

# SURVEILLANCE COGNITIVE FUNCTION

## 1 **Background and Purpose**

As described in Baseline Cognitive Function in the Manual of Operations, the Mini-Mental State (MMS) Examination was used to assess cognitive function in the Baseline Clinic Visit. For the Follow-Up Clinic Visits, a modified version of the test, the Modified Mini-Mental State (3MS) Examination, will be used. 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<sup>1</sup>. In addition to the 3MS exam, the Digit-Symbol Substitution Task will also be administered as in the Baseline Visit. (NOTE: See also records 67 and 68).

## 2 **Definitions**

None.

## 3 **Methods**

### 3.1 Modified Mini-Mental State (3MS) Exam - General Considerations

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

The 3MS should be administered in a quiet place with minimal distractions. If any temporary condition that may detract the participant from his/her optimal performance cannot be removed, the participant should be moved to another location; if this is not possible, reschedule the exam.

In the administration of the 3MS exam, do not offer extra help or wait too long for responses unless a probe is directed. It is sometimes appropriate to re-present or rephrase a question, but in general, when a participant gives an incorrect answer, says "I don't know", or is unable to give an answer, the examiner scores accordingly and proceeds to the next item.

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

We gratefully acknowledge Dr. Teng for providing the "Manual for the Administration and Scoring of the Modified Mini-Mental State (3MS) Test" which was adapted for the CHS Manual of Operations.

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.

## 3.2 **General Scoring Considerations**

- Always read scripts exactly as written.
- Always be very discreet with use of the stopwatch.
- Make sure the testing environment is as quiet and non-threatening as possible. This includes the supportive and nonjudgmental interaction of the examiner, who must take special care to sit quietly and not cause distractions.

### 3.2.1 3MS Exam

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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 prior-used 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.

- If you cannot determine how to code the response, record notes in the left-hand margin so that an editor can review the scoring later. Contact the Coordinating Center about ambiguities.
- 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 "9 - Not Attempted/Disability". If a task is scored "9 - Not Attempted/Disability", the reason the task was not completed must be specified in Item 19 - Special Problems. Please indicate the questions that were affected.
- Check "error/can't do/refused" if the task is not successfully completed for any other reason. This includes errors due to cognitive dysfunction as well as refusals when no physical or functional disability is present.
- Let the participant attempt all tasks unless you determine that the participant

cannot do the task. In these cases, score the question "0". 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.

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

### 3.2.2 Digit-Symbol Substitution Task Scoring

- The Digit-Symbol Substitution Task score is based on the number of symbols correctly coded in 90 seconds. Please observe the following directives:
  - It is imperative to review the instructions very deliberately and to speak **very slowly**.
  - Be certain that participants understand the instructions before proceeding with the test.
  - Read the script **exactly** as it is written. You may make subtle changes if repeating the instructions, but there can be no omissions, additions or substitutions.
  - Do not offer encouraging words or in any way distract the participant, unless s/he actually stops and needs to be encouraged to continue.
  - Code Question 22a "Done" when the sample or any part of the task was attempted.
  - If Question 22a is coded "Done", a score must be calculated for Questions 22b and 22c.
  - Single blank spaces between two completed items are not considered incorrectly coded symbols.
  - Two or more blanks which occur consecutively signal the end of the task. Symbols coded after two or more blanks are not included in totals recorded in Questions 22a and 22b.

- If part of the sample is attempted but the participant refuses to complete the actual task, code Questions 22a and 22b "0".
- Enter the number of symbols correctly coded in Item 22b.
  - For purposes of the CHS Cognitive Function form, when it is known that a participant is dyslexic and will therefore draw some types of symbols backward, those symbols which are drawn exactly backward are scored as being correct.
- Enter the number of symbols incorrectly coded in Item 22c.

### 3.3 **Administration** - Modified Mini-Mental State Exam

Script: "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."

