Appendix 2

ADAS-Cog Administration and Scoring Manual

Administration and Scoring Manual
Alzheimer's Disease Assessment Scale – Cognitive (ADAS-cog)

3/20/12

Adapted from:

The Administration and Scoring Manual for the
Alzheimer's Disease Assessment Scale
1994 Revised Edition, Richard C. Mohs, Ph.D.
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INTRODUCTION

The test items on the cognitive part of the ADAS should be given in the following sequence:

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Ideational Praxis
Orientation
Word Recognition
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Subjective items:
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Spoken Language Ability

Optional performance items:
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Number Cancellation Task

Optional Subjective Item:
Concentration/Distractibility

Of the performance items administered, the WORD RECALL test is given first and the WORD RECOGNITION task is given last, with the other performance items administered in-between. Separating the two word memory tasks in this way minimizes the chance that a subject will confuse the words from the two tasks.

Extended versions of the ADAS-cog may include optional items after WORD RECOGNITION, including the MAZE and NUMBER CANCELLATION tasks.

<u>ADAS-COG TESTER QUALIFICATIONS</u>

The tester must meet all qualification requirements of the sponsor. The ADAS-cog should be administered by an appropriately trained and experienced psychometrician.

GENERAL TEST ADMINISTRATION GUIDELINES

Materials and Setting

- ➢ The testing kit should be organized and prepared prior to the test session so that items are administered at a streamlined and consistent pace.

- ➢ The testing kit should not be in full view of the subject, but should be at the tester's side, within easy reach.

- ➢ The tester should be very familiar with the testing kit, and should make sure that the word cards appropriate to the visit are included with the kit prior to initiating the testing session.

- ➢ Provide a comfortable and quiet environment free from distractions.

- ➢ The tester and subject should sit directly facing each other across a small table. They should not be sitting at the corner of a table.

Managing the Subject

- ➢ For each item on the ADAS-cog, the tester should speak clearly and evenly when giving the instructions and prompts, and the subject should not be rushed.

- ➢ Encourage and reinforce effort. The overall aim should be to get the subject to try his/her best, and to keep the subject motivated and as focused as possible.

- ➢ Feedback to the subject should be neutral and should not indicate whether or not the response was correct. Comments that reinforce effort, such as, *"That's fine"* or *"You're doing well"* are appropriate as long as the subject is trying.

- ➢ If the subject specifically asks if a response was correct, the tester should say to the subject "I'm not supposed to give you feedback until the end. Just try to do your best on each item." The tester should focus on and reinforce the subject's effort, and attempt to re-oreint the subject to the next task. If the subject insists on receiving feedback, then the tester can give it but should try to get the subject to move to the next item smoothly.

Standardized Procedures

- ➢ To maximize standardization, it is very important to maintain consistency across administrations with each subject, including testing environment, time of day, tester, and procedures.

- ➢ The initial instructions for each item should be given verbatim. If the subject does not understand the initial instruction, the tester may paraphrase if needed.

- ➢ It is vital that the tester memorize the administration instructions verbatim for each item prior to administering the ADAS-cog.

➢ The standard ADAS-cog is not a timed test and the subject's score does not depend upon how rapidly the test is completed. The items should be given so that the session moves smoothly and quickly, but not so that the subject feels pressured to respond rapidly.

➢ If the optional Extended ADAS-cog is used, the MAZE and NUMBER CANCELLATION tasks are timed. These are administered after the WORD RECOGNITION task and are the only timed items. These are not required components of the standard ADAS-cog and are added at the sponsor's discretion.

➢ For each item, the subject has a maximum of two chances to give a correct response. Some test items require that an item be repeated after an incorrect response, others do not. Follow the specific administration instructions for each item.

➢ Each item has specific types of prompts that are allowed. The instructions in this manual include the types and timing for prompts for each item.

OPENING CONVERSATION

The first few minutes of the session are spent in open-ended conversation about neutral topics in order to put the subject at ease, establish rapport, and to assess how well the subject can use and understand language. It is important to spend enough time in this open-ended conversation to make a formal assessment of language, as this conversation is a major source of data for making the ratings of global language items (COMPREHENSION, WORD FINDING DIFFICULTY, and SPOKEN LANGUAGE ABILITY). The global language ratings are also based on spontaneous language during the testing.

During the opening conversation at the beginning of the test session:

➢ Ask open-ended questions giving the subject opportunity to generate language.

➢ Don't complete the subject's sentences or fill in words. It's important to allow the subject to demonstrate his/her impairment (if he/she has impairment).

➢ Avoid asking questions that demand recollection of information relating to the questions that will be asked during the ORIENTATION portion of the ADAS-cog.

➢ If the tester knows the subject well, the tester can usually initiate the conversation with topics that will prompt the subject to speak. If the tester is not familiar with the subject, the tester should initiate the conversation with general, open-ended questions.

➢ Write down instances of language difficulty or errors during the conversation and during spontaneous verbal interchanges throughout the testing.

➢ This opening conversation is not a memory test. The subject should not be penalized for memory impairment (e.g., names of relatives, recent events) in scoring the language items.

> ➤ There is no time requirement (minimum or maximum) for the opening conversation. The tester should be sure to ask enough questions to get a sample of the subject's spontaneous speech. This will vary from subject to subject.

Examples of open-ended questions include:

How are you today?
Tell me about your trip here today.
Can you tell me about what you have done during the past week?
Tell me about some things you like to do?
Who brought you to the clinic today?
Tell me about your family.

INTRODUCTION OF THE TESTING SESSION:

When the opening conversation is completed, the tester should introduce the testing itself by telling the subject **"*I'm going to ask you to do a number of things today. Please do your best at each task. Also, please feel free to ask any questions along the way. OK? Let's begin."***

WORD RECALL

On this task, the subject is given three trials to learn a list of high-frequency, high imagery nouns. The 10 words are printed in block letters on white cards.

Use the word cards that match the word list for each visit. The word list should be identified prior to each visit by reviewing the study case report forms.

For each word, indicate on the case report form if the subject did or did not remember it.

At the start of the first trial, the tester gives the following instructions verbatim:
"*I am going to show you some words printed on these cards one at a time. Please read each word out loud and try to remember it, because later I will ask you to try to remember all of the words I have shown you. Ready? Read the word and try to remember it."*

The tester can repeat or rephrase the instructions as necessary prior to presenting each word list. If the instructions are rephrased, the tester should not add additional instructions but should rephrase the verbatim instructions.

The word cards must be presented to the subject at an even, non-rushed pace. A suggested (but not required) pace is to show each word card for approximately 2 seconds, although it may be necessary to shorten for subjects who are fast readers or extend for subjects who are slow readers or who need additional time. The primary focus is to make sure that the subject reads each card aloud, is not rushed, and that the word cards are presented at an even pace.

The tester can prompt with: **"*Read it out loud and try to remember it"*** as necessary.

If the subject cannot read the word, the tester says the word out loud and has the subject repeat it. In some cases, the tester may have to say all of the words and have the subject repeat them. Make sure the subject looks at each word while repeating it.

If the subject misreads a word, the tester asks the subject to re-read the word. The tester must not let the subject misread a word and continue without correcting the subject.

After the presentation, the tester asks the subject to try to recall as many of the words as possible by saying: **"*Good, now tell me all the words you can remember."***

When the subject is finished recalling words, prompt by asking:
"*Do you remember any more words?" or "Can you remember any others?"*

Two more learning and recall trials follow.
For trials 2 and 3, say the following instructions to the subject verbatim:

"Now I'm going to show you the same words again. Read each word out loud and try to remember it."

Follow the Trial 1 instructions regarding presentation of the word cards and giving prompts.

Encouragement can be given if the subject is nervous or giving up.

Word Lists: Dr. Richard Mohs and the ADCS recommend that a given word list not be repeated more frequently in a study than every six months.

