TENG MINI-MENTAL STATE EXAMINATION

TABLE OF CONTENTS

1. Background and rationale 2
2. Equipment and supplies 2
3. Safety issues and exclusions 2
4. Participant and exam room preparation 3
5. Detailed measurement procedures 3
5.1 General issues 3
5.2 General scoring issues 3
5.3 Administration 4
5.3.1 Date and Place of Birth 5
5.3.2 Registration 6
5.3.3 Mental Reversal 6
5.3.4 First Recall of Three Words 7
5.3.5 Temporal Orientation 8
5.3.6 Spatial Orientation 9
5.3.7 Naming 10
5.3.8 Four-Legged Animals 10
5.3.9 Similarities 12
5.3.10 Repetition 13
5.3.11 Read and Obey 14
5.3.12 Writing 14
5.3.13 Copying Two Pentagons 15
5.3.14 Three Stage Command 16
5.3.15 Second Recall of Three Words 17
5.3.16 Validation of Birthplace 17
5.3.17 Special Problems 18
6. Procedures for administering the measurement at home or by telephone 18
6.1 Procedures for administering the measurement at home 18
6.2 Procedures for administering the measurement over the telephone 18
7. Alert values/follow-up/reporting 18
8. Quality assurance 19
8.1 Training requirements 19
8.2 Certification requirements 19
8.3 Quality assurance checklist 19
9. Reference 20
10. Data collection form 21

1. Background and rationale

Cognitive function may decline as a result of certain risk factors and diseases. This in turn could adversely impact the physical functioning and quality of life of older adults. After a certain level of decline, dementia can develop. Dementia is a major illness and cause of disability among the elderly.

The purposes of assessing cognitive function at follow-up in Health ABC are as follows.

1) To define those with cognitive stability or decline at follow-up (incident dementia).
2) There will be significant differences by age, education, and race. Interpretation of changes in the cognitive vitality battery may be aided by understanding the changes in the MMSE score and its relationship to age, race, and education in this population.

The MMSE (Mini-Mental State Examination) is a widely used test of cognitive function among the elderly. It includes tests of orientation, registration, attention, calculation, recall, and visual-spatial skills. The MMSE asks the participant to provide information on temporal orientation and to perform certain tasks. As for most neuropsychological tests, it is influenced by age and education. The interviewer scores the responses or performance as correct or in error. The test includes one paper and pencil task.

The 3MS exam or Teng MMSE[1] is an expanded 100-point version of the original Folstein MMSE designed to increase the standardization, sensitivity, and specificity of the test as a screen for dementia. This form of the test was designed to sample a broader variety of cognitive functions, cover a wider range of difficulty levels, and enhance the reliability and validity of the scores. The total score is derived by computer algorithm.

2. Equipment and supplies

- No. 2 pencils with eraser
- Stop watch
- "Close your eyes" (Card # 1)
- Several pieces of blank paper
- Intersecting pentagons card (Card # 2)

3. Safety issues and exclusions

None.

4. Participant and exam room preparation

The 3MS should be administered in a quiet place, with minimal distractions, at a desk or table the participant can use to write on. Unless it is policy at the clinic for examiners to never knock or open a closed examination room door, we strongly encourage that a special sign be posted indicating that the 3MS is being administered and to please not interrupt the test. If a temporary condition that could interfere with a participant's optimal performance cannot be removed, the participant should be moved to another location; if this is not possible, reschedule the exam.

Ask the participant if they are comfortable. Reassure them that this is a routine test of concentration and memory that will be done several times during the course of the study.

5. Detailed measurement procedures

5.1 General issues

Examiners should thoroughly familiarize themselves with the testing procedures and the scoring criteria before using the 3MS test in formal assessment. While the 3MS form contains condensed information from the manual, misunderstandings of this information can easily occur.

In the administration of the 3MS exam, give at least 2 seconds for a response, but do not converse or offer extra help. If the participant says "I don't know" or is unable to give an answer, the examiner may prompt once with the statement, "Please try," or "Give it a try." When a participant gives an incorrect answer the examiner scores accordingly and proceeds to the next item. If the participant asks how they are doing, say, "We appreciate your effort."

Although time limits are set for some items, they are used only for guiding the examiners in pacing the administration and in scoring. The participant should never be told of any time limit on any item. The stop watch should always be kept out of the participant's view.

5.2 General scoring issues

The 3MS examination asks the participants to provide information and to perform specific tasks as instructed by the examiner to assess cognitive function. Based on the response or performance of the task, the interviewer marks the appropriate level of "correctness" of the response.

The 3MS version of the exam broadens the final range of scores from 0-30 to 0-100 and exhibits greater sensitivity in screening participants for dementia. However, the authors have provided a scoring mechanism that can generate the 0-30 MMS score. Due to the complexity of the scoring mechanism in this exam, examiners will not be asked to tally a preliminary score for each participant. Both the 3MS and MMS scores will be generated by a computer algorithm after data entry.

1) If you cannot determine how to code the response, record notes in the left-hand margin so that the scoring can be reviewed later. Bring ambiguities to the attention of the clinic quality control officer.

2) If a task is not attempted due to a physical limitation such as vision or hearing impairment, severe arthritis, or illiteracy, that task is scored "Not Attempted/Disabled." If a task is scored "Not Attempted/Disabled," the reason the task was not completed must be specified in Item 19 - Special Problems. Please indicate the questions that were affected.

