** Wait for the participant’s response. If the answer is correct say, **“Correct, please start here (point to the 2) and continue.”** If the participant picks the wrong item say, **“The next letter would be B” (point to B).** Then point to the 2 and say, **“Please start here and continue.”**
- d) If the participant cannot complete the sample and clearly does not comprehend the task, do not administer Test B (code as not attempted due to task difficulty).
- e) If performance is correct, proceed to Test B. Flip the page over to reveal TEST B.
- f) Say, **“Good. Let’s try the next one. On this page are some numbers and letters. Begin at number 1 (point) and draw a line from 1 to A (point to A), A to 2 (point to 2), 2 to B (point to B), B to 3 (point to 3), 3 to C (point to C) and so on in order until you reach the end (point to end). Remember, first you have a number, then a letter, then a number, then a letter, and so on. Try not to lift the pencil as you move from one number or letter to the next. Draw the lines as fast as you can. Ready? Go ahead.”**
- g) Start timing after examiner says “go ahead,” not when the participant starts drawing.
- h) At the end, say, **“That’s fine,”** or **“very good.”**
- i) The test is stopped if the participant makes 5 errors (if the participant self-corrects an error do not count it as an error) or exceeds 4 minutes and time and errors are recorded. Note: In this case, this is not recorded as discontinued due to refusal, task difficulty or impairment.

### 2. Prompts

- a) Call all errors to the participant's attention immediately (draw a small dash through the incorrect line) and have the participant proceed from the point the mistake occurred. Say, **“That one was not correct.”** Point to the last correct number (or letter) and say, **“Please start here and continue.”** Do not stop timing.
- b) If the participant is covering any of the numbers/letters with his/her hand, make sure all numbers/letters are visible before starting the timer.

- c) If, during the task, the participant covers a number/letter with his/her hand and reports having trouble finding a particular number/letter, you can say, **“All the numbers/letters are there”** or **“Try not to cover the page with your arm.”**
- d) If the participant asks “Is this right?” or “Do I go to 7 next?” on timed test: Say, **“I will let you know if you make a mistake.”**

### 3. Scoring

- a) Record the time to completion and the number of errors at the bottom of the form and enter in the DMS Neurocognitive Scoring Summary Form.
  - (1) If the participant makes 5 errors, then the errors should be recorded as 5 and the time should be recorded as 4 minutes, no matter how long it took the participant to make 5 errors.
  - (2) However, if the participant exceeds 4 minutes, the test is stopped and the time is recorded as 4 minutes. Errors are recorded as the actual # of errors the participant made in that 4 minutes.
- b) Participants may draw atypical lines or make self-corrections that could confuse QA/QC. When scoring the test, the examiner should write notes in the margin of Trails explaining any confusing lines or movements.
- c) This test may be discontinued due to participant refusal, task difficulty (e.g., the participant never fully understood the instructions), or if the examiner determines that the participant is unable to perform the task due to a physical impairment (e.g., tremor). If discontinued for these reasons, record in the DMS Neurocognitive Scoring Summary Form.

## O. **BOSTON NAMING TEST (Full Battery Only)**

### 1. Administration

- a) In this test, the participant is shown a series of pictures (line drawings) and asked to provide the name of each item.
- b) Say, **“Next, I am going to show you a series of pictures. For each picture, I want you to try to tell me what the picture is. If you can’t tell me, that’s okay. After we complete each picture, we we’ll go on to the next one. Let’s begin.”**
- c) Show the pictures one at a time and write down the participant’s responses. Be sure to record all responses (even if it’s “I don’t know” or “DK” or “no response” if the ppt does not give an answer).
- d) If the participant is unable to name the item in 20 seconds, score the item as an “error” and move on to the next picture.
- e) Introduce each picture by saying, **“What is this?”**

### 2. Prompts

- a) The examiner should provide no help (hints or clues). For example, if a participant asks “what do you do with it,” repeat the request, **“What do you think the name of it is?”**
- b) If the participant gives a generalized response to an item (for example, “sea creature” for “octopus”), prompt **“can you think of a more specific name for it?”** More examples of generalized responses: “game pieces” for “dominoes”, “stairs” for “escalator”, “bird” for “pelican”, “magical horse” or “horse” for “unicorn”, “chopper” or “airplane” for “helicopter”.