<u>Scoring Guidelines:</u>

During the Recall task, the subject must say exactly the same word as presented on the learning cards in order to be scored correct.

Plural forms of the word are not correct.

COMMANDS

This task is designed to assess receptive language. The subject is asked to carry out 5 separate commands with 1 to 5 steps per command.

Each command should be read once. If the subject makes an error and recognizes that an error was made, the tester says the *ENTIRE* command one more time. Do not give the command more than twice. The subject may recognize that an error was made by requesting another attempt, stating that their first attempt wasn't correct, or indicating that they are not satisfied with their first attempt.

If the subject does not recognize that they made an error, the tester does NOT repeat the command.

All commands should be given to every subject.

For the first, second and fifth commands, there should be nothing in front of the subject.

For the third and fourth commands, there should be no other materials near the pencil, watch and card (pens, paper, etc.).

Say the following instructions verbatim: *"Now I am going to ask you to do a few things. Ready?"* Pause before saying each command, then read each command out loud exactly as written. It is important to say each command clearly and at an even pace. The subject should not have to struggle to understand the instructions.

If the subject demonstrates hearing or attentional difficulties, orient the subject by saying, *"Ready?"* or **"Now I want you to..."** prior to giving the command. Do *NOT* give the command more than twice in total.

*"*Make a *FIST.*" (say *"Relax it"* if needed upon completion).

*"*Point to the *CEILING* and then to the *FLOOR.*"

Line up a Pencil, Watch, and Card on the table (left to right from the subject's point of view). All three objects must be used.

Say:

"Put the *PENCIL ON TOP OF THE CARD* and then *PUT IT BACK.*"

The three items must be returned to their original position prior to administering the next command.

"Put the *WATCH* on the *OTHER SIDE OF THE PENCIL* and then *TURN OVER THE CARD.*"

Remove the Pencil, Watch, and Card from the table. Say:

*"*TAP *EACH SHOULDER TWICE*, with *TWO FINGERS*, keeping your *EYES SHUT.*"

Scoring Guidelines:

- Each underlined element represents a single step.

- Each command is scored as a whole (no partial credit). All components must be correct for the response to be scored as correct.

- For the second command (point to the ceiling and then to the floor), it is not necessary that the subject point with his/her index finger; indicating the correct direction with the hand is sufficient and should be scored as correct.

- For the shoulder tapping command, watch carefully as there are several ways to follow this command correctly. For example, the subject would be scored correct if he/she used two fingers on the right hand to tap each shoulder twice, and would also be scored correct if he/she used two fingers on the right hand to tap his/her right shoulder twice, and two fingers from the left hand to tap his/her left shoulder twice. Each shoulder should only be tapped a total of two times.

CONSTRUCTIONAL PRAXIS

This test assesses the subject's ability to copy 4 geometric forms ranging from a very simple one (circle) to a fairly difficult one (cube).

The forms should be presented one at a time in the following order:

> Circle
> Two Overlapping Rectangles
> Diamond (Rhombus)
> Cube

The tester should give the subject a lead pencil with an eraser along with the first drawing.

The tester says the following instructions verbatim to the subject:
"On this piece of paper is a shape. Try to draw another one that looks just like this, somewhere on the page." (Tester may point to the shape.)

The figures must be presented one at a time. At the completion of each drawing, remove the completed form from the table and then present the next figure to the subject.

The tester can repeat or rephrase the instructions as necessary prior to presenting each figure.

General Administration Guidelines:

- ➢ The subject may erase if he/she needs to.

- ➢ The subject may erase the entire drawing if he/she needs to during his/her first attempt. The first attempt is counted as being complete when the subject tells the tester he/she is done with his/her drawing.

- ➢ If the subject rushes or is drawing too quickly, interrupt him/her immediately, prior to completion, and prompt with: ***"Take your time and try to draw it just like this one."*** Consider the drawing after the prompt to be the first attempt.

- ➢ Very impaired subjects may draw on top of the presented figure. If the subject starts to do this, interrupt immediately and prompt with: ***"Try to draw it just like this one somewhere else on the page"*** and point to an empty part of the page. If the subject has already completed their drawing on top of the presented figure, consider that to be the first attempt and the drawing elsewhere on the page to be the second attempt. If the subject has not yet completed their drawing on top of the presented figure, consider the drawing after the prompt to be the first attempt.

- ➢ Allow the subject a maximum of two attempts for each shape. However, allow a second attempt only if the subject asks for a second attempt or indicates a problem with his/her first drawing. If the subject says the reproduction is poor or is clearly dis-satisfied, ask if the subject wants another try. If the subject makes a second attempt, ask the subject which drawing is better and score that one.

- ➢ Do not require or offer a second attempt if the subject is happy with their first attempt, even if incorrect.

- ➢ If the subject cannot reproduce the figure in two attempts, the tester should go on to the next item.
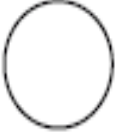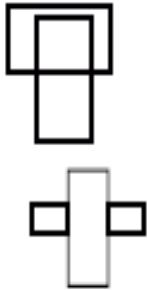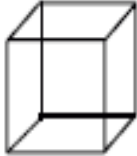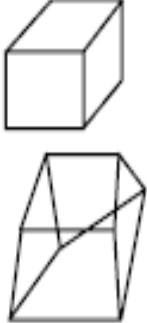
Scoring Guidelines:
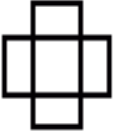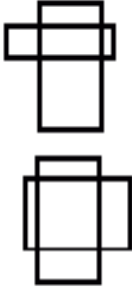
- ➢ A drawing should be scored as correct if the subject has reproduced all of the essential features of the original.

- ➢ Changes in the size of the whole figure do not count as errors. Small gaps between lines do not indicate an error, as long as the shape has been reproduced.

Figure-Specific Scoring Guidelines, including the two points immediately above:

- • Circle: A closed curved figure.

- • Two Overlapping Rectangles: Forms must be four-sided, and overlap must be similar to presented form. Changes in size are not scored.

- • Diamond (Rhombus): Figure must be four sided, oriented so that the points are at the top and bottom, and the sides are approximately equal length (e.g., longest side is not ≥ 1.5 times the length of the shortest side).

- • Cube: The form is 3-dimensional, with front face in the correct orientation, internal lines drawn correctly between corners. Opposite sides of faces should be approximately parallel.

- • The person doing the scoring at each site should be consistent in scoring figures across subjects and visits.

- • Each figure is scored as follows on the CRF:
  - o Shape drawn correctly.
  - o Shape drawn incorrectly (at least one side/section of the shape drawn).
  - o No recognizable attempt at drawing any side/section of shape.

Examples of correct and incorrect drawings are included on the following page.

Constructional Praxis : Scoring examples

DELAYED WORD RECALL (optional item)

In this task, the subject is asked to recall as many words as possible from the 10 words presented during the WORD RECALL task. There is one trial of recall. This task should follow immediately after completion of the COMMANDS and CONSTRUCTIONAL PRAXIS items**.**

To begin testing, give the subject the following instructions verbatim*:*

"A few minutes ago I had you read some words printed on these cards (point to word cards)*. Tell me all of the words you can remember that were on the cards."* Prompt with *"Any others?"* as necessary.

If the subject says he/she cannot recall any of the words, prompt once by asking "Just do the best you can. It's fine to guess if you are not sure*?*"

Discontinue if there is no response or if it's clear that the subject cannot recall any additional words after prompting.

NAMING

For this task, the subject is asked to name the 12 randomly presented real objects, with high (Flower, Bed, Whistle, Pencil), medium (Rattle, Mask, Scissors, Comb), and low (Wallet, Harmonica, Stethoscope, Tongs) frequency values.