3) Mark "error/refused" if the task is not successfully completed for any other reason. This includes errors due to cognitive dysfunction, refusals when no physical or functional disability is present, lack of response, or the participant says they can't remember.

4) Let the participant attempt all tasks unless you determine that the participant cannot do the task. In these cases, score the question "Error/refused." This includes instances in which you perceive:

   - the participant is unable to do the task;
   - the participant appears to be experiencing excess stress; or
   - no response is received from the participant after a reasonable time period.

5) If the participant answers the question correctly but not within the specified time limit (if a time limit is given), the question remains incorrect (scored Error/refused). Quick self-corrections are OK as long as they are within the specified time limit.

In these as in all cases, continue on to the next question without delay.

5.3 Administration

1) Introduce test to participant.

   Script: "Are you comfortable? I would like to ask you a few questions that require concentration and memory. Some are a little bit more difficult than others. Some questions will be asked more than once."

2) Read each question from the form and mark the appropriate level of response.

3) Always read scripts exactly as written.

4) Give at least 2 seconds for the participant to initiate an answer.

5) Always be discreet with the use of the stopwatch.

5.3.1 Date and Place of Birth

Question 1 is a measure of long-term memory. It is assumed that everyone has had repeated opportunities to learn and report their date and place of birth.

Question 1a to 1c - When were you born?

1) Fill in the month, day and year reported by the participant; convert the month into numerical format (i.e., write April 12, 1920 as 04-12-20). Only the last two digits of the year are required.

2) If partial or unrelated information is given, clarify the question by telling the participant you are looking for the month, day and year in which they were born.

3) If no response is given, mark the "No response" response option.

This item will be computer-scored by comparing the date reported here to the birth date already entered into the database.

Question 1d to 1e - Where were you born?

1) If the participant gives only a partial answer (e.g., only the city/town), ask for the missing information.

2) If an unrelated answer is given (e.g., hospital name), clarify the question by telling the participant you are looking for the city/town and state or country in which they were born.

3) In rare instances, participants may state that they have been born in rural areas which did not have towns associated with them. The examiner should ask the participant to name the town through which they received mail, or the postal address. If there still is no such town, the location that the participant considers to be their place of birth and routinely uses on documents when this question is asked (e.g., county, parish, etc.) may be accepted. It is important that this is not an arbitrary location, but truly the "place of birth" of the participant so that the same answer will be given when this question is repeated at the end of the questionnaire.

Scoring:

- If the participant gives a response, record the city/town and state/country reported by the participant and mark "answer given."

SCORING NOTE: Since we have no independent source for determining the accuracy of the response, the question is repeated in Question 18 if a response is given at this time. When the participant's responses on both occasions are the same, the answer is considered correct. This method assumes that when the participant does not remember, it is unlikely that the two responses will be identical.

5.3.2 Registration

Question 2 - I am going to say three words for you to remember. Repeat them after I have said all three words: **shirt, blue, honesty.**

1) Make sure the participant is attentive when beginning the question.

2) Say the three words distinctly at the rate of 1 to 2 seconds per word.

3) The participant may repeat the words in any order.

4) If the participant repeats after each word is read by the examiner, at the end of your presentation say, "Tell me the three words again" and mark the score according to the responses to this request.

5) Do not repeat the words for the participant until after the first trial. Be sure to score the test after the first trial. When there are errors on the first trial, repeat the items up to six times until they are all learned. (Total of seven presentations.)

6) Be sure that the correct suffix of the word is repeated. For example, do NOT accept "shirts" for "shirt" or "honest" for "honesty." The exact form of the word must be repeated.

7) Record the number of presentations necessary for the participant to repeat the sequence (up to seven).

5.3.3 Mental Reversal

This item has two parts: counting backward from 5 to 1 and spelling WORLD backwards. For each part, ask the participant to do the forward version first; coach once when needed. Only one attempt per question is allowed.

Question 3

(first part): "I would like you to count from 1 to 5." ***Wait as the participant counts.***
(second part): "Now I would like you to count backwards from 5 to 1."

1) If the participant cannot count forward to 5, prompt with "Say 'one, two, three, four, five'" at the rate of 1.5 seconds per digit.

2) Coach only once, then continue with the second part of Question 3 even when the performance in counting forward is not perfect.

Scoring:

- Record whether or not the participant was able to count forward.

- Write the numbers in the sequence given in the blanks provided. This item will be computer scored.

- If no response is given, record '99999' (one '9' for each space provided).

Question 4

(first part): "Spell 'WORLD'." ***Wait as the participant spells.***
(second part): "Now spell 'WORLD' backwards."

1) If the participant cannot spell "world" forward, prompt with "It is spelled W O R L D" at the rate of 1.5 seconds per letter.

2) Coach only once, then continue with the second part of Question 4 even when the performance in spelling forward is not perfect.

Scoring:

- Record whether or not the participant was able to spell "world."

- Write the letters in the sequence given on the blanks provided. This item will be computer scored.

- If no response is given, record 'XXXXX' (one 'X' for each space provided). DO NOT SCORE '99999' or '00000'.

5.3.4 <u>First Recall of Three Words</u>

Question 5 - What three words did I ask you to remember earlier?

1) The words may be repeated in **any** order.

