

STUDY OF OSTEOPOROTIC FRACTURES (V5)

Cognitive Function Test Protocol

I. MINIMENTAL STATE EXAMINATION

1. Introduction:

We are using a modified version of the MiniMental State Examination (MMSE). There are two types of modifications. 1) We will use the short list of items from the MMSE which has been shown to capture most of the variance in score from the full examination. 2) We will adopt a modified scoring system for the items that was developed by Dr. Evelyn Teng of the University of Southern California.

It is important that all examiners provide the same degree of encouragement to the participants when they're performing these tests. Participants should be told that they're "doing a good job".

2. Measurement Procedures:

The following is the list of items and their scoring procedures:

Q 1 - Temporal Orientation: "What is today's date?" (day and month)

If the participant doesn't automatically give you the month, ask her what month it is. There is a range of possible scores depending on how close the reported date is to the actual date. If she starts to say the wrong date but quickly corrects her answer, record the corrected answer and score it as correct.

Coding for month

1=Correct

2=Small mistake: missed by 5 days or less when at the beginning or end of month (e.g. On April 4, ppt. says month is March or on April 28, ppt. says month is May).

3=Larger mistake: missed by one month when not within 5 days of the beginning or the end of the month.

4=Missed by more than one month.

7=Refused

8=Don't know

9=Missing

Coding for day of month (actual date)

1=Correct

2=Missed by 1 or 2 days

3=Missed by 3-5 days

4=Missed by more than 5 days

7=Refused

8=Don't know

9=Missing

Note: The scoring for the date is independent of the month (i.e. if a participant says that the date is June 5th and it is actually May 5th, then the date is correct but the month is wrong).

If a participant corrects herself while providing any of the answers then do not penalize her. Consider her self-corrected answer the final answer.

Q 2 - Registration: "I am going to say three words that I want you to remember. After I have said them, I want you to repeat them. Remember what they are because I am going to ask you to name them again in a few minutes. 'Apple,' 'Table,' 'Penny'. Please repeat the three words for me.

Say the three words clearly (enunciation is important) and slowly (about one second for each). After you have said all 3, ask her to repeat them. **This first repetition determines her score (0-3)**, but keep saying them until she can learn all 3: try as many as 6 times. When she repeats all three correctly in one response, go on to the next question. If she does not learn all 3 after six attempts, then you cannot test her ability to recall the items: mark the box indicating that she was unable to learn the three words.

Score one point for each word repeated on the first trial. The order in which they are repeated is not important.

Q3 - Attention and Calculation: "Now I am going to spell a word forwards and I want you to spell it backwards. The word is world. W - O - R - L - D." Say the word "world" and then spell it slowly, about one second for each letter. Then ask the patient to "spell it backwards, that is, in reverse order." Repeat the forward spelling if necessary, but not after spelling starts.

As the participant spells the word backwards, write down the letters in the order she says them in the spaces provided on the scoring form. To determine the number of errors, use the correct spelling of 'world' backwards provided on the form and the guidelines below. In addition, three pages of examples of how to score this test are attached.

Score according to the following rules:

1) Mark one error for each change needed to correct the reverse spelling to DLROW (ie if you only have to move one letter to correct the spelling, then that's just one error, no matter how many spaces you had to move that letter).

Examples: Participant spelled it

DROLW - 1 error (only need to change the L and it's correct)

DORLW - 2 error (need to change L and R)

DRLOW - 1 error (need to change L)

WORLD - 3 error (need to change W, D, and L)

2) When there are two or more possible ways to make corrections, mark the lower or lowest number of errors.

3) Refusal to do the entire task counts as 5 errors. Partial refusal should be scored as in rule 1.

4) Transposition of two letters counts as only one error.

Q4 - Recall: Ask the patient "What are the three words that I asked you to remember?"

For each word not recalled, provide a category clue (e.g. "a piece of fruit"); if the subject still cannot give the correct answer, provide three choices, (e.g. "orange, banana, apple"). Use only the specified cues and choices.

For each item, record whether it was recalled without any prompt, recalled with one prompt, or recalled with two prompts. They do not have to be recalled in any particular order to count.

If the participants refuses for any particular item or doesn't know, record this in the blanks provided.

Q5- Copying: Show the subject the intersecting pentagons and ask her to copy it exactly as it is. "Here is a drawing. Please copy the drawing on the same paper. The actual size of the drawing does not matter." Allow about 1 minute for copying.

In scoring, do not penalize for self-corrected errors, tremors, minor gaps, or overshoots.

Individual pentagons: For each pentagon (left and right), in the designated column, check only one box to indicate whether the pentagon was either:

- a 5 sided figure with approximately equal sides, or
- a 5 sided figure with unequal sides, i.e. ratio of any two sides is ≥ 2 to 1, or
- an enclosed figure that has other than 5 sides, or
- a nonenclosed figure consisting of 2 or more lines, or
- no figure at all (less than 2 lines).

Only one of the five boxes should be checked for each pentagon.

If participant is completely unable to draw the figure or can't see the figure, then record this on the form.

Intersection: In addition, in the designated space, record whether the intersection between the two pentagons was:

- a 4 cornered enclosure, or
- an intersection that is other than a 4 cornered enclosure, or
- no enclosure at all.

SCORING THE PENTAGON DRAWING

(The score is automatically calculated in Omnis based on the boxes checked. The scoring algorithm used is below.)

The score is determined as follows:

- 1) **4 points** for each 5 sided figure with approximately equal sides;
- 2) **3 points** for each 5 sided figure with unequal sides, i.e. ratio of any two sides is ≥ 2 to 1;
- 3) **2 points** for each enclosed figure that has other than 5 sides;
- 4) **1 point** for each nonenclosed figure consisting of 2 or more lines; and
- 5) **2 points** for an intersection of the two figures that is a 4 cornered enclosure, **1 point** for an intersection that is other than a 4 cornered enclosure.