The subject is also asked to name the fingers on his/her dominant hand.

Give the subject the following instructions verbatim: **"Now I am going to show you some objects. I want you to tell me what their names are. What is this called?"** (present object).

Continue to present objects in random order. The first question about each object should be: **"What is this called?"** or **"What is the name of this thing?"**

If the subject responds with the object's function say: **"Yes, that's what it does, but what is its name?"**

If the subject gives an incorrect response on the first attempt, the tester says the semantic cue for that object and gives the subject a second attempt.

General Administration Guidelines:

- ➤ Objects should be presented one at a time in random order.
- ➤ The tester should hold the objects in his/her hand when presenting them to the subject.
- ➤ Do not allow the subject to touch the objects. If the subject tries to hold or touch the items, tell the subject "**I need to hold this as part of the test**".
- ➤ The tester must not demonstrate how to use the objects.
- ➤ If the subject gives an incorrect name for an object on their first attempt, tell the subject "**Can you think of another name for it?"** and give the semantic cue below. If the subject says "**Rose"** for the flower on their first attempt, prompt the subject by asking **"Can you think of a more generic name for it?"** and give the semantic cue below**.** Score the subject's response following the prompt as their second attempt.
- ➤ If the subject does not respond, gives an incorrect response or says "I don't know" when the object is initially presented, the tester gives the clue for that item provided below. If the subject still does not respond or makes an error on the second attempt, score the item as incorrect and go on to the next object.

  ITEM CLUES
  Flower: grows in a garden
  Bed: used for sleeping in
  Whistle: makes a sound when you blow on it
  Pencil: used for writing
  Rattle: a baby's toy
  Mask: hides your face
  Scissors: cuts paper
  Comb: used on hair
  Wallet: holds your money
  Harmonica: a musical instrument
  Stethoscope: doctor uses it to listen to your heart
  Tongs: picks up food

- The subject is also asked to name the fingers of his/her dominant hand (e.g., thumb, index [pointer/forefinger], middle, ring finger, and pinky/little). To determine which hand is dominant, ask the subject which hand he/she writes with.

- Give the subject the following instructions verbatim: *"Now I am going to point to a part of your hand and I want you to tell me what it's called. What is this?"*

- For the fingers, if a query is necessary, say: *"What is another name for this finger?"*

- Give the subject a maximum of two attempts to name each finger.

- Acceptable names for fingers (see exceptions below):
  Thumb
  Index/Forefinger/Pointer
  Middle
  Ring
  Pinky/Little

- Numbers (e.g., first finger) are not acceptable and should be queried: say **"*What is another name for this finger?*"**

Scoring Guidelines:

The hardest part of scoring the naming task is determination of the range of correct responses based on the subject's cultural and geographical background. A response other than the name given on the response form should be scored as correct if it is a name that would be used by a non-demented person with the same cultural background as the subject.

- For example: the mask might be called a "false face" in some parts of the U.S.; the wallet might be called a "billfold" or the harmonica might be called a "mouth organ".

- Descriptions of the object and semantic or phonemic paraphasias should not be scored as correct. Examples of incorrect responses: "listening thing" for stethoscope, "cutter" for scissors, and "prongs" for tongs.

- It is recommended that each site use their best judgment in scoring an ambiguous or unusual response. Each site should document their decisions so that the rule can be applied consistently across visits. This document should be initiated prior to ADAS-cog testing to document any regionalisms, and then the site can add to this document during the study period.

IDEATIONAL PRAXIS

This task is designed to determine whether the subject can perform a familiar but complex sequence of actions.

There are 5 components to this task and each one is underlined in the instruction.

A standard long (business size) envelope, an 8.5" x 11" unlined sheet of paper and a pencil are placed in front of the subject. The envelope should be white and blank. There should be no markings on the envelope. For example, there should <u>not</u> be lines for return or recipient address, no other markings and no pre-printed text on the envelope.

Read the following instruction to the subject exactly as written:
"I want you to pretend you have written yourself a letter. Take this piece of paper, <u>fold it</u> so that it will fit into the envelope, and then <u>put it into the envelope</u>. Then, <u>seal the envelope</u>, <u>address the envelope</u> to yourself, and <u>show me where the stamp goes</u>."

After the first complete instruction only one additional reminder can be given for each component. The subject can be reminded of the task if he/she appears to not understand the instruction or struggles with it. If for example he/she writes one word as the address and indicates he/she is done, he/she would <u>not</u> get a reminder; however, if he/she doesn't understand the task, asks for a repetition or is trying to remember the instruction, a reminder can be given.

If a reminder is given, the tester should repeat the instruction only for the component of the task where the subject is having difficulty.

Only one reminder is allowed for each component.

For example: If the subject stops after folding the paper and putting it in the envelope, the tester should give one reminder on the next component: ***"Now seal the envelope."*** If the subject cannot do this part, move on and give one reminder on the next component***: "Now address the envelope to yourself."***

Impairment on this item should reflect dysfunction in executing a familiar, overlearned task only, and not recall difficulty.

If the subject performs a step incorrectly after prompting, the tester must not correct the error or assist in any way. The tester should continue with the next steps, regardless of whether the previous steps were correctly completed. It is important to not correct the subject's error to allow for subsequent monitoring.

> ➢ For example, if the subject folds the letter correctly, but puts it in the envelope in an orientation that prevents the envelope from being closed, or does not put it in the envelope at all, the tester should score "fold" as correct, and score "put it into the envelope" as incorrect. The tester should put the folded letter aside and then have the subject continue with the next step. At the end of the testing session, the tester should paperclip or staple the letter to the outside of the envelope to allow subsequent reviewers to note that this step was not correctly performed.

Have the subject indicate where the stamp goes by placing an "X" on the envelope. If the subject points to the location of the stamp but does not place an "X", the tester can note on the envelope the location where the subject pointed. It should be clear that the note is from the tester, with the tester's initials and date. This is considered a correct response.

<u>Scoring Guidelines:</u>

- The subject should be scored correct for any name on the address, even if it is not his/her own name. This portion of the ADAS-cog is not testing orientation to self.

- The positions of the address and the stamp on the envelope must be roughly in the "normal" familiar positions on the envelope.
    - To be scored as correct, the stamp must be roughly in the upper right hand corner of the non-flap (front) side of the envelope. This item should be scored as incorrect if the subject indicates that the stamp goes on the back of the envelope.

    - To be scored as correct, the address must be roughly in the middle field of the non-flap (front) side of the envelope. This item should be scored as incorrect if the subject writes the address on the back of the envelope or in the return address area.

- Regarding content, any address which would enable a postal worker to deliver the envelope in the local region is counted as correct, even though it might not contain the subject's current address. A fictional address that contains all of the correct elements would be scored as correct. The address should contain: name, street, city, and state. Zip code is not required.

    If the testing clinic is in a location where a full street number is not needed for postal delivery, the tester should document that for monitoring purposes.

ORIENTATION

This task is designed to determine how well oriented the subject is with regard to person, time and place.

The components of orientation are:
Person
Day of the Week
Date, Month, Year
Season
Time of Day
Place

The tester should ask the subject for each of these pieces of information one at a time.

Make sure no watches, clocks, calendars, etc. are visible to the subject.

One restatement of each question is allowed if the subject misunderstands the initial question (*e.g.,* if subject confuses day and date). Questions must not be restated based on an incorrect response but only if the subject does not understand the initial question or asks for a repetition.

A subject may reply to a question with two answers (e.g., *"I think it's Tuesday…..or Monday….no, wait. I think it's Tuesday."*). If this happens, the tester should prompt the subject for a decision (e.g., *"So which day do you think it is?").*

Scoring Guidelines:

- Date: +/- one day

- Time: +/- one hour

- Place: Partial name is acceptable (e.g., part of the name of hospital, clinic or professional building where the testing is taking place). The response must not be too generic; the terms "hospital", "clinic" or "doctor's office" are not enough to be scored as correct. It is recommended that each site create a list of acceptable responses for the name of their specific site, and have this list accessible by all ADAS-cog testers.

