

Brief Executive Language Screen – Standard Administration and Scoring

The purpose of this manual is to provide guidance for the administration of BELS subtests and scoring information. The manual follows the order of item administration.

Spontaneous Speech

Oz Beach Scene

Administration: “Describe everything you see going on in this scene”

Audio record full response. Note time (max = 1 minute). Do not prompt specifics. OK to ask ‘Anything else’ once only.

Transcription: Transcribe word for word, expand contraction words (e.g., ‘doesn’t’ = ‘does not’, ‘the mother’s washing up’ = ‘the mother is washing up’). Note fillers (e.g., ‘um’, ‘ah’) but exclude these from word count.

Scoring:

Cookie Theft Scene (GOAL Version)

Refer to Goodglass & Kaplan (1972) for Cookie Theft Scene.

Administration: “Talk continuously for 1 minute about what you see going on in this picture”.

Audio record full response. Note time (max = 1 minute). See Oz Beach Scene prompting and transcription rules.

Transcription: Follow instructions for Oz Beach Scene transcription and scoring.

Scoring: Add to Oz Beach Scene Score and multiply by 2, so total /20.

Spontaneous Speech Scoring

Score 0 or 1 point each for Speech Quantity, Grammar/Syntax, Errors, Novel Ideas and Topic Related Sentences. Total score is /5.

1. **Speech Quantity:** Scored 0 = if less than 80 words are spoken. Scored 1 = if 80 or more words are spoken. (*1.3 SDs below healthy norms from Robinson et al., 2021 (M=126.07, SD =34.65)*).
2. **Grammar/ Syntax:** Scored 0 = if any agrammatical sentences. Scored 1 = if all sentences are grammatical (*agrammatical sentences include words missing from sentence, tense or plural errors, and suffix errors*).
3. **Errors:** Scored 0 = if any type of error occurs (stutter/phonological/semantic). Scored 1 = if there are no speech errors.
4. **Novel Ideas:** Scored 0 = if any ideas are repeated. Scored 1 = if there are no idea repetitions.
5. **Topic Related Sentences:** Scored 0 = for any off-topic sentences (e.g., “*how much time do I have left?*” *UNLESS it is the last sentence, then scored 1*). Scored 1 if all sentences are related to the scene.

Oral Apraxia

Administration: Ask the person to do the following: Cough, whistle, make a clucking sound with tongue, blow out a match, puff up cheeks.

Scoring: Score each command 0 to 2.

- Correct = 2 points (e.g., whistles with sound).

- Effortful or partial execution = 1 point (e.g., whistles without sound, cheeks only partially puffed or are not sustained, makes a clucking sound but only after examiner demonstrates).
- Unable to do = 0 points.

Sentence Repetition

Administration: Ask the person to “*repeat this sentence*”. Note errors.

Scoring: Each sentence scored 0 or 1. Repetition must be exact. Sentence repeated exactly = 1 point. Omissions, substitutions, additions, word errors = 0 points.

Oral Naming

Administration: Point to each picture and ask, “*What is this*”. If person gives the wrong name (e.g., porpoise instead of dolphin, or crown for tiara), ask “*Does it have another name?*”. Note errors.

Scoring: 1 point for each correct item spontaneously named, or named correctly after examiner asks for another name. Wrench or spanner is acceptable for item 8. If a semantic or visual cue is provided, or person does not know the name of the item, score 0. Total score is /10, which is divided by 2 to give a score /5.

Word Repetition

Administration: Say aloud each name and ask the person to repeat. Must be completed after Oral Naming. Leave the pictures in front of person for naming, repetition and comprehension. Note errors.

Scoring: Each word correctly repeated = 1 point. Incorrect repetition = 0 points. Total score is /10, which is then divided by 4 to give a score /2.5.

Word Comprehension

Administration: Say each word aloud and ask person to point to it – e.g., “*Show me the ...*”. At end of comprehension, take the page away from view. Note errors.

Scoring: 1 point for each correct response. Total score is /10, which is then divided by 4 to give a score /2.5.