2) For each word not readily reported, provide the category (for instance, "it is something to wear") followed by multiple choices when necessary. Do not wait more than 3 seconds for spontaneous recall and do not wait more than 2 seconds after giving the category before providing the next level of help.

3) If the participant gives an incorrect answer in the correct category (e.g., says "socks" or "coat" instead of "shirt"), provide the three alternatives for them to choose from, and when the choice is correct, mark the "after 'was it shirt, shoes, or socks'" response option.

4) If the participant repeats an incorrect form of the correct word, e.g., "shirts" for "shirt" or "honest" for "honesty," a code has been added to reflect this answer ('correct word/incorrect form'). In these cases it is very important to repeat the word with the correct ending back to the participant for the subsequent recall.

Scoring: For each word, check appropriate box:

- spontaneous recall;

- incorrect form of the correct word;
- correct recall after cueing with category (“something to wear”);
- correct identification from the three alternatives (“Was it shirt, shoes, or socks?”);
- "unable to recall" when an inaccurate response was given after both prompts, or when the appropriate time limit has elapsed.
- "not attempted/disabled" when a physical or functional disability prevents the participant from answering.

Example:

Examiner: "What three words did I ask you to remember earlier?"

Participant: "Shirt....." (3-second pause)

Examiner: "Another word is about a color."

Participant: "Blue!"

Examiner: "Good. Another word is about a good personal quality."

Participant: "Modesty?"

Examiner: "I'll give you three words to choose from - honesty, charity, modesty."

Participant: "Modesty!" (Or: No response for 2 seconds)

Examiner: "No. The word is 'honesty'."

For the above example the scores are “spontaneous recall,” “after ‘a color,’’’ and “unable to recall” respectively for shirt, blue and honesty.

5.3.5 Temporal Orientation

Question 6a - What is today's date?

1) Ask for the date. Fill in the month, day and year reported by the participant; convert the month into numerical form (e.g., June 15, 1995 as 06-15-95).

2) If no response is given, mark the “No response” response option.

3) Do not fill in a scoring code for current month, day or year. The correct date on which the exam was administered is already recorded in the Year 8 Clinic Visit Workbook. The computer will compare the actual date reported by the examiner to the date reported by the participant to calculate the correct score.

Question 6b - What is the day of the week?

Write the response only if it is incorrect. If the response is correct, leave the line blank. If no response is given, record an 'x' in the space, and mark "Error/refused."

Question 6c - What season of the year is it?

1) Since distinctions between seasons can be difficult during certain months, the following schedule has been created. For months with two seasons listed, either answer is correct.

Month	Correct Response
January	Winter
February	Winter
March	Winter or Spring
April	Spring
May	Spring
June	Spring or Summer
July	Summer
August	Summer
September	Summer or Fall (Autumn)
October	Fall (Autumn)
November	Fall (Autumn)
December	Fall (Autumn) or Winter

2) Write the response only if it is incorrect. If the response is correct, leave the line blank. If no response is given, record an 'x' in the space, and mark "Error/refused."

5.3.6 Spatial Orientation

1) For **questions 7a through 7c,** write the response only if it is incorrect. If the response is correct, leave the line blank. If no response is given, record an 'x' in the space, and mark "Error/refused."

Question 7a - What state are we in?
Question 7b - What county are we in?
Question 7c - What (city/town) are we in?
Question 7d - Are we in a clinic, store or home?

This question assumes that the test is being administered in a clinic setting. When the correct answer is not among the three alternatives (e.g., test is being conducted in a hospital or nursing home), substitute the correct response for the middle alternative (store).

2) If the participant responds that neither "clinic," "store" nor "home" is the correct answer, ask them to make the best choice out of the three options.

5.3.7 Naming

This set of questions tests whether or not the participant can promptly name the two objects and the five body parts.

Question 8a to 8b - What is this?

1) Show the pencil/wrist watch to the participant.
   NOTE: The pencil should be a standard sharpened wooden pencil with eraser.

2) Correct responses for Question 8b include:

   - Watch
   - Wrist watch
   - Timepiece

3) If the participant cannot name the item within 2 seconds or gives an incorrect answer, do not help or question again. Mark "Error/refused" and continue with Question 8c.

Questions 8c to 8g - What do you call this part...?

1) Ask each question while pointing to the appropriate part on your own body.

2) Correct responses for each item are:

   c. forehead or brow
   d. chin
   e. shoulder or shoulders
   f. elbow or elbows
   g. knuckle or knuckles

3) If the participant gives a scientific or medical version of the name for any of the body parts (i.e., 'medicalese'), ask them to provide the common name.

4) If the participant cannot name the item within 2 seconds or gives an incorrect answer, do not help or question again. Mark "Error/refused" and continue with Question 9.

5.3.8 Four-Legged Animals

Question 9 - What animals have four legs? Tell me as many as you can.

1) Record each animal named in the spaces provided.

2) If the participant says "All animals have four legs," say "tell me their names."

3) Discontinue after 30 seconds. Record the total number of correct responses.

4) If the participant gives no response in 10 seconds and there are still at least 10 seconds remaining, gently remind them (once only): "What (other) animals have four legs?"

5) The first time an incorrect answer is provided, say, "I want four-legged animals." Do not correct for subsequent errors.

Scoring:

- Score one point for each correct animal.