- Season: Within one week prior to onset or within two weeks of termination, as defined by the calendar date for each season.

- Month, Year, Day of the Week, and the subject's first and last name must be exactly correct.

WORD RECOGNITION

On this task the subject is given **one** trial to learn a list of 12 words, and **one** trial to identify these 12 words when mixed in among 12 other, distracter words.

Use the word cards that match the word list for each visit. The word list should be identified prior to each visit by reviewing the study case report forms.

Record the subject's YES/NO response for each word on the case report forms.

The learning part of this trial is similar to the learning part of WORD RECALL. The subject is asked to read each word aloud and try to remember it.

At the start of the learning trial, the tester gives the following instructions verbatim:
"I am going to show you some words printed on these cards. I want you to read each word out loud and try to remember it."

The word cards must be presented to the subject at an even, non-rushed pace. A suggested (but not required) pace is to show each word card for approximately 2 seconds, although this may be necessary to shorten for subjects who are fast readers or extend for subjects who are slow readers or who need additional time. The primary focus is to make sure that the subject reads each card aloud, is not rushed, and that the word cards are presented at an even pace.

The tester can prompt with: ***"Read it out loud and try to remember it"*** as necessary.

During the learning trial, if the subject cannot read the word, the tester says the word out loud and has the subject repeat it. In some cases, the tester may have to say all of the words and have the subject repeat them. Make sure the subject looks at each word while repeating it.

If the subject misreads a word, the tester asks the subject to re-read the word. If the subject cannot read the word, the tester says the word out loud and has the subject repeat it. The tester must not let the subject misread a word and continue without correcting the subject.

At the end of the learning portion of a trial the tester says the following to the subject verbatim*:*
"Now I'm going to show you another set of words. Some of the words were on the word cards I just showed you and others are new. For each word I want you to tell me if it is one of the words I just showed you."

The tester shows the first word and says either: ***"Is this one of the words I showed you before, yes or no?"*** or*:* ***"Did I show you this word before?"***

The same question is asked before the second test word. For the remaining test words from the third word on, the tester should say: ***"How about this one?"***

If after the first two words the subject does not remember the task (e.g., reads the word rather than responding "Yes" or "No") then the tester should repeat or rephrase the entire question and make a note in the Reminders Given column on the worksheet that the subject had to be reminded of the task instructions.

If the subject appears to have fallen into a response set (*i.e.,* saying "Yes" to every word or saying "No" to every word), then the test instructions should be repeated and a note made in the Reminders Given column. It may be unclear if the subject has fallen into a response set or if he/she is responding appropriately (e.g., doesn't remember any of the words so is saying "No" to everything). In this case the examiner should ask the subject, "When you say (Yes or No), what do you mean by that?" If the subject is able to describe the task appropriately then continue to the next word and do **not** count this as a reminder. If he/she is unable to demonstrate he/she understands the task, then reinstruct and mark in the Reminders Given column.

If the subject does not respond with "Yes" or "No", but says "Old" or "New" or "I have (have not) seen that before", and there is unequivocal understanding of what the subject is communicating, this is acceptable. No clarification is needed and a Reminder should not be marked.

Scoring Guidelines:

If the subject requires a reminder, place a check mark (✓) in the reminder column.

Score a reminder if instructions must be repeated if the subject:
- Falls into a response set.
- Forgets the requirements or does not answer to a word.
- Requests that the tester repeat the instructions.

If the study worksheet does not have a reminder column, write an "R" next to the word.

Since reminders are <u>always</u> provided for the first two words of the recognition trial and <u>not</u> counted, the number of reminders ranges from 0-22.

REMEMBERING WORD RECOGNITION TEST INSTRUCTIONS

This item is scored solely on the subject's performance on the Word Recognition Task. The rater should review the Reminders Given column, and select the score that corresponds to the number of reminders given after the first two words.

Since the rater gives reminders for the first two words as part of the task instructions, these first two reminders are not included in the score; only reminders given after the second word are included in the scoring range of 0 – 22.

GLOBAL LANGUAGE ITEMS:

General Guidelines:

- A large portion of the data for rating these items will come from the initial open-ended conversation.

- There will be spontaneous verbal interactions and conversations during the testing, and they also are to be considered in making these ratings.

- Follow the specific instructions below as to what <u>not</u> to include in the global ratings (e.g., do not rate errors in the COMMANDS task in the rating of COMPREHENSION OF SPOKEN LANGUAGE) as impairment would then be rated twice.

- If the DELAYED WORD RECALL, NUMBER CANCELLATION and MAZE Tasks are included, the subject's language during these three tasks should NOT be included in rating the subjective language items (WORD FINDING DIFFICULTY, COMPREHENSION and SPOKEN LANGUAGE ABILITY).

COMPREHENSION OF SPOKEN LANGUAGE

This item evaluates the subject's ability to understand what is being said to them.

Do not include the subject's performance on the COMMANDS and/or IDEATIONAL PRAXIS tasks when scoring this item.

Example of comprehension impairment:

During the opening conversation the tester asked the subject *"How did you get here today?"*

The subject responded: *"What day is today?"*

Scoring: The scoring is based on the frequency of such comprehension errors and on the degree of effort (e.g., repetition, rephrasing, etc.) the tester needs to make in order to be understood.

WORD-FINDING DIFFICULTY

Along with SPOKEN LANGUAGE ABILITY, this item rates impairment in expressive language, i.e., language that is spoken by the subject. WORD-FINDING DIFFICULTY rates *only word finding difficulty*, whereas SPOKEN LANGUAGE ABILITY is a more global rating of the quality of verbal communication.

To rate WORD FINDING DIFFICULTY, the tester must determine whether the subject has difficulty in finding the desired word in spontaneous speech. Listen for compensatory strategies subjects often use when having difficulty finding words, such as circumlocution, i.e., giving explanatory phrases or nearly satisfactory synonyms.

Do not include performance on the NAMING task in this rating. A major part of this rating is based upon the tester's opening conversation with the subject.

Example of word finding impairment:
During the opening conversation, the tester asked the subject "*How did you get here today?*"

The subject responded: "*Um, uh…in the…um….train…and the uh… train and car…and uh….what do you call those yellow cars? You see, that's where the…. yellow car….the car should be……the car…yes….it's a yellow car…*"

Scoring: Based on this example as well as conversation during the testing session, this subject was scored as:

4=moderately severe: frequent loss of words without compensation

During the example above and throughout the test session, the subject lost words without compensation frequently. However, he did use a range of content words, so his speech was not empty. A rating of 5 (severe) is reserved for very advanced subjects who have only one or two words left, if any.

SPOKEN LANGUAGE ABILITY

This item is a global rating of the quality of the subject's verbal communication i.e., clarity of speech, difficulty in making oneself understood with words.

Quantity of speech and word finding difficulty are not rated on this item, if the subject can make themself clearly understood. More specifically, this item is an evaluation of the subject's language ability in communicating a thought, and **not** deficiencies in the subject's mechanics of speech. For example, slurring of words should not be considered in scoring this item as long as the words are understandable to the tester.

It should be noted that the higher scores (4-5) on this item are reserved for subjects whose expressive language abilities are impaired to such an extent that they seldom communicate without difficulty.

Example of impairment:
During the opening conversation, the tester asked the subject "***How did you get here today?***"

The subject responded: "***Um, uh…in the…um….train…and the uh… train and car…and uh….what do you call those yellow cars? You see, that's where the…. yellow car….the car should be……the car…yes….it's a yellow car…***"

Scoring: Based on this example and similar examples during the testing session, this subject was scored as:

4 = moderately severe: subject has difficulty more than 50% of the time

During the example above and throughout the test session, the subject had a great deal of difficulty in formulating the speech to express his ideas. However, he was able to make himself understood some of the time, his speech was not empty and he was not mute.

