SOL-INCA2
Neurocognitive Scoring Summary (NEE)
QxQ
6/28/2024

Introduction

The Neurocognitive Scoring Summary (NEE) form provides a summary of the results from multiple neurocognitive tests. The form also captures whether a test was discontinued and the reason this may have occurred.

Procedures

The Neurocognitive Scoring Summary (NEE) form is the *last* form entered in CDART for a participant that completed a series of neurocognitive tests for SOL-INCA2. After updating the IER, SIX, BTWB, MSPB, CGE/CGS, DLE/DLS, and OITB forms, the results from several tests in the Neurocognitive Assessment Booklet (NAB) will be tabulated in the NEE form. A video tutorial depicting the data entry process in CDART is available online at https://sites.cscc.unc.edu/hchs/SOL-INCA.

Brief-Spanish English Verbal Learning Test

The Brief-Spanish English Verbal Learning Test (B-SEVLT) is a measure of new learning and verbal memory. When administering the B-SEVLT, read the script provided in the NAB.

Questions 1 through 9 record information from the B-SEVLT.

Q1. Count the number of correct words recalled for **Trial 1** on Page 3 of the NAB and enter the total.

Q2. Count the number of correct words recalled for **Trial 2** on Page 3 of the NAB and enter the total.

Q3. Count the number of correct words recalled for **Trial 3** on Page 3 of the NAB and enter the total.

Q4 – Q9. After the BTWB form has been completed and saved in CDART, click the refresh wheel next to each of these fields to populate with the scores from the BTWB form.

Digit Symbol Substitution

The Digit Symbol Substitution (DSS) tests psychomotor speed and sustained attention. When administering the DSS, read the script provided in the NAB including the examples. Stop testing at 90 seconds.

If the participant omits an item or starts to do only one type (e.g., only the 1's) say "Do them in order. Don't skip any." Then point to the first item omitted and say, "Do this one next, please." If Spanish administration, say "Hágalo en orden. No salte ninguno." and then "Haga este después, por favor."

The participant must use a pencil. The participant may self-correct the two items they most recently completed by crossing out (not erasing) their previous response and writing the new response above it. If the participant starts self-correcting items further back (e.g., 3 or more items ago), then say, "Just keep going" and point to the next empty box. If Spanish administration, say "Solo siga adelante."

Question 10 records information from the DSS. A copy of the scoring template is provided at the end of this document. 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-shape) or if it is a spontaneous correction of an incorrect symbol. Credit is not given for items completed out of sequence (e.g., doing all the 1's). Blank spaces between two completed items receive no credit. 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.

Q10. Apply the scoring template to the responses on Page 6 of the NAB and enter the number of correct symbols.

Trails Making Test A and B

The Trails Making Test A and B (TMT) measures attention, sequencing, mental flexibility, and visual search and motor function. When administering the TMT, read the script in the NAB including the examples. Stop timing for each test when the participant (1) correctly draws the line to the last circle, (2) makes 5 errors, or (3) the time for the test (4 minutes) is reached.

The TMT should be administered in the participant's preferred language. For Trail A, participants are asked to connect numbers in order as quickly as possible. For Trail B, participants are asked to switch back-and-forth to connect numbers and letters in order as quickly as possible. Each part begins with a sample followed by the full administration of the test.

For both tests, the administrator needs to mark and point out errors as they occur. Specifically, draw a small dash through the incorrect line and say "that's incorrect. Go back here [point to last correctly connected circle]." For Spanish administration, say "No está correcto. Comience desde acá." Do not stop timing while pointing out errors. If the participant does not seem to understand the error, repeat the instructions. For Trail A, say "Draw the line connecting the numbers in order." For Spanish administration, say "Dibuje la línea que conecta los números en orden." For Trail B, say "Draw the line connecting the numbers and letters in order, switching from a number to a letter and back to a number." For Spanish administration, say "Dibuje la línea que conecta los números y las letras en orden. Puede ir de un número a una letra y luego regresar a un número."

Stop timing for each test when the participant:

(1) correctly draws the line to the last circle before the 4 min max
(2) makes 5 errors
(3) at 4 minutes, regardless of how much of the test they have completed

If the participant attempts the test, record their time and error scores in Questions 11a through 12b. For both Trail A and Trail B, the maximum time allowed is 4 minutes and the maximum number of errors that should be entered is 5.

If the participant reached 4 minutes without completing the test, incomplete segments of the test are counted as errors.

A copy of the scoring template is provided at the end of this document.