“Map or atlas” for “globe” is an incorrect answer and would be marked as incorrect. Please do not give more than one prompt per item.

- c) If the participant gives the correct name, but says that it is not that object (e.g., “Well, it’s not a globe”), the response is considered incorrect.
- d) If the participant gives a general or circumlocutory response (e.g., “you sleep on it” for “bed”) say, **“Can you think of a specific name for it?”**
- e) Discontinue after 6 consecutive failures. Note: In this case, this is not recorded as discontinued due to refusal, task difficulty or physical impairment.

### 3. Scoring

- a) Certain regional synonyms are acceptable and may be counted as correct (e.g., snake, worm, or rope for Pretzel; lock or bolt for Latch.
- b) More examples of admissible responses:
  - (1) Arbor, lattice, and pergola are acceptable for Trellis.
  - (2) Hasp, lock, deadbolt, and bolt are acceptable for Latch.
  - (3) Squeezebox, concertina, buttonbox, groanbox, and melodeon are acceptable for Accordion.
  - (4) Woodchuck is acceptable for Beaver.
  - (5) Bat is acceptable for Racquet.
  - (6) Torah and scripture are acceptable for Scroll.
  - (7) Rack is acceptable for Hanger.
  - (8) Phinx is acceptable for Sphinx.
  - (9) Sextant is acceptable for Protractor.
  - (10) Cot or bunk are acceptable for Bed.
- c) Inadmissible responses:
  - (1) Squid is NOT acceptable for Octopus.
  - (2) Arrow is NOT acceptable for Dart.
  - (3) Map or atlas are NOT acceptable for Globe.
  - (4) Dice is NOT acceptable for Dominoes.
  - (5) Eel or knot are NOT acceptable for Pretzel.
  - (6) Doghouse is NOT acceptable for Igloo.
  - (7) Unicorn is NOT acceptable for Unicorn.
  - (8) Brush is NOT acceptable for Comb.
  - (9) Aspare or Aspear are NOT acceptable for Asparagus.
  - (10) Manuscript or Declaration of Independence or Bill of Rights or Edict are NOT acceptable for Scroll.
- d) There are some mispronunciations that ARE acceptable (e.g., asparaguh for Asparagus, occapuss or ocsapuss for Octopus, hamhock for Hammock, iglow for Igloo, stroll for Scroll, and tennis rack for Racquet).
- e) Questionable responses should be recorded and addressed with Dr. Thomas Mosley at [tmosley@umc.edu](mailto:tmosley@umc.edu) or Tiffany Owens at [taowens@umc.edu](mailto:taowens@umc.edu).

- f) Record 1 for correct and 0 for incorrect responses. Record the total score at the bottom of the form and enter in the DMS Neurocognitive Scoring Summary Form. If stopped because of errors, record the score at the time the test was stopped.
- g) This test may be discontinued due to participant refusal, task difficulty (e.g., the participant never fully understood the instructions), or if the examiner determines that the participant is unable to perform the task due to a physical impairment (e.g., visual impairment). If discontinued for these reasons, record this in the DMS Neurocognitive Scoring Summary Form.