CONCENTRATION/DISTRACTIBILITY (Optional item)

This item rates the frequency with which the subject is restless, distracted by irrelevant stimuli and/or must be reoriented to the ongoing task because of loss of train of thought or the subject appears to be caught up in his/her own thoughts. Memory impairments are not scored on this item.

MAZE TASK (EXECUTIVE FUNCTION) (Optional Item)

This task includes an example/practice maze to familiarize the subject with the task and the test maze, which is scored. The example is mandatory and must be used with each administration.

Instructions for the Mandatory Practice Maze:
Present the practice maze in the correct orientation in front of the subject. Indicate where to begin and where to exit the maze.

This portion of the task is not timed and should be used to re-explain as necessary to ensure good understanding of the task. The subject can be assisted through this maze to be sure he/she understands the directions. Follow the maze instructions below.

Say the following instructions to the subject verbatim, *"I want you to find the route from the start to the exit of this maze. Put your pencil here"* (point to the start) *"at the start. Here"* (point to the exit) *"is the exit of the maze. Try not to run into dead ends or cross solid lines. Please keep your pencil on the paper at all times."* If the subject lifts his/her pencil, remind him/her to keep the pencil on the page.

Once the subject has completed the Mandatory Practice Maze, proceed to the Scored Maze.

Instructions for the Scored Maze :
Use the maze that is specified for each visit. Each maze will have an indicator on it to identify the visit at which it should be administered.

Present the maze in the correct orientation in front of the subject. Repeat the maze instructions above. Begin timing as soon as the instructions are read and after prompting the subject with **"*Ready, Go.*"** There is a limit of 4 minutes (240 seconds) for the maze.

Help may be given once during the maze if the subject hits a dead end, goes more than halfway into a dead end, or crosses a solid line. For example, if the subject hits one dead end, bring him/her back to the point of the incorrect decision and suggest that he/she **"*try another decision.*"** If the subject makes two errors or hits two dead ends, record the time at which the second error occurred and discontinue the test.

Scoring Guidelines:

- Sloppiness (e.g., cutting corners or accidentally crossing a line) should not be scored as an error.

- Occasionally, there may be slight entry into a dead end. This should not be scored as an error. However, in those cases where a subject enters into a blind alley at least half the length of the dead end, an error should be counted.

- In the event that the maze is completed with fewer than two errors at exactly 240 seconds, record 239 seconds as the time of completion. The recording of 240 seconds will be used only to indicate a completion failure.

- Record the number of errors (maximum of 2) and time of completion. Time limit = 240 seconds.

NUMBER CANCELLATION TASK

This task includes an example/practice form to familiarize the subject with the task and the test form, which is scored. The example is mandatory and must be used with each administration.

Instructions for Mandatory Practice Number Cancellation Task:

Place the practice form face up in front of the subject. Say**: "*On the top of this page are two numbers. In this row of numbers you will find these numbers mixed in with other numbers. I'd like you to begin here"* (point to the beginning of the line**)** *"and cross off each number that matches either of the two numbers at the top of the page. Please work as quickly as you can."*

Correct any errors and re-explain as necessary to ensure understanding of the task.

Discontinue the example after 30 seconds or when the subject finishes the line, whichever is first. The example task is not scored.

Instructions for Scored Number Cancellation Task:

Use the Number Cancellation Task that is specified for each visit. Each Number Cancellation Task will have an indicator on it to identify the visit at which it should be administered.

Place the test form face up in front of the subject. Say the following instructions to the subject verbatim**: "*On the top of this page are two numbers. Throughout this page you will find these numbers mixed in with other numbers. I'd like you to begin here"* (point to the beginning of the first line**)** *"and going across (line by line), cross off each number that matches either of the two numbers at the top of the page. Please work as quickly as you can."*

Erasing is not allowed. If the subject attempts to erase, just ask him/her to leave that target and continue to look for the next correct target.

If the subject stops at the end of a line, before the last line, and there is still time left, ask them to *"keep going."*

Discontinue the task after 45 seconds or when the subject finishes the last line, whichever is first.

You should point to the top of the page and remind the subject of the task if:

1. The subject crosses off an incorrect number more than three times at the beginning of the task (in the first row).

2. The subject appears to be stuck, and upon questioning, cannot explain the task being performed.

3. It is apparent that only one of two targets is being crossed off.

Scoring Guidelines:

- Record the number of targets crossed off.

- Record the number of errors (non-targets crossed off).

- Record the number of times the subject was reminded of the task and/or redirected to the task.

ADAS-COG SCORING GUIDE

The standard ADAS-cog includes the following 11 items, with a Total scoring range of 0 – 70. The ADAS score is based on the number of errors made in each item. A score of 70 represents the most severe impairment and 0 represents the least impairment.

The CRF should collect the subject's response for each item: Correct or Incorrect for tasks, and Yes or No for each word on Word Recall and Recognition. The item-specific data should be entered into a database and the computer then calculates the score based on the item-specific responses.

The scoring form (hard copy or electronic) must include the correct word lists to be used at each visit.

1. WORD RECALL TASK

On this task, the subject is given three trials to learn a list of ten high-frequency, high-imagery nouns. The ten words are printed in block letters on white cards.

Scoring:
The subject's score is the mean number of words **not** recalled across the three trials (maximum score = 10).

The score should be calculated to two decimal places.

If **any** of the three trials is not completed for any reason, then the task is considered incomplete and a missing data code must be assigned to the item score.

2. COMMANDS

This task is designed to assess receptive speech. The subject is asked to carry out five separate commands with 1 to 5 steps per command.

Scoring:
0 = all commands correct
1 = 1 command incorrect
2 = 2 commands incorrect
3 = 3 commands incorrect
4 = 4 commands incorrect
    5   = all 5 commands incorrect

3. CONSTRUCTIONAL PRAXIS

This test assesses the subject's ability to copy four geometric forms ranging from a very simple one (circle) to a fairly difficult one (cube).

Scoring:
0 = all 4 drawings correct
1 = 1 form drawn incorrectly

2 = 2 forms drawn incorrectly
3 = 3 forms drawn incorrectly
4 = 4 forms drawn incorrectly (but one or more side/section of at least one shape drawn)
5 = No figures drawn, no recognizable attempt at drawing any side/section of any figure

4. NAMING TASK

For this task, the subject is asked to name 12 randomly presented real objects, with high (flower, bed, whistle, pencil), medium (rattle, mask, scissors, comb) and low (wallet, harmonica, stethoscope, tongs) frequency values. The subject is also asked to name the fingers of his/her dominant hand.

Scoring:
0 = 0-2 items (objects and fingers) named incorrectly
1 = 3-5 items (objects and fingers) named incorrectly
2 = 6-8 items (objects and fingers) named incorrectly
3 = 9-11 items (objects and fingers) named incorrectly
4 = 12-14 items (objects and fingers) named incorrectly
5 = 15-17 items (objects and fingers) named incorrectly

5. IDEATIONAL PRAXIS

This task is designed to determine whether the subject can perform a familiar but complex sequence of actions.

Scoring:
0 = all components performed correctly
1 = failure to perform 1 component
2 = failure to perform 2 components
3 = failure to perform 3 components
4 = failure to perform 4 components
5 = failure to perform 5 components

6. ORIENTATION

In this task, the subject is asked 8 questions regarding their orientation to person, place and time.

Scoring:
One point is given for each incorrect response (maximum = 8).

7. WORD RECOGNITION

On this task the subject is given one trial to learn a list of 12 words.