- Accept marginal cases such as:
  - monkey
  - chimp
  - baboon
  - kangaroo

- Different names for the same animal of different age or sex count as one animal. For example:
  - kitten/cat
  - puppy/dog
  - deer/doe

- Those animals with similarities but true technical differences may be counted as two separate animals; e.g., pony and horse may be counted as two; mule and donkey may be counted as two; but ass and donkey are the same animal and must be counted as one.

- Other oddities:
  - a sea lion does not have four legs
  - a seal does not have four legs
  - a platypus is acceptable

Example:

Examiner: "What animals have four legs? Tell me as many as you can."

Participant: "Dog....Cat....Bird....."

Examiner: "I want four-legged animals."

Participant: "Oh, OK! Elephant...." Ten seconds pass and there are still ten seconds left of the 30 seconds.

Examiner: "What other animals have four legs?"

Participant: "Hippo....Dog....Kitten....Cow....Pig.... Chicken....Sheep...." Thirty seconds is up.
Score: 7

A set of abbreviations may be helpful for writing the animal names quickly.

5.3.9 Similarities

This question is designed to measure abstract or conceptual thinking. In general, 2 points are given for conceptual similarities which are primarily pertinent for both members of the pair. Always accept the first answer given. If two concepts are given simultaneously (i.e., within the first statement provided back by the participant), score the higher value of the two concepts.

Question 10a - In what way are an arm and a leg alike?

If the initial response is scored "Lesser correct answer" or "Error/refused," coach the participant by saying "An arm and a leg are both limbs or extremities" to reinforce the correct answer. ***Coach only for Question 10a.*** No other prompting or coaching is allowed.

Scoring:

- Mark "Limbs, extremities, appendages" when the response is that they are both:

  - limbs
  - extremities
  - appendages

- Mark "Lesser correct answer" when the response is that both:

  - are body parts
  - bend
  - move
  - are long
  - have joints
  - other similar responses

- Mark "Error/refused" when the participant gives an incorrect similarity, tells how they are different, says "They are different" or "I don't know," or refuses to answer. Other examples of "Error/refused" answers:

  - fingers and toes

Question 10b - In what way are laughing and crying alike?

Scoring:

- Mark "Expressions of feelings, emotions" when the response is that they are both expressions of:

  - feelings
  - emotions

- Mark "Lesser correct answer" when the response is that both are:

  - sounds
  - expressions
  - both have tears
  - both are satisfying to you
  - you cry with both
  - other similar responses

- Mark "Error/refused" when the participant gives an incorrect similarity, tells how they are different, says "They are different" or "I don't know," or refuses to answer. Other examples of "Error/refused" answers:

  - when you laugh, you laugh; when you cry, you cry

Questions 10c - In what way are eating and sleeping alike?

Scoring:

- Mark "Necessary bodily functions, essential for life" when the response is that they both are:

  - ***necessary*** bodily functions
  - essential for life

- Mark "Lesser correct answer" when the response is that both are:

  - body functions
  - relaxing
  - good for you
  - other similar responses

- Mark "Error/refused" when the participant gives an incorrect similarity, tells how they are different, says "They are different" or "I don't know," or refuses to answer.

5.3.10 <u>Repetition</u>

Question 11 - Repeat what I say: "***I would like to go out.***"

Pronounce the individual words distinctly but with normal tempo of a spoken sentence.

Scoring:

- Mark "Correct" when the sentence is repeated exactly.

- Mark "1 or 2 words missed" when one or two incorrect words are given.

- Mark "3 or more words missed/refused" when three or more incorrect words are given, there is no response or the participant refuses.

Question 12 - Now repeat: ***No ifs, ands or buts.***

Pronounce the individual words distinctly but with normal tempo of a spoken sentence.

- Mark "Correct" for each part (e.g., *ifs, ands, buts)* correctly repeated; give no credit if the participant misses the "s."
- Mark "Error/refused" when the word is not correctly repeated (including when the "s" is not pronounced), no response is given or the participant refuses.

5.3.11 Read and Obey

Question 13 - Hold up Card C (in the Year 8 Clinic Visit Workbook Response Cards) and say, "PLEASE DO THIS."

1) If the participant does not close their eyes within 5 seconds, prompt by pointing to the sentence and saying "READ AND DO WHAT THIS SAYS."
2) If the participant has already read the sentence aloud spontaneously, simply say, "DO WHAT THIS SAYS." Allow 5 seconds for the response.
3) As soon as the participant closes their eyes, say: "OPEN."
4) Mark "Closes eyes without prompting" when participant performs the command spontaneously.

Scoring:

- Mark "Closes eyes after prompting" when participant performs the command only after the prompt: READ AND DO WHAT THIS SAYS.
- Mark "Reads aloud, but does not close eyes" when participant reads the command aloud either spontaneously or after the prompt, but does not close their eyes.
- Mark "Does not read aloud or close eyes/refused" when the participant neither reads the sentence aloud nor closes their eyes, or otherwise does not respond.

5.3.12 Writing

Question 14 - Please write the following sentence: ***I would like to go out***.

1) Hand participant a piece of blank paper and a #2 pencil with eraser. If necessary, repeat the sentence word by word as the participant writes.
2) Allow a maximum of 1 minute after the first reading of the sentence for scoring the task.