Q11a. Enter the total time in minutes and seconds to complete **Trail A** from Page 7 of the NAB, up to 4 minutes. If the participant committed 5 or more errors, the total time is the time at which the 5th error was committed.

Q11b. Enter the total number of errors committed by the participant on **Trail A** from Page 7 of the NAB. Incomplete segments of the test should be counted as errors. If more than 5 errors were committed, enter '5'.

Q12a. Enter the total time in minutes and seconds to complete **Trail B** from Page 10 of the NAB, up to 4 minutes. If the participant committed 5 errors, the total time is the time at which the 5th error was committed.

Q12b. Enter the total number of errors committed by the participant on **Trail B** from Page 10 of the NAB. Incomplete segments of the test should be counted as errors. If more than 5 errors were committed, enter '5'.

Neither a "time out" scenario in which an individual has used all the allotted time for a specific test, nor an "error out" when an individual commits enough errors to end the test should be considered a discontinuation. This test should be marked as discontinued only under these circumstances:

The participant refuses to attempt the test. (Noted in CDART as 1=Refusal).

The participant attempts the test initially, but becomes confused quickly about the instructions or gets very frustrated with the task. (Noted in CDART as 2=Task difficulty).

The participant is unable to complete the test due to a physical impairment. (Noted in CDART as 3=Impairment).

Data entry examples and notes:

After 5 errors, the test is stopped, regardless of how many lines they connected.

Total time to complete: 2:25 (Max 4:00)
Total number of errors: 5 (Max = 5)

The test is stopped at 4 minutes, the participant made < 5 errors, but did not finish getting to all the lines. The maximum number of errors (5) are recorded to account for the portions of the test not completed.

Total time to complete: 4:00 (Max 4:00)
Total number of errors: 5 (Max = 5)

The test is stopped at 4 minutes, the participant made no errors, but did not finish getting to all the lines. The maximum number of errors (5) are recorded for the portions of the test not completed.

Total time to complete: 4:00 (Max 4:00)
Total number of errors: 5 (Max = 5)

Number Span Test

The Number Span Test is a measure of attention and working memory. When administering the Number Span Test, read the script in the NAB including the examples.

For each number sequence, the participant will be asked to repeat the numbers forwards or backwards. Numbers should be presented at a clear and measured pace of approximately 1.5 seconds per number. For each trial only give the number sequence once. Record the responses for each trial and indicate whether it is correct (1) or incorrect (0). Stop testing after two consecutive incorrect answers of the same length.

During the Number Span Test Backward, if the participant gives a response in a forward order, say "Tell me the numbers in backward order." For Spanish administration, say "Dígame los números al contar hacia atrás." If the participant accurately self-corrects after the prompt and *without* repeating the numbers, give them credit for the item.

Questions 13 and 14 record information from the Number Span Test.

Q13. Count the number of correct responses to the Number Span Test Forward on Page 13 of the NAB and enter the total.

Q14. Count the number of correct responses to the Number Span Test Backward on Page 14 of the NAB and enter the total.

Word Fluency Test

The Word Fluency Test is a measure of verbal fluency and thinking. When administering each test, read the script in the NAB including the examples.

Questions 15 through 18 record information from the Word Fluency Test. Words like anyone, anything, and anybody are counted as separate words. Homonyms like ant and aunt may be counted if given consecutively otherwise it is considered a repetition and only counted as one word. Homophones (i.e., words that sound like they are spelled with F or A, but actually begin with another letter) are scored as incorrect (example, phone).

For the animal naming test, all animals are acceptable including extinct (e.g., dinosaurs) and mythical ones (e.g., unicorns). Credit is given for different names for males, females, or infants of the same species (e.g., bull, cow, calf) as well as superordinate (e.g., dog) and subordinate (e.g., terrier) titles.

Q15. Count the number of acceptable words produced for the letter F on Page 17 of the NAB and enter the total.

Q16. Count the number of acceptable words produced for the letter A on Page 18 of the NAB and enter the total.

Q17. Enter the response code circled on Page 19 of the NAB.

Q18. Count the number of acceptable animals named on Page 20 of the NAB and enter the total.

MINT Sprint

The Multilingual Naming Test Sprint (MINT Sprint) is an objective measure of Spanish-English bilingualism and picture naming. When administering the MINT Sprint, read the script in the NAB to the participant in their preferred language.

Questions 19 through 21b record information from the MINT Sprint.