- Read each question from the form and mark the appropriate level of response.
- If the participant is unable to answer the question or perform the task due to a functional disability, check "Not Attempted/Disability". Document the reasons in Item 19 - Special Problems.
- If the participant refuses to answer the questions, check "Error/Can't Do/Refused".

### 3.4 Date and Place of Birth

This item is a measure of long-term memory. It is assumed that everyone has had repeated opportunities to learn and report his/her date and place of birth.

- Question 1a to 1c - When were you born?
  - 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 last two digits of year are required.
  - 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 s/he was born.
  - If no response is given, write '99' in the spaces provided.

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

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

- If the participant gives only a partial answer (e.g., only the city/town), ask for the missing information.
- 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 s/he was born.
- In rare instances, participants may state that they have been born in rural areas which did not have towns associated with them. The technician should ask the participant to name the town through which he/she received mail, or the postal address. If there still is no such town, the location that the participant considers to be his/her 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.
- If the participant gives a response, record the city/town and state/country reported by the participant and code "1 - 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.

- Check "Can't do/refused" when no response is given, participant refuses to answer or participant says that s/he can't remember.
- Check "Not attempted/disability" when a physical or functional disability prevents the participant from answering.

### 3.5

#### Registration

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

- Make sure the participant is attentive when beginning the question.

- Say the three words distinctly at the rate of 1.5 seconds per word.
- The participant may repeat the words in any order.
- 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.
- Do not repeat the words for the participant until after the first trial. When there are errors on the first trial, repeat the items up to six times until they are all learned.
- Be sure that the correct suffix of the word is repeated. For example, do NOT accept "shoe" for "shoes" or "honest" for "honesty". The exact form of the word must be repeated.
- Record the number of presentations necessary for the participant to repeat the sequence (up to 7).

### 3.6 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 - I would like you to count from 1 to 5. *Wait as the participant counts.*

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

Script: "Now I would like you to count backwards from 5 to 1."

- 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 - Spell "WORLD". *Wait as the participant spells.*

- 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.

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

Script: "Now spell "WORLD" backwards."

- 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'.

3.7

### First Recall of Three Words

- Question 5 - What three words did I ask you to remember earlier?
  - The words may be repeated in **any** order.
  - 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.
  - If the participant gives an incorrect answer in the correct category (e.g., says "socks" or "coat" instead of "shoes"), provide the three alternatives for him/her to choose from, and score 1 when the choice is correct.
  - If the participant cannot give the correct answer even after multiple choices, code "0" and tell him/her the correct answer for the benefit of the second recall to be requested later.
  - If the participant repeats an incorrect form of the correct word, e.g., "shoe" for "shoes" 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 "3" for spontaneous recall;
- Check "2" for an incorrect form of the correct word;
- Check "2" for correct recall after cuing with category;
- Check "1" for correct identification from the three alternatives;
- Check "Unable to recall" when the an inaccurate response was given after both prompts, or when the appropriate time limit has elapsed;
- Check "Not attempted/disabled" when a physical or functional disability prevents the participant from answering.

Example script:

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

Participant: "Shoes....." (3 second pause)

Examiner: "Another word is about a color."

Participant: "Brown!"

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 3, 2 an 0 respectively for shoes, brown and honesty.



Temporal Orientation

- Question 6a - What is today's date?
  - 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, 1990 as 06-15-1990).
  - If no response is given, record '99' in each space provided.
  - Do not fill in a scoring code for current month, day or year. At the end of this form, the examiner is required to enter the correct date on which the exam was administered. 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.
  
- Question 6c - What season of the year is it?
  - 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.

<u>Month</u>	<u>Correct Response</u>
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

- 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.

### 3.9

#### Spatial Orientation

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.

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

### 3.10

#### 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?
  - Show the pencil/wrist watch to the participant.

NOTE: The pencil should be a standard sharpened wooden pencil with eraser.
  - Correct responses for Question 8b include:
    - Watch
    - Wrist watch
    - Timepiece
  - If the participant cannot name the item within 2 seconds or gives an incorrect answer, do not help or question again. Code "0" and continue with Question 8c.