Scoring:

- NOTE: If the participant is still working at the end of one minute, allow them to complete the task for the sake of maintaining rapport and morale. Mark the 1 minute point on the product and do not credit for parts finished after 1 minute.

- Mark "Correct" for each completely correct word, except "I."

- The following are considered acceptable:

  - Printing or cursive writing
  - All capital letters
  - Self corrected errors

- The following are considered errors:

  - Portions of sentence written after the one minute time limit.
  - Spelling errors
  - Incorrect mixed capitalizations, e.g., I Would Like To Go Out.

- Mark "Error/refused" for each word which has any error listed above or if the participant does not respond.

Right- or Left-Handedness

Observe which hand the participant uses to write and record on the form. You will need this information later in Question 16. If this task was not performed due to a functional disability, ask the participant if they are right- or left-handed.

5.3.13 Copying Two Pentagons

Question 15 - Here is a drawing. Please copy the drawing onto this piece of paper.

1) Hand participant Card D. Allow one minute for copying.

2) For right-handed participants, present the sample on the left side; for left-handed participants, present the sample on the right side.

3) Allow a maximum of 1 minute for response.

Scoring:

- NOTE: If the participant is still working at the end of one minute, allow THEM to complete the task for the sake of rapport and morale. Mark the 1 minute point on the product and do not credit parts finished after 1 minute.

- Do not penalize for self-corrected errors, tremors, minor gaps, or overshoots.

- When gaps are found in the drawing, they are permissible if the shape of the pentagon can be perceived.

- Each pentagon is scored as follows: Mark appropriate box:

- 5 approximately equal sized sides.
- 5 unequal sides, and the longest:shortest side ratio is > 2:1.
- nonpentagon enclosed figure is drawn.
- 2 or more lines, but it is not an enclosed figure.
- less than 2 lines or the participant refuses to do the task.
- participant does not attempt the task due to a functional disability such as visual impairment or severe arthritis, etc.

- The intersection is scored as follows:

- 4-cornered enclosure.
- not a 4-cornered enclosure.
- no enclosure or the participant refuses to do the task.
- participant does not attempt the task due to a functional disability such as visual impairment or severe arthritis.

5.3.14 Three Stage Command

Question 16 - Hold up a piece of white paper in plain view of the participant but out of their reach and say: ***Take this paper with your left (right for left-handed person) hand, fold it in half using both hands, and hand it back to me.***

1) Refer to Question 14 to check whether the participant is right- or left-handed. Ask them to take the paper in their non-dominant hand.

2) After saying the whole command, hold the paper within reach of the participant.

NOTE: - Do not repeat any part of the command.

- If the participant requests the examiner to repeat a portion of the command and it is felt appropriate to oblige for the sake of maintaining rapport, score according to the response(s) executed prior to repeating the command.

- Do not move the paper toward the participant.

- Do not move your hand toward the participant as a gesture to take the paper back.

3) If the participant reaches for the paper right after hearing the first portion of the command, move your hand away from the participant so that the paper is out of reach and continue to state the next two parts of the command without interruption.

4) The participant may hand back the paper with either hand.

Scoring:

- Mark "correct" for each portion of the command completed correctly.

- Mark "Error/refused" for each portion of the command incorrectly completed. This includes:

- First portion: Participant uses dominant/preferred hand.
- Second portion: Participant folds the paper more than once.
- Third portion: Participant puts the paper down instead of handing it back to the examiner.
- Participant refuses to do the task.

- Mark "not attempted/disabled" when a physical or functional disability (such as severe arthritis) prevents the participant from answering.

5.3.15 Second Recall of Three Words

Question 17 - What three words did I ask you to remember earlier?

1) Administer this item even when the participant scored one or more "0's" on Question 5.

2) The words may be repeated in **any** order.

3) For each word not readily given, provide the category followed by multiple choices when necessary. Do not wait more than 3 seconds for spontaneous recall and do not wait more than 2 seconds after category cueing before providing the next level of help.

Scoring:

- If the participant repeats an incorrect form of the correct word, e.g., "shirts" for "shirt" or "honest" for "honesty," a code has also been added to reflect this answer ('correct word/incorrect form').

- If the participant gives an incorrect answer in the correct category (e.g., says "socks" or "coat" when the correct answer is "shirt"), provide the three alternatives for them to choose from, and, if the choice is correct, mark the "After 'was it shirt, shoes, or socks'" response option.

- If the participant cannot get the correct answer even after multiple choices, check "unable to recall/refused."

- Mark "unable to recall/refused" if an incorrect response is given after both prompts, or when the appropriate time limit has elapsed.

5.3.16 Validation of Birthplace

Question 18 - Would you please tell me again where you were born?

1) Ask this question only when a response was given in Question 1d and 1e.

2) Score the response by checking against the response in Question 1d and 1e.

5.3.17 Special Problems

Question 19 - If physical/functional disabilities or other problems exist which cause the participant difficulty in completing any of the tasks, record the nature of the problem from the following problems codes:

- vision
- hearing
- writing problems due to injury or illness
- illiteracy/lack of education
- language
- other (please record the specific problem in the space provided.)

The way to determine the above listed disability or problem will be by examiner's observation or participant's self-report. For example, if the participant has an obvious difficulty hearing the examiner, or clearly says, "I can't see," the examiner would mark the appropriate box next to the listed problem.