## P. LOGICAL MEMORY II (Full Battery Only)

### 1. Administration

- a) This test assesses delayed recall of the stories presented earlier in the exam. Note that Logical Memory II is not given if Logical Memory I was not attempted or discontinued.
- b) Say, **"Okay, this is the last task. Do you remember the little stories I read to you a few minutes ago? Now I want you to tell me the stories again. Tell me everything that you can remember about the stories."**
- c) If the participant does not recall one or both of the stories after 10 seconds, offer a reminder. If the participant does not recall any of the details included in the reminder, you may offer the reminder to see if that helps them recall more details of the stories.
  - (1) For Story A, say, **"One story was about a woman who was robbed."**
    - (a) Allow 90 seconds for recall of the story, but if the participant indicates that he or she cannot recall any more details from the story, there is no need to wait until the 90 seconds are up.
    - (b) No further help is provided for Story A, other than general encouragement.
  - (2) If the participant does not mention Story B, offer a prompt, say, **"One story was about a man who had trouble on the highway."**
    - (a) Allow 90 seconds.
    - (b) No further help is provided for Story B, other than general encouragement.

### 2. Prompts

- a) 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 can remember about the story."**
- b) Note whether the reminders were given for Story A or B.
- c) Provide 1 prompt for more details after the ppt has finished their recall for each story, before moving on: Say, **"Can you think of any more details?"**
- d) Occasionally, a ppt may "blend" or combine both stories into one. Don't interrupt them, and give no credit for recall of the blended story. Instead, say: **"You blended/combined both stories. One story was about a woman who was robbed. Please tell me everything you can remember about that story."** and score the ppt's recall of Story A. Then, prompt 1x for more details (**"Can you think of any more details?"**) before moving to Story B. Then say, **"Tell me everything you can remember about the other story."** and score the ppt's recall of Story B. If the ppt is unable to recall Story B (without blending it again), provide the reminder for Story B: **"One story was about a man who had trouble on the highway."** and score the ppt's recall of

Story B. Prompt 1x for more details (“**Can you think of any more details?**”) before moving on.

- (1) Be sure to mark if a reminder was given for one or both stories. Also, for “which story was recalled first,” mark “neither” and add a notelog stating the ppt blended/combined both stories during initial recall.

### 3. Scoring

- a) Use the same scoring procedure as used for Logical Memory I. In general, record the participant’s words verbatim between the lines of the story provided on the form.
- b) Scoring is deferred until after the cognitive battery is completed.
- c) Score one point for each item/story element correctly repeated.
- d) For questionable responses, refer to the Logical Memory I tables above. Record the total score at the bottom of the form and enter in the DMS Neurocognitive Scoring Summary Form.
- e) This test may be discontinued due to participant refusal or task difficulty (e.g., the participant never fully understood the instructions). If not given because Logical Memory I was not attempted or discontinued, record this in the DMS Neurocognitive Scoring Summary Form (using the same reason as that given for Logical Memory I).

## **Q. NEUROCOGNITIVE BATTERY SUMMARY FORM (Full and Abbreviated Battery)**

1. All tests are scored and the Neurocognitive Battery Summary Form completed after the participant has completed the cognitive tests and left the exam area.
2. There are some occasions when a particular test will not be performed. The reasons may include:
  - a) Participant refusal: The participant declines/refuses to perform a test.
  - b) Task difficulty: The participant could not fully understand the instructions or is becoming notably frustrated and hence a test is stopped in order to preserve rapport.
  - c) Impairment: The examiner determines that the participant is unable to perform a test due to a significant impairment such as visual, hearing, literacy, or motor problem.
3. If a test is not performed or discontinued for one of these reasons, the reason is recorded on the Neurocognitive Battery Summary Form.
4. Note that some tests (e.g., Trails A & B and Boston Naming) have specific criteria for when the test should be stopped. If the test was stopped because the participant met the test’s criteria to stop (e.g., exceed time on Trails, etc.), select ‘No’ as the response to ‘was the test discontinued,’ and enter the score (rather than one of the ‘A, B, C’ reasons for discontinuation) on the Neurocognitive Battery Summary Form.
5. For Questions 2-10, 12, 15: Record the score(s) for each test. If tests were discontinued, record the reason.
6. For Question 16: The examiner is asked to comment on whether there were any mitigating factors that the examiner felt may have adversely affected the participant’s performance. This would not include tests that were discontinued (as the reasons for these issues will have already been noted). Examples that may have affected performance would include: hearing loss, vision problems, tremor, arthritis in the hands, sedation, or if performed in the home/LTC setting, environmental factors such as poor lighting, background noise or interruptions during the testing session. If so, the examiner should provide a brief description of the issue in 16a.