Scoring:
There are 24 opportunities for error in the one trial of recognition, including the 12 learning (target) words and 12 distractor words. The subject could incorrectly identify a distracter word as one of the learning words they were just shown, or they could incorrectly say they were not shown a learning word. While all incorrect responses should be noted on the form by the rater

(there are 0-24 errors possible in the trial), the maximum error score is 12. If the subject makes 13-24 errors, the score for the trial remains at 12. Dr. Mohs has stated that the maximum error score is 12 per trial as this is the average number of errors that would be made by a person guessing randomly.

8. REMEMBERING WORD RECOGNITION TEST INSTRUCTIONS

This item evaluates the subject's ability to remember the instructions given for the Word Recognition task. The score is based on the number of instruction repetitions only after the first two words. No other tasks or aspects of the ADAS-cog are considered when scoring this item.

Scoring:
 0 = subject never needs extra reminders of instructions
 1 = very mild: forgets **once**
 2 = mild: must be reminded **2** times
 3 = moderate: must be reminded **3** or **4** times
 4 = moderately severe: must be reminded **5** or **6** times
 5 = severe: must be reminded **7** or more times

9. COMPREHENSION OF SPOKEN LANGUAGE

This item evaluates the subject's ability to understand spoken language.

Scoring:
0 = None: subject understands.
1 = Very Mild: one or two instances of misunderstanding.
2 = Mild: 3–5 instances of misunderstanding.
3 = Moderate: requires several repetitions and rephrasings.
4 = Moderately Severe: subject only occasionally responds correctly; i.e., yes-or-no questions.
5 = Severe: subject rarely responds to questions appropriately; not due to poverty of speech.

10. WORD-FINDING DIFFICULTY IN SPONTANEOUS SPEECH

Along with Spoken Language Ability, this item rates impairment in expressive speech, but it rates only word finding difficulty, whereas Spoken Language Ability is a more global rating of the extent to which the subject can communicate verbally.

Scoring:
 0=no evidence of word finding difficulty in spontaneous speech
 1=very mild: 1 or 2 instances, not clinically significant
 2=mild: noticeable circumlocution or synonym substitution
 3=moderate: loss of words without compensation on occasion
 4=moderately severe: frequent loss of words without compensation
 5=severe: nearly total loss of content of words; speech sounds empty; 1-2 word utterances

11. SPOKEN LANGUAGE ABILITY

This item is a global rating of the quality of speech, i.e., lack of clarity, difficulty in making oneself understood.

Scoring:

0 = subject speaks clearly and/or is understandable
1 = very mild: one instance of lack of understandability
2 = mild: subject has difficulty less than 25% of the time
3 = moderate: subject has difficulty 25-50% of the time
4 = moderately severe: subject has difficulty more than 50% of the time
5 = severe: one or two word utterances; fluent, but empty speech; mute

Optional Additional Items

These items may be added to the ADAS-cog at the sponsor's discretion:

CONCENTRATION/DISTRACTIBILITY

If added, this item adds 5 points to the possible total ADAS-cog score.

This item rates the frequency with which the subject is distracted by irrelevant stimuli and/or must be reoriented to the ongoing task because of loss of train of thought or the subject appears to be caught up in his/her own thoughts. Memory impairments are not scored on this item.

Scoring:

0 = no evidence of poor concentration or distractibility
1 = very mild: one instance of poor concentration
2 = mild: 2-3 instances of poor concentration/distractibility; signs of restlessness and inattentiveness
3 = moderate: 4-5 instances during interview
4 = moderately severe: poor concentration/distractibility throughout much of interview
5 = severe: extreme difficulty in concentration and extremely distractible, unable to complete Tasks

DELAYED RECALL

If added, this item adds 10 points to the possible total ADAS-cog score.

In this task, the subject is asked to recall the 10 words presented during the Word Recall task. There is one trial of recall. This task is administered following completion of the COMMANDS and CONSTRUCTIONAL PRAXIS items**.**

Scoring:

The score is the number of words not recalled (Maximum score = 10).

MAZE TASK/EXECUTIVE FUNCTION

In this task, the subject is asked to find their way through a maze with a pencil, without hitting a dead end. The subject is told they may pause to make a decision. The task is halted after the subject makes two errors or 240 seconds has elapsed. An example maze is given for practice before the subject attempts the test maze.

Scoring:
The score is the time to completion or the time to making the second error (maximum time = 240 seconds).

The score from the practice task is not included. The score is calculated only from the timed performance task.

Note: We are currently reviewing the ADCS algorithm for condensing Executive Funciton scores into a 5 point scale and will add the final scale after review and consultation with Dr. Mohs.

NUMBER CANCELLATION TASK

In this task, the subject is asked to cross off as many target digits as possible in 45 seconds.

Scoring:
The score is the number of target items correctly crossed off in 45 seconds, minus the number of incorrectly crossed off items, and minus the number of reminders given.
The score from the practice task is not included. The score is calculated only from the timed performance task.

Note: We are currently reviewing the ADCS algorithm for condensing Number Cancellation scores into a 5 point scale and will add the final scale after review and consultation with Dr. Mohs.

Alzheimer's Disease Cooperative Study

ADAS – Cognitive Behavior
SAMPLE FORM – Page 1 of 4

Center Name	Patient Number	Patient Initials	Examiner Initials	Examination Date
	P **R** – ☐☐☐ – ☐☐	☐☐☐	☐☐☐	☐☐☐☐☐☐ Month Day Year

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1. WORD RECALL TASK: Indicate the total number of *correct* responses for each trial

Trial 1	Trial 2	Trial 3

2. NAMING OBJECTS AND FINGERS: Check each object/finger named *correctly* or check "NONE."

NONE ☐

☐ Flower ☐ Rattle ☐ Wallet
☐ Bed ☐ Mask ☐ Harmonica
☐ Whistle ☐ Scissors ☐ Stethoscope
☐ Pencil ☐ Comb ☐ Tongs

☐ Thumb ☐ Index ☐ Ring
☐ Pinky ☐ Middle

3. COMMANDS: Check each command performed *correctly* or check "NONE." NONE ☐

☐ Make a fist.
☐ Point to the ceiling, then to the floor.
☐ Put the pencil on top of the card, then put it back.
☐ Put the watch on the other side of the pencil and turn over the card.
☐ Tap each shoulder twice with two fingers keeping your eyes shut.

4. CONSTRUCTIONAL PRAXIS: Check each figure drawn *correctly*.

☐ None: attempted but drew no forms correctly.
☐ Patient drew no forms; scribbled; wrote words.
☐ Circle
☐ Two overlapping rectangles
☐ Rhombus
☐ Cube

5. IDEATIONAL PRAXIS: Check each step completed *correctly* or check "NONE" NONE ☐
☐ Fold a letter.
☐ Put letter in envelope.
☐ Seal envelope.
☐ Address envelope.
☐ Indicate where stamp goes.

6. ORIENTATION: Check each item answered *correctly* or check "NONE." NONE ☐
☐ Full name ☐ Day
☐ Month ☐ Season
☐ Date ☐ Place
☐ Year ☐ Time of day

---

7. WORD RECOGNITION TASK: Scoring will be done by the A.D.C.S. Data Coordinating Center.

Trial 1	Trial 2	Trial 3
☒	☒	☒

8. LANGUAGE: Check level of impairment.
☐ **None**: patient speaks clearly and/or is understandable.
☐ **Very Mild**: one instance of lack of understandability.
☐ **Mild**: patient has difficulty < 25% of the time.
☐ **Moderate**: patient has difficulty 25–50% of the time.
☐ **Moderately Severe**: patient has difficulty more than 50% of the time.
☐ **Severe**: one- or two-word utterances; fluent, but empty speech; mute.