Action and Past Tense Naming

Action Naming items selected from Druks & Masterson (2000) Object and Action Naming Battery.

Administration: “What is this action you see”. Can ask for another name (e.g., if they say ‘firing’ for ‘shooting’). Then ask for the past tense of that action. Can provide the person with

assistance with understanding what you mean by past tense (e.g., “Today I am swimming, so yesterday I ...”).

Scoring: Score 1 for each correct response. Asking for another name is marked as correct. If a prompt is given (e.g., make a biting motion with your own mouth and ask what you are doing), then score as 0. Total naming and past tense naming /10. Then divide score by 2 to get a score /5.

Word Fluency

Administration: “Tell me”:

- a) “As many words as you can that begin with the letter *S*; but no numbers, proper Nouns (e.g., seven, Susan, Samsung) or using the same word but changing the endings (e.g., sit, sitting). Try not to repeat words”.
- b) “As many *Animals* as you can, starting with any letter. Try not to repeat any words”.
- c) “(At least 20% higher than *S* total) words that begin with the letter *B*”. E.g., if 9 words given for *S*, 20% higher = 10.8, so: “Tell me 11 words that start with the letter *B*; but no numbers, proper nouns, or using the same word but changing the endings. Try not to repeat any words”.
- d) “(At least 20% higher than *Animals* total) *Fruit or Vegetables* starting with any letter”. E.g., if 10 *Animals*, 20% higher = 12, so: “Tell me 12 *Fruits or Vegetables*” starting with any letter. Try not to repeat any words”.

➤ Write down words in 15 second increments.

Scoring:

Table 1. BELS Verbal Fluency Norms and Cut-Offs

Score	S	Animals	GOAL B	GOAL Fruit/Veg
2/2	≥12	≥19	≥13	≥18
1/2	7-11	14-18	8-12	13-17
0/2	≤6	≤13	≤7	≤12
Normative Data				
<i>N</i>	198	133	134	134
<i>M</i>	16.55	22.58	16.71	21.75
<i>SD</i>	5.16	4.49	4.54	4.51

Note. Cut-off scores calculated based on healthy normative data.

2/2 = within or greater than 1SD of healthy mean (i.e., z score of >-1.00).

1/2 = if between 1 and 2SD below healthy mean (i.e., z score -1.00 to -1.99).

0/2 = if 2SD below healthy mean (i.e., z ≤ -2.00).

- **Phonemic fluency errors:** any proper nouns, changing the ending of a word already provided (e.g., if person says “sing”, “sang”, “sung”, only “sing” is counted as correct). Note any perseverations (even if self-corrected).
- **Semantic fluency errors:** any word that is not part of the semantic category (e.g., “plant” for *Animals*, “rice” for *Fruit/Veg*), or if person names a specific species of animal, or fruit/veg, followed by a broader category (e.g., “polar bear”, “brown bear”, “black

bear”, “bear”; or “strawberry”, “blueberry”, “blackberry”, “berry”, where “bear” and “berry” would be considered errors).

Total score: Phonemic and Semantic Verbal Fluency scores each range 0-4. Multiply by 2 for total weighted score (i.e., Phonemic Total 0-8; Semantic Total 0-8).

Sentence Completion

Initiation

Administration: “I am going to tell you a sentence that has the last word omitted. I would like you to say 1 word that completes the sentence meaningfully”. Record response and note time from when you finish presenting the sentence until they start to respond (in seconds). Errors include no response at 20 seconds, a response containing three or more words (e.g., “the kind old man asked us to... see him home”) even if it meaningfully completes the sentence (remind person to try and give one-word responses, remind this only once), or agrammatical or non-meaningful responses (e.g., “the sun went down before we could... amazing”).

Scoring: 1 point per correct response. Total raw score /10.

Weighted Score /10: Response score 0-2 (total raw score divided by 5). High Constraint Reaction Time score 0-4. Low Constraint Reaction Time score 0-4.