6. Procedures for administering the measurement at home or by telephone

6.1 Procedures for administering the measurement at home

There are no modifications necessary to administer the Teng Mini-Mental State Exam in the home.

6.2 Procedures for administering the measurement over the telephone

The same Year 8 Clinic Visit Workbook that is used in the clinic should be used when the tests are administered by phone. The Teng Mini-Mental State Exam is found on pages 54 through 59. Questions #1, #2, #3, and #4 on page 54; Questions #6 and #7 on page 55; Questions #9, #10, and #11 on page 56; Question #12 on page 57 and Questions #17, #18, and #19 on page 59 can be completed over the telephone.

When completing the Procedure Checklist, next to the Teng Mini-Mental State Exam (item 13), please mark the "Yes, measurement partially completed" bubble. In addition, in the Comments column, please write in Telephone Contact.

7. Alert values/follow-up/reporting

When the interview is completed, thank the participant without offering specific feedback on their performance. You might say, "Thank you for doing this interview."

No alert values. A score of 80 or less is roughly comparable to a score of 24 on the 0-30 scale and is used as a screening cut point for cognitive impairment. This is a screening test that varies with age and education. Additional clinical evaluation is needed for diagnosis. The field center physician or designee should look at the MMSE score compared to baseline and in the context of what else is known about the person, discuss the results with the participant on an individual basis. This would include sending the results to their doctor with permission.

8. Quality assurance

8.1 Training requirements

The examiner requires no special qualifications or prior experience to perform this assessment. Training should include:

- Read and study manual
- Attend Health ABC training session on techniques (or observe administration by experienced examiner)
- Practice on volunteers
- Discuss problems and questions with local expert or QC officer

8.2 Certification requirements

- Complete training requirements
- Explain how to score a question if:
  - Participant has a physical limitation, making task impossible
  - Participant has cognitive limitation
  - Participant does not respond or can't remember
  - Participant answers correctly but not within time allotted
  - Conducts exam using three test scripts while being observed by QC officer

8.3 Quality assurance checklist

- ☐ Exam performed in quiet, private area without interruptions
- ☐ Correct instructions given in clear, slow speaking voice
- ☐ Stopwatch used discreetly
- ☐ Missing parts of dates and birthplace asked for
- ☐ List of 3 objects read slowly and evenly
- ☐ 3 objects repeated until learned, up to 6 times
- ☐ WORLD spelled out slowly, about 1 second per letter
- ☐ Waiting for spontaneous recall no more than 3 seconds
- ☐ Waiting for prompted (w/category) recall no more than 2 seconds
- ☐ Standard pencil used for naming
- ☐ Individual words and "s's" in phrase "NO IFS..." clearly enunciated

- ☐ Pentagon drawing held ON LEFT SIDE for RIGHT-HANDED participant and on RIGHT SIDE for LEFT-HANDED participant
- ☐ Pentagon drawing correctly scored
- ☐ Paper for Three Stage Command held out in front of participant, NOT TO RIGHT OR LEFT
- ☐ Responses correctly coded (QC officer should independently fill out scoring sheet)
- ☐ Special problems (impairment, illiteracy, etc.) recorded in exam comments
- ☐ Reviews form for completeness
- ☐ Correctly completes form

9. Reference

1. Teng, Evelyn Lee, and Helena Chang Chui. 1987. The Modified Mini-Mental State (3MS) Examination. J. Clin. Psychiatry 48:8 pp 314-318.

10. Data collection form

Health ABC

HABC Enrollment ID #	Acrostic	Date Form Completed	Staff ID#
H		Month / Day / Year	

Type of Annual Contact
● Year 8 ○ Year 10

TENG MINI-MENTAL STATE EXAM (3MS)

Are you comfortable? I would like to ask you a few questions that require concentration and memory. Some are a little bit more difficult than others. Some questions will be asked more than once.

(Examiner Note: Record responses. If the participant does not answer, mark the "No response" option.)

❶ When were you born?

a. ☐☐ / b. ☐☐ / c. ☐☐ ○ No response
Month Day Year

Where were you born? (Place of Birth?)	Answer given	Can't do/ Refused	Not attempted/ disabled
d. City/town	○	○	○
e. State/Country	○	○	○

Examiner Note: Ask again in Question #18.

❷ I am going to say three words for you to remember. Repeat them after I have said all three words:

Shirt, Blue, Honesty

(Examiner Note: Do not repeat the words for the participant until after the first trial. The participant may give the words in any order. If there are errors on the first trial, repeat the items up to six times until they are learned. Record responses to first attempt below.)

	Correct	Error/ Refused	Not attempted/ disabled
a. Shirt	○	○	○
b. Blue	○	○	○
c. Honesty	○	○	○

d. Numbers of presentations necessary for the participant to repeat the sequence: ☐ presentations

❸ a. I would like you to count from 1 to 5.

○ Able to count forward ○ Unable to count forward *Say 1-2-3-4-5*

b. Now I would like to you count backwards from 5 to 1. Record the responses in the order given:
(Examiner Note: Enter "99999" if no response)

☐ ☐ ☐ ☐ ☐

❹ a. Spell "world."

○ Able to spell ○ Unable to spell "It's spelled W-O-R-L-D."

b. Now spell "world" backwards
(Examiner Note: Record letters in order given. Enter "xxxxx" if no response.)