9. COMPREHENSION OF SPOKEN LANGUAGE: Check level of impairment
☐ **None**: patient understands.
☐ **Very Mild**: one instance of misunderstanding.
☐ **Mild**: 3–5 instances of misunderstanding.
☐ **Moderate**: requires several repetitions and rephrasing.
☐ **Moderately Severe**: patient only occasionally responds correctly; i.e., yes – no questions.
☐ **Severe**: patient rarely responds to questions appropriately; not due to poverty of speech.

10. WORD FINDING DIFFICULTY: Check one response.
☐ **None.**
☐ **Very Mild**: 1 or 2 instances, not clinically significant.
☐ **Mild**: noticeable circumlocution or synonym substitution.
☐ **Moderate**: loss of words without compensation on occasion.
☐ **Moderately Severe**: frequent loss of words without compensation.
☐ **Severe**: nearly total loss of content words; speech sounds empty; 1– to 2-word utterances.

11. REMEMBERING TEST INSTRUCTIONS: Check level of impairment.
☐ **None**.
☐ **Very Mild**: forgets once.
☐ **Mild**: must be reminded 2 times.
☐ **Moderate**: must be reminded 3–4 times.
☐ **Moderately Severe**: must be reminded 5–6 times
☐ **Severe**: must be reminded 7 or more times.

ADAS – Word Recall
SAMPLE FORM – Page 2 of 4

Center Name	Patient Number	Patient Initials	Examiner Initials	Examination Date
	P R – ☐ ☐ – ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ Month Day Year

Present Word List #2.

Check EACH word correctly recalled.

TRIAL 1		TRIAL 2		TRIAL 3	
BOTTLE		FOREST		GIRL	
POTATO		TEMPLE		TEMPLE	
GIRL		BOTTLE		POTATO	
TEMPLE		STAR		ANIMAL	
STAR		POTATO		FOREST	
ANIMAL		GIRL		LAKE	
FOREST		CLOCK		OFFICE	
LAKE		ANIMAL		CLOCK	
CLOCK		LAKE		BOTTLE	
OFFICE		OFFICE		STAR	
TOTAL	☐	**TOTAL**	☐	**TOTAL**	☐

Indicate total number of words correctly recalled for <u>EACH</u> trial on the ADAS Cognitive Behavior Form.

12. Executive Function (Maze):

a. ☐☐ number of errors

b. ☐☐ time at completion or second error
(total seconds)

13. Number Cancellation:

a. ☐☐ number of targets hit
(Range: 0 - 40)

b. ☐☐ number of errors

c. ☐☐ number of times to remind of task

If any item(s) 1-13 are incomplete or not done, please specify reason:

☐ Subject too cognitively impaired to complete

☐ Subject was unable to complete for physical reasons

☐ Subject refused

☐ Not Done, for reason other than above explain: _____
_____
_____
_____
_____

Center Name	Patient Number	Patient Initials	Examiner Initials	Examination Date
	P R – ☐☐ – ☐☐	☐☐☐	☐☐☐	☐☐☐☐☐☐
				Month Day Year

Instructions: Say to the patient, **"NOW I WANT YOU TO TRY TO REMEMBER THE WORDS THAT I SHOWED YOU EARLIER ON PRINTED CARDS. CAN YOU TELL ME ANY OF THOSE WORDS?"**

Allow a maximum of two minutes for recall.

check EACH word correctly recalled.

BOTTLE	☐
POTATO	☐
GIRL	☐
TEMPLE	☐
STAR	☐
ANIMAL	☐
FOREST	☐
LAKE	☐
CLOCK	☐
OFFICE	☐
TOTAL	☐

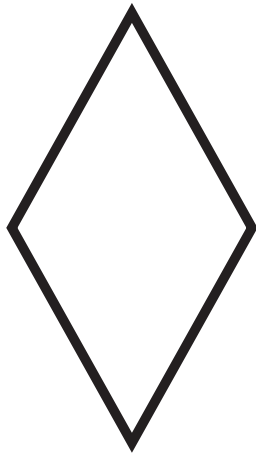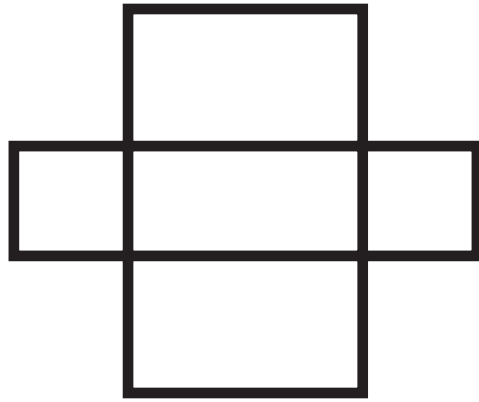| Center Name	Patient Number	Patient Initials	Examiner Initials	Examination Date
	P R – ☐☐ – ☐☐	☐☐☐	☐☐☐	☐☐ ☐☐ ☐☐ Month Day Year

Present Word List #2.

Check subject's response for each word. Subject should respond "yes" to original words which are bolded. INCORRECT responses are shaded. Three trials of reading and recognition are given.
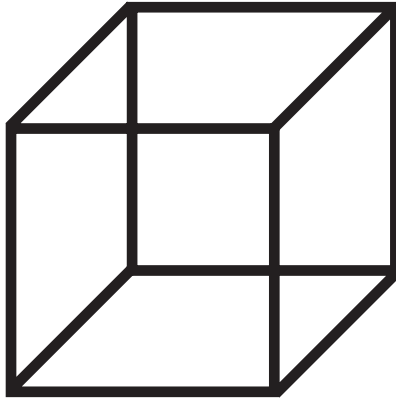
(Shaded/checked cell indicated by ▓)

Word	Yes	No
COST		▓
NATION	▓	
CHIMNEY		▓
SPARROW	▓	
DAMAGES		▓
TRAFFIC	▓	
SANDWICH		▓
SERVICE	▓	
SHELL	▓	
SOLUTION		▓
YARD	▓	
TUBE		▓
BODY	▓	
GROUND	▓	
STICK	▓	
ENGINE		▓
RICHES		▓
GRAVITY		▓
SUMMER	▓	
WISDOM	▓	
MAN	▓	
MEAL		▓
PASSENGER		▓
ACID		▓

Word	Yes	No
BATTLE	▓	
MUCH	▓	
TUBE		▓
TEAM	▓	
COPY	▓	
ENGINE		▓
GRAVITY		▓
COST		▓
JAR	▓	
DISTANCE	▓	
TRIUMPH	▓	
TEMPER	▓	
SENTENCE	▓	
FOX	▓	
PASSENGER		▓
SANDWICH		▓
SOLUTION		▓
WHISTLE	▓	
CHIMNEY		▓
UNION	▓	
ACID		▓
MEAL		▓
DAMAGES		▓
RICHES		▓