Table 2. BELS Sentence Completion Initiation Reaction Time (seconds) Norms and Cut-Offs

Score	HC	LC
4/4	<4.09	<14.50
2/4	4.09-5.30	14.51-19.70
0/4	≥5.31	≥19.71
Normative Data		
<i>N</i>	109	109
<i>M</i>	2.87	9.29
<i>SD</i>	1.22	5.21

Note. Cut-off scores calculated based on healthy normative data.

4/4 = within or greater than 1SD below healthy mean (i.e., z score <0.99).

2/4 = if between 1 and 2SD above healthy mean (i.e., z score 1.00 to 1.99).

0/4 = if 2SD above healthy mean (i.e., z ≥ 2.00).

Inhibition

Administration: “I am going to tell you a sentence that has the last word omitted. This time finish my sentence with 1 word completely unconnected to the sentence - that is a nonsense word.” Record response and note time from when you finish presenting the sentence until they start to respond (in seconds). If no response at 20 seconds mark as error. Repeat instruction on 1st 2 items if they complete it meaningfully. Note use of a strategy (e.g., objects in the room, colours, animals) but do not suggest the use of a strategy.

Scoring: 1 point per correct response. Total score /10.

Errors (see Robinson et al., 2015 for further detail):

- Blatant 'A' errors (i.e., completely connected word, e.g., 'she went to the salon to colour her... "hair", "toenails", "nails", "eyebrows") or responses consisting of 3 or more words.
- Somewhat connected 'B' errors
 - B2: Semantically connected or opposite to correct response (e.g., 'she went to the salon to colour her'... "foot")
 - B3: Semantically connected to sentence (e.g., 'she went to the salon to colour her' ... "red")
 - B4: Semantically connected, bizarre response (e.g., 'she went to the salon to colour her' ... "dog")
- No response provided in 20 seconds.

Strategy: Score 2 = for three or more instances of strategy use. Examples of a strategy include: naming items around the room, things outside the window, furniture, colours, animals. Score 1 = for one or two instances of strategy use. Score 0 = for no use of a strategy.

Note. Use of a strategy does not have to be across consecutive trials or the same strategy each time (e.g., they name furniture on two items and colours on two items).

Total /22: initiation (weighted score /10) + inhibition (/10) + strategy score (/2).

Luria Rhythm Tapping

Administration:

Congruent: *"When I tap once, you tap once". (Demonstrate twice). "When I tap twice, you tap twice". (Demonstrate twice). "Now let's do this a few times."*

Incongruent: *"Now we will do the opposite. When I tap once, you tap twice". (Demonstrate twice). "When I tap twice, you tap once". (Demonstrate twice). Now we will do this a few times."*

Do not proceed if they are unable to do the practice taps.

Scoring:

Congruent: Score 1/1 = able to complete the entire run; Score 0 = unable to execute run.

Incongruent: Score 2/2 = able to execute the whole run; Score 1/2 = able to execute part of the run; Score 0/2 = unable to execute any of the run.

To calculate the total weighted score /2: Score 2/2 if raw score (congruent + incongruent = 3/3); Score 0/2 if raw score is less than 3/3.

Incidental Verbal Memory

Administration: "Can you tell me any of the 10 items that were on the card that you pointed to?"

Scoring: 1 point per correct response. Participants may recall incorrect names of items and allowance is made for semantically related responses (e.g., crown for tiara, porpoise for dolphin).

References:

- Druks, J., & Masterson, J. (2000). *An Object and Action Naming Battery*. Psychology Press.
- Goodglass, H., & Kaplan, E. (1972). *The assessment of aphasia and related disorders*. Lea & Febiger.
- Phillips, M. R., Byrne, J., Gibson, E. C., Gilbert, C., Ford, L., Marsh, G., Chow, J. & Robinson, G. A. (2024). The brief executive language screen: Sensitivity and specificity in acute to early sub-acute stroke. *Topics in Stroke Rehabilitation*, 1-13.
- Robinson, G. A., Cipolotti, L., Walker, D. G., Biggs, V., Bozzali, M., and Shallice, T. (2015). Verbal suppression and strategy use: A role for the right lateral prefrontal cortex. *Brain*, 138, 1084-1096.
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