- Questions 8c to 8g - What do you call this part...?
  - Ask each question while pointing to the appropriate part on his/her own body.
  - Correct responses for each item are:
    - c. forehead or brow
    - d. chin
    - e. shoulder or shoulders
    - f. elbow or elbows
    - g. knuckle or knuckles
  - If the participant gives a scientific or medical version of the name for any of the body parts (i.e., 'medicalese'), ask him/her to provide the common name.
  - If the participant cannot name the item within 2 seconds or gives an incorrect answer, do not help or question again. Check "0" and continue with Question 9.

### 3.11 Four-Legged Animals

- Question 9 - What animals have four legs? Tell me as many as you can.
  - Record each animal named in the spaces provided.
  - If the participant says "All animals have four legs", say "tell me their names."
  - Discontinue after 30 seconds or after 10 correct responses, whichever occurs first.
  - If the participant gives no response in 10 seconds and there are still at least 10 seconds remaining, gently remind him/her (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 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 script:

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

### 3.12

#### Similarities

This question is designed to measure abstraction or conceptual thinking. In general, 2 points are given for conceptual similarities which are primarily pertinent for both members of the pair. No prompting or coaching is allowed. 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?

- Check "2" when the response is that they are both:
  - limbs
  - extremities
  - appendages
- Check "1" when the response is that both:
  - are body parts
  - bend
  - move
  - are long
  - have joints
  - other similar responses
- Check "Error" 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 "0" answers:
  - fingers and toes
- Check "Not attempted/disabled" when a physical or functional disability prevents the participant from answering.
- If the initial response is scored "1" or "0", 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.

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

- Check "2" when the response is that they are both expressions of:
  - feelings
  - emotions
- Check "1" when the response is that both are:
  - sounds

- expressions
  - both have tears
  - both are satisfying to you
  - you cry with both
  - other similar responses
- Check "Error" 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 "0" answers:
    - when you laugh, you laugh; when you cry, you cry

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

- Check "2" when the response is that they are both are:
  - *necessary* bodily functions
  - essential for life
- Check "1" when the response is that both are:
  - body functions
  - relaxing
  - good for you
  - other similar responses
- Check "Error" 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.

3.13

**Repetition**

■ 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.
- Check "Correct" when the sentence is repeated exactly.
- Check "1 or 2 words missed" when one or two incorrect words are given.
- Check "3 or more words missed" 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.

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

3.14

Read and Obey

■ Question 13 - Hold up card 11-S and say, "PLEASE DO THIS."

- If the participant does not close his/her 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.
- As soon as the participant closes his/her eyes, say: OPEN.
- Check "Closes eyes without prompting" when participant performs the command spontaneously.
- Check "Closes eyes after prompting" when participant performs the command only after the prompt: READ AND DO WHAT THIS SAYS.
- Check "Reads aloud, but does not close eyes" when participant reads the command aloud either spontaneously or after the prompt, but does not close his/her eyes.
- Check "Does not read aloud or close eyes" when the participant neither reads the sentence aloud nor closes his/her eyes, or otherwise does not respond.

3.15

Writing

- Question 14 - I would like to have a sample of your handwriting. Please write: *I would like to go out.*

- 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.

NOTE: If the participant is still working at the end of one minute, allow him/her 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.

- Check "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.
- Check "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 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.

3.16 Copying Two Pentagons

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

- Hand participant Card 12-S. Allow one 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.

NOTE: If the participant is still working at the end of one minute, allow him/her 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.

Scoring:

- 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:
  - Check "4" when there are 5 approximately equal sides.
  - Check "3" when there are 5 unequal sides, and the longest:shortest side ratio is  $> 2:1$ .
  - Check "2" when another enclosed figure is drawn.
  - Check "1" when there are 2 or more lines, but it is not an enclosed figure.
  - Check "0" when there are less than 2 lines or the participant refuses to do the task.
  - Check "9" when the 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:
  - Check "2" when there is a 4-cornered intersection.
  - Check "1" when it is not a 4-cornered intersection.
  - Check "0" when there is no enclosure or the participant refuses to do the task.
  - Check "9" when the participant does not attempt the task due to a functional disability such as visual impairment or severe arthritis.