Q19 – Q21b. After the MSPB form has been completed and saved in CDART, click the refresh wheel next to each of these fields to populate with the scores from the MPSB form.

Odor Identification Test

The Odor Identification Test measures a person's abilities to identify smells, which may be an indicator of neurodegeneration in the brain. When administering the Odor Identification Test, read the script in the NAB to the participant in their preferred language.

Question 21f records information from the Odor Identification Test.

Q21f. After the OITB form has been completed and saved in CDART, click "Save and Reload" on this form to populate Q21f with the smell test score from the OITB form.

Discontinuation of Tests

The remaining questions catalog the following: language in which most tests were administered, if specific tests were or were not discontinued, and the reason for discontinuation of a test.

Tests may be discontinued under these circumstances:

- The participant refuses to complete the test. Marked in CDART as 1=Refusal.

    Ex: The participant listens to the instructions but *refuses to attempt* the task required by the test.

- The participant *attempts* to complete the task required, but becomes confused (i.e., participant did not clearly understand the instructions) and/or becomes very frustrated with the task. Mark in CDART as 2=Task Difficulty.

    Ex: The participant tries the first few items on the test but makes several errors, and/or becomes frustrated when the examiner points out the errors, or the participant states they can't do the task, want to stop, or don't understand the instructions.

- Examiner determines and/or the participant indicates they are unable to perform the task required by the test due to a physical impairment (i.e., hearing loss, visual impairment, fine motor skills impairment) and cannot be corrected by wearing glasses or with the use of a hearing device/voice amplifier. Marked in CDART as 3=Impairment.

Neither a "time out" scenario in which an individual has used all the allotted time for a specific test, nor an "error out" when an individual commits enough errors to end the test should be considered a discontinuation.

Q22. Enter the language each test was administered excluding the MINT Sprint. If tests were given in both English and Spanish, record the predominant language used.

Q23. Indicate if any of the tests were discontinued (1 = Yes, 0 = No).

Q23b. If applicable, select the tests that were discontinued (1 = Yes, 0 = No).

Q23c. If applicable, select the reason specific tests were discontinued (1 = Refusal, 2 = Task Difficulty, 3 = Impairment).

1	2	3	4	5	6	7	8	9
−	⊥	⊐	L	⊔	○	∧	×	=

SAMPLES

2	1	3	7	2	4	8	2	1	3	2	1	4	2	3	5	2	3	1	4	5	6	3	1	4
⊥	−	⊐	∧	⊥	L	×	⊥	−	⊐	⊥	−	L	⊥	⊐	⊔	⊥	⊐	−	L	⊔	○	⊐	−	L
							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

1	5	4	2	7	6	3	5	7	2	8	5	4	6	3	7	2	8	1	9	5	8	4	7	3
−	⊔	L	⊥	∧	○	⊐	⊔	∧	⊥	×	⊔	L	○	⊐	∧	⊥	×	−	=	⊔	×	L	∧	⊐
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43

6	2	5	1	9	2	8	3	7	4	6	5	9	4	8	3	7	2	6	1	5	4	6	3	7
○	⊥	⊔	−	=	⊥	×	⊐	∧	L	○	⊔	=	L	×	⊐	∧	⊥	○	−	⊔	L	○	⊐	∧
44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68