## NEUROCOGNITIVE BATTERY SUMMARY FORM



FORM CODE: 

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If a test was discontinued, record the reason for discontinuation using the appropriate letter:

**A = Refusal** (participant declines/refuses to perform a test)

**B = Task difficulty** (participant could not fully understand the instructions or became frustrated)

**C = Impairment** (Visual, hearing, literacy, or limb or motor problem)

BATTERY	TEST NAME	IF DISCONTINUED: Enter reason for discontinuation.	SCORE
BOTH	2. Digit Symbol Substitution	2a. <input type="text"/>	2b. <input type="text"/> <input type="text"/>
BOTH	3. Delayed Word Recall	3a. <input type="text"/>	3b. <input type="text"/> <input type="text"/>
BOTH	4. Incidental Learning	4a. <input type="text"/>	4b. Symbols <input type="text"/> 4c. Digit-Symbol Pairs <input type="text"/>
BOTH	5. Word Fluency (FAS)	5a. <input type="text"/>	5b. F Total <input type="text"/> <input type="text"/> 5c. A Total <input type="text"/> <input type="text"/> 5d. S Total <input type="text"/> <input type="text"/>
BOTH	6. Animal Naming	6a. <input type="text"/>	6b. <input type="text"/> <input type="text"/>
FULL only	7. Logical Memory I	7a. <input type="text"/>	7b. Story A <input type="text"/> <input type="text"/> 7c. Story B <input type="text"/> <input type="text"/>
FULL only	8. Digits Backwards	8a. <input type="text"/>	8b. <input type="text"/> <input type="text"/>

BATTERY	TEST NAME	IF DISCONTINUED: Enter reason for discontinuation.	SCORE
BOTH	<b>9. Trails A</b> (Part A, TMT A)	9a. <input type="text"/>	9b. Time to complete <input type="text"/> Minutes 9c. <input type="text"/> <input type="text"/> Seconds (Max = 4:00) 9d. Number of errors <input type="text"/> (Max = 5)
BOTH	<b>10. Trails B</b> (Part B, TMT B)	10a. <input type="text"/>	10b. Time to complete <input type="text"/> Minutes 10c. <input type="text"/> <input type="text"/> Seconds (Max = 4:00) 10d. Number of errors <input type="text"/> (Max = 5)
FULL only	<b>12. Boston Naming</b>	12a. <input type="text"/>	12b. <input type="text"/> <input type="text"/>
FULL only	<b>15. Logical Memory II</b>	15a. <input type="text"/>	15b. Story A <input type="text"/> <input type="text"/> 15c. Story B <input type="text"/> <input type="text"/> 15e. Which story was recalled first? <input type="checkbox"/> Story A <input type="checkbox"/> Story B <input type="checkbox"/> Neither 15f. Reminder for Story A? <input type="checkbox"/> Yes <input type="checkbox"/> No 15g. Reminder for Story B? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>ADMINISTRATION NOTES</b>			
<p>16. For any tests that were fully completed (not discontinued), was there anything that you feel may have substantially influenced the test results for this participant? These might include for example: hearing loss, vision problems, tremor, arthritis in the hands, sedation, or if performed in the home/LTC setting, environmental factors such as poor lighting, background noise or interruptions during the testing session.</p> <p><u>NOTE:</u> ACHIEVE participants should be wearing their hearing aids for the neurocognitive testing.</p> <p>If an ACHIEVE participant does not wear their hearing aids during neurocognitive testing, document their lack of hearing aids in 16a.</p> <p>16a. If yes, specify:</p>			