### 3.17 Three Stage Command

- Question 16 - Hold up a piece of white paper in plain view of the participant but out of his/her 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.***

- 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.
- 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 sake of maintaining rapport, score according to the response(s) executed prior to repeating 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.
- 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.
- The participant may hand back the paper with either hand.
- Check "correct" for each portion of the command completed correctly.
- Check "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.
- Check "not attempted/disabled" when a physical or functional disability (such as severe arthritis) prevents the participant from answering.

### 3.18 Second Recall of Three Words

- Question 17 - What three words did I ask you to remember earlier?
  - Administer this item even when the participant scored one or more "0's" 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 cuing before providing the next level of help.
  - If the participant repeats an incorrect form of the correct word, e.g. "shoe" for "shoes" 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 "shoes"), provide the three alternatives for him/her to choose from, and score 1 if the choice is correct.
  - If the participant cannot get the correct answer even after multiple choices, check "unable to recall/refused".
  - Check "unable to recall/refused" if an incorrect response is given after both prompts, or when the appropriate time limit has elapsed.

Example script:

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

Participant: "Shoes....." (3 second pause)

Examiner: "Another word is about a color."

Participant: "Brown!"

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 3, 2 and 0 respectively for shirt, brown and honesty.

### 3.19 Validation of Birthplace

- Question 18 - Would you please tell me again where you were born.
  - Ask this question only when a response was given in Question 1d and 1e.
  - Score the response by checking against the response in Question 1b.

### 3.20 Question 19 - Special Problems

If physical/functional disabilities or other problems exist which cause the participant difficulty in completing any of the tasks, mark the box coded 'yes' and 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).

If no special problems were noted, mark the box coded 'no'.

### 3.21 Dominant Hand

A participant's dominant hand may not necessarily be the hand with which he/she writes. Two questions have been added here to determine dominant hand.

- If the response is either "right" or "left", ask: "always right (left) or usually right (left)?"
- If the participant states s/he uses both hands, clarify by asking if s/he "usually uses a specific hand" or has "no preference".
- Question 20 - Please tell me which hand you would normally use to throw a ball to hit a target.
  - This is the hand used in normal or routine circumstances.
- Question 21 - Please tell me which hand you would normally use to hold a toothbrush while cleaning teeth.
  - This is the hand used in normal or routine circumstances.

### 3.22 Digit-Symbol Substitution Task

Place the task sheet before the participant and point to the task.

Script: "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 part of each box there is a symbol. Each symbol is paired with a number."

(Point to the four rows of boxes.)

Down here are boxes with numbers on the top, but the bottom part is blank. What I want you to do is to put the correct symbol in each box like this.

(Fill in the first three sample boxes.)

Now I want you to fill in all boxes up to this line.

(Point to the line separating the samples from the test proper.)

- If the participant has difficulty completing the ten sample items or does not understand the task, help him complete the sample items.

- If the participant still has difficulty or does not understand the task, discontinue the task. Check "Done" for Question 20a. Check "0" for Questions 20b and 20c.
- Give participants with visual limitations an opportunity to complete the sample.

If a visually impaired participant cannot complete the sample:

- Check Question 20a "Not Done".
- Do not record scores for Questions 20b and 20c.

- After the demonstration and practice is complete, point to the first box following the sample items and say:

Script: "When I tell you to begin, start here and fill in the boxes in these four rows. Do them in order and don't skip any. Please try to work as quickly as possible. Let's begin."

- Stop the participant after 90 seconds. Say, "That's good. That completes this set of tasks."

- Additional Scoring Notes

- An "A" is not acceptable for the carat "^" sign (symbol for number 7).
- A "U" with a tail is acceptable for the "U" symbol (symbol for number 5).
- A flat-bottomed "U" is also acceptable for the round-bottomed "U" (symbol for number 5).