☐ ☐ ☐ ☐ ☐

◆Page 54◆

1769

Health ABC 3MS

HABC Enrollment ID #	Acrostic	Type of Annual Contact
H		● Year 8 O Year 10

5 What three words did I ask you to remember earlier?

(Examiner Note: The words may be repeated in any order. If the participant cannot give the correct answer after a category cue, provide the three choices listed. If the participant still cannot give the correct answer from the three choices, score "Unable to recall/refused" and provide the correct answer.)

a. Shirt

O Spontaneous recall
O Correct word/incorrect form
O After "Something to wear"
O After "Was it shirt, shoes, or socks?"
O Unable to recall/refused (provide the correct answer)
O Not attempted/disabled

b. Blue

O Spontaneous recall
O Correct word/incorrect form
O After "A color"
O After "Was it blue, black, or brown?"
O Unable to recall/refused (provide the correct answer)
O Not attempted/disabled

c. Honesty

O Spontaneous recall
O Correct word/incorrect form
O After "A good personal quality"
O After "Was it honesty, charity, or modesty?"
O Unable to recall/refused (provide the correct answer)
O Not attempted/disabled

6 **a.** What is today's date?
(Examiner Note: If the participant does not answer, mark the "No response" option.)

___ / ___ / ___ O No response
Month Day Year

b. What is the day of the week?
(Examiner Note: Write answer if incorrect, enter 'X' if no response, and mark Error/refused.)

O Correct
O Error/refused _____ Day of the week
O Not attempted/disabled

c. What season of the year is it?
(Examiner Note: Write answer if incorrect, enter 'X' if no response, and mark Error/refused.)

O Correct
O Error/refused _____ Season
O Not attempted/disabled

7 **a.** What state are we in?
(Examiner Note: Write answer if incorrect, enter 'X' if no response, and mark Error/refused.)

O Correct
O Error/refused _____ State
O Not attempted/disabled

b. What county are we in?
(Examiner Note: Write answer if incorrect, enter 'X' if no response, and mark Error/refused.)

O Correct
O Error/refused _____ County
O Not attempted/disabled

c. What (city/town) are we in?
(Examiner Note: Write answer if incorrect, enter 'X' if no response, and mark Error/refused.)

O Correct
O Error/refused _____ City/town
O Not attempted/disabled

d. Are we in a clinic, store, or home?
(Examiner Note: If correct answer [e.g., hospital or nursing home] is not among the three alternatives, substitute it for the middle alternative [store]. If the participant states that none is correct, ask them to make the best choice of the three options.)

O Correct
O Error/refused
O Not attempted/disabled

Health ABC **3MS**

HABC Enrollment ID #	Acrostic	Type of Annual Contact
H		● Year 8 O Year 10

8 ***(Examiner Note: Point to the object or a part of your own body and ask the participant to name it. Score "Error/Refused" if the participant cannot name it within 2 seconds or gives an incorrect name. Do not wait for the participant to mentally search for the name.)***

	Correct	Error/ Refused	Not attempted/ disabled
a. Pencil: What is this?	O	O	O
b. Watch: What is this?	O	O	O
c. Forehead: What do you call this part of the face?	O	O	O
d. Chin: And this part?	O	O	O
e. Shoulder: And this part of the body?	O	O	O
f. Elbow: And this part?	O	O	O
g. Knuckle: And this part?	O	O	O

9 What animals have four legs?
Tell me as many as you can.

(Examiner Note: Discontinue after 30 seconds. Record the total number of correct responses. If the participant gives no response in 10 seconds and there are still at least 10 seconds remaining, gently remind them [once only]).
"What (other) animals have four legs?"
The first time an incorrect answer is provided, say,
"I want four-legged animals."
Do not correct for subsequent errors.

Score (total correct reponses): [ ][ ]

(Examiner Note: Write any additional correct answers on a separate sheet of paper.)

10 ***(Examiner Note: If the initial response is scored "Lesser correct answer" or "Error," coach the participant by saying: "An arm and a leg are both limbs or extremities" to reinforce the correct answer. Coach only for Question #10a. No other prompting or coaching is allowed.)***

a. In what way are an arm and a leg alike?

O Limbs, extremities, appendages

O Lesser correct answer
(e.g., body parts, both bend, have joints)
O Error/refused
(e.g., states differences, gives unrelated answer)
O Not attempted/disabled

b. In what way are laughing and crying alike?

O Expressions of feelings, emotions

O Lesser correct answer
(e.g., sounds, expressions, other similar responses)
O Error/refused
(e.g., states differences, gives unrelated answer)
O Not attempted/disabled

c. In what way are eating and sleeping alike?

O Necessary bodily functions, essential for life

O Lesser correct answer
(e.g., bodily functions, relaxing, good for you or other similar responses)
O Error/refused
(e.g. states differences, gives unrelated answer)

O Not attempted/disabled

11 Repeat what I say: **"I would like to go out."**
(Examiner Note: Pronounce the individual words distinctly but with normal tempo of a spoken sentence.)

O Correct

O 1 or 2 words missed

O 3 or more words missed/refused

O Not attempted/disabled

Health ABC 3MS

HABC Enrollment ID #	Acrostic	Type of Annual Contact
H		● Year 8 O Year 10

12 Now repeat: **"No ifs, ands or buts."**

(Examiner Note: Pronounce the individual words distinctly but with normal tempo of a spoken sentence. Give no credit if the participant misses the "s.")