9	2	8	1	7	9	4	6	8	5	9	7	1	8	5	2	9	4	8	6	3	7	9	8	6
=	⊥	×	−	∧	=	L	○	×	⊔	=	∧	−	×	⊔	⊥	=	L	×	○	⊐	∧	=	×	○
69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
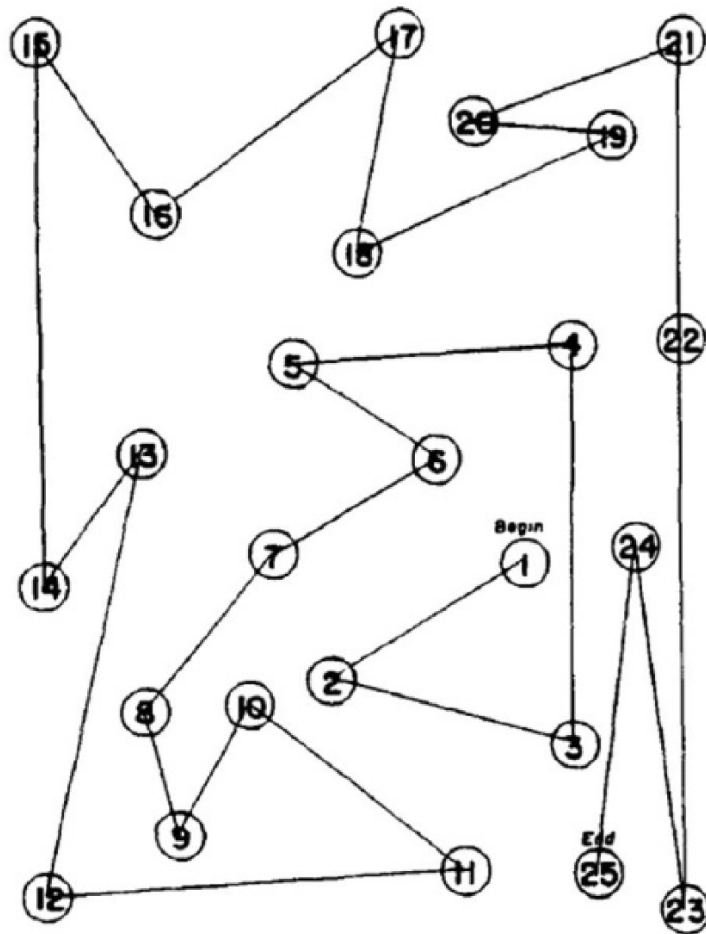
Part A
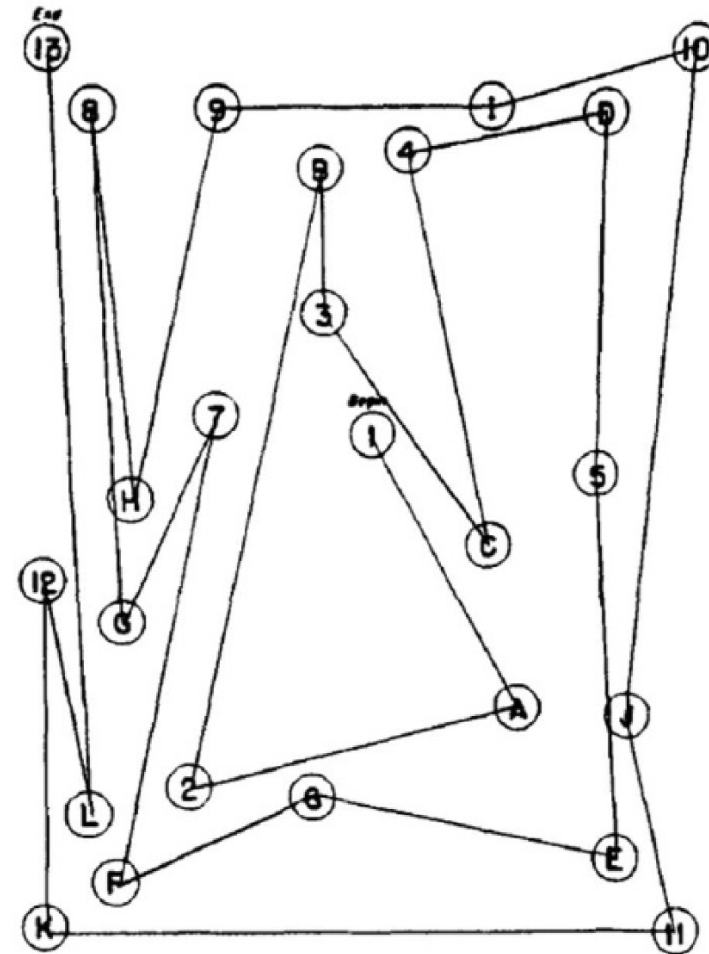
Part B

Touch the picture that shows what you just smelled.

Coffee

Lemon

Popcorn

Cinnamon

Touch the picture that shows what you just smelled.

Cinnamon

Chocolate

Play Doh

Flower

Touch the picture that shows what you just smelled.

Chocolate

Popcorn

Coffee

Bubble Gum

Touch the picture that shows what you just smelled.

BubbleGum

Flower

Lemon

Chocolat

Touch the picture that shows what you just smelled.

Popcorn

Play Doh

Chocolate

Flower

Touch the picture that shows what you just smelled.

Natural Gas

Lemon

Popcorn

Coffee

Touch the picture that shows what you just smelled.

Smoke

Chocolate

Flower

Play Doh

Touch the picture that shows what you just smelled.

BubbleGum

Natural Gas

Coffee

Lemon

Touch the picture that shows what you just smelled.

Popcorn

Cinnamon

Flower

Smoke