	Correct	Error/ Refused	Not attempted/ disabled
a. no ifs	O	O	O
b. ands	O	O	O
c. or buts	O	O	O

13 ***Examiner Note: Hold up card #12 and say,***

"Please do this."

If the participant does not close their eyes within 5 seconds, prompt by pointing to the sentence and saying

"Read and do what this says."

If the participant has already read the sentence aloud spontaneously, simply say,

"Do what this says."

Allow 5 seconds for the response. Assign the appropriate score (see below). As soon as the participant closes their eyes, say

"Open."

O Closes eyes without prompting

O Closes eyes after prompting

O Reads aloud, but does not close eyes

O Does not read aloud or close eyes/refused

O Not attempted/disabled

14 Please write the following sentence:
I would like to go out.

(Examiner Note: Hand participant a piece of blank paper and a #2 pencil with eraser. If necessary, repeat the sentence word by word as the participant writes. Allow a maximum of 1 minute after the first reading of the sentence for scoring the task. Either printing or cursive writing is allowed. Score "Correct" for each correct word, but no credit for "I". For each word, score "Error/Refused" if there are spelling errors or incorrect mixed capitalizations [all letters printed in uppercase are permissible]. Self-corrected errors are acceptable.)

	Correct	Error/ Refused	Not attempted/ disabled
a. would	O	O	O
b. like	O	O	O
c. to	O	O	O
d. go	O	O	O
e. out	O	O	O

(Examiner Note: Note which hand the participant uses to write. If this task is not done, ask participant if they are right or left handed. [Use in Question #16])

O Right
O Left
O Unknown

Health ABC 3MS

HABC Enrollment ID #	Acrostic	Type of Annual Contact
H		● Year 8 O Year 10

15 Here is a drawing. Please copy the drawing onto this piece of paper.

(Examiner Note: Hand participant card #13. Allow 1 minute for copying. For right-handed participants, present the sample on the left side; for left-handed participants, present the sample on the right side. Allow a maximum of 1 minute for response. Do not penalize for self-corrected errors, tremors, minor gaps, or overshoots.)

a. Pentagon 1

O 5 approximately equal sides
O 5 sides, but longest:shortest side is >2:1
O nonpentagon enclosed figure
O 2 or more lines, but it is not an enclosed figure
O less than 2 lines/refused
O not attempted/disabled

b. Pentagon 2

O 5 approximately equal sides
O 5 sides, but longest:shortest side is >2:1
O nonpentagon enclosed figure
O 2 or more lines, but it is not an enclosed figure
O less than 2 lines/refused
O not attempted/disabled

c. Intersection

O 4-cornered enclosure
O not a 4-cornered enclosure
O no enclosure/refused
O not attempted/disabled

16 ***(Examiner Note: Refer to Question #14 to check whether the participant is right- or left-handed. Ask them to take the paper in their non-dominant hand.)***

"Take this paper with your left (right for left handed person) hand, fold it in half using both hands, and hand it back to me."

(Examiner Note: After saying the whole command, hold the paper within reach of the participant. Do not repeat any part of the command. Do not move the paper toward the participant. The participant may hand back the paper with either hand.)

	Correct	Error/ Refused	Not attempted/ disabled
a. Takes paper in correct hand	O	O	O
b. Folds paper in half	O	O	O
c. Hands paper back	O	O	O

◆Page 58◆

58575

Health ABC 3MS

HABC Enrollment ID #	Acrostic	Type of Annual Contact
H		● Year 8 O Year 10

17 What three words did I ask you to remember earlier?

(Examiner Note: Administer this item even when the participant scored one or more "unable to recall/refused" on Question #5. The words may be repeated in any order. For each word not readily given, provide the category followed by multiple choices when necessary. Do not wait more than 3 seconds for spontaneous recall and do not wait more than 2 seconds after category cueing before providing the next level of help.)

a. Shirt

O Spontaneous recall

O Correct word/incorrect form

O After "Something to wear"

O After "Was it shirt, shoes, or socks?"

O Unable to recall/refused (provide the correct answer)

O Not attempted/disabled

b. Blue

O Spontaneous recall

O Correct word/incorrect form

O After "A color"

O After "Was it blue, black, or brown?"

O Unable to recall/refused (provide the correct answer)

O Not attempted/disabled

c. Honesty

O Spontaneous recall

O Correct word/incorrect form

O After "A good personal quality"

O After "Was it honesty, charity, or modesty?"

O Unable to recall/refused (provide the correct answer)

O Not attempted/disabled

18 Would you please tell me again where you were born?

(Examiner Note: Ask this question only when a response was given in Question #1d and #1e. Score the response by checking against the response in Question #1d and #1e.)

Place of Birth?	Matches	Does not match/ Refused	Not attempted/ disabled
a. _____ City/town	O	O	O
b. _____ State/Country	O	O	O

19 ***(Examiner Note: If physical/functional disabilities or other problems exist which cause the participant difficulty in completing any of the tasks, record the nature of the problem listed below. Mark all that apply.)***

O Vision

O Hearing

O Writing problems due to injury or illness

O Illiteracy or lack of education

O Language

O Other ***(Please record the specific problem in the space provided.)***

_____