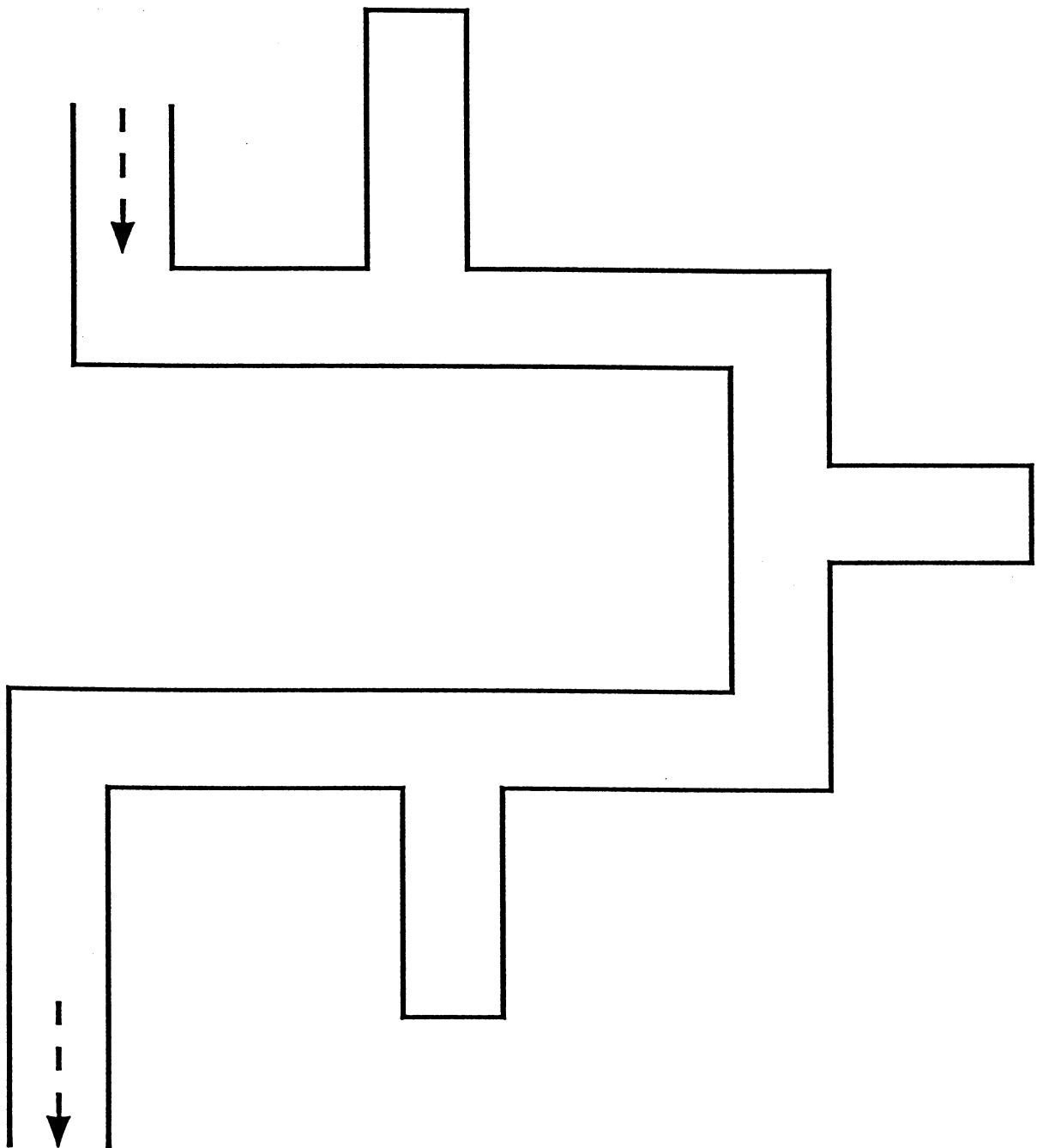| Word	Yes	No
VISITOR	▓	
ACID		▓
SPEAK	▓	
SOLUTION		▓
NAME	▓	
MEAL		▓
LINE	▓	
BILL	▓	
CHIMNEY		▓
ENGINE		▓
WEALTH	▓	
TUBE		▓
IMAGE	▓	
COST		▓
SANDWICH		▓
DAMAGES		▓
ELEPHANT	▓	
RICHES		▓
GRAVITY		▓
FUTURE	▓	
PASSENGER		▓
STRING	▓	
BANNER	▓	
BERRY	▓	

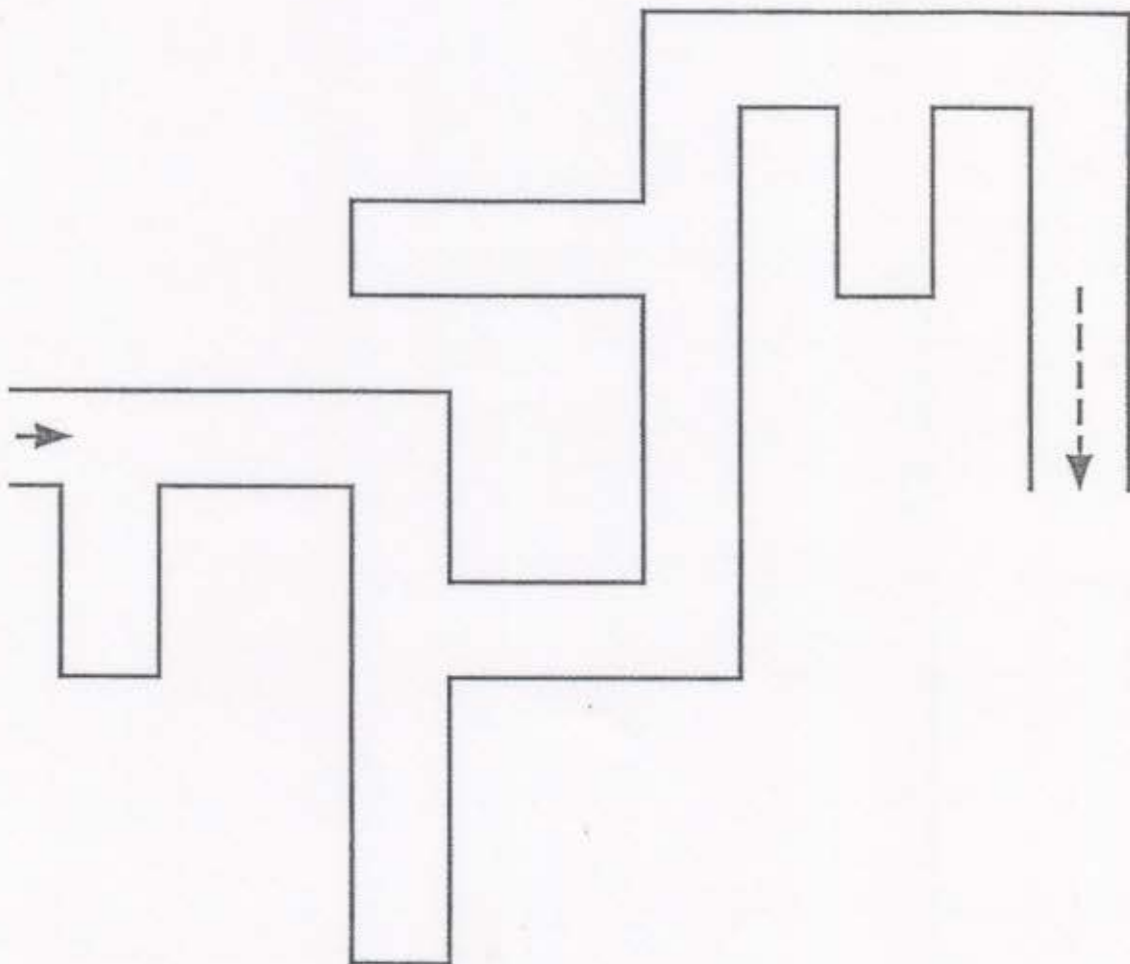*see procedures manual for further clarification
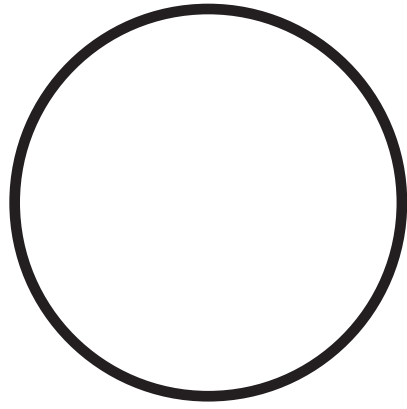
Example

"6" and "1"

1 2 2 4 5 9 5 6 6 9 1 9 6 7 8 3 2 4 3 7 2 1 4 2 2 1 2 6 6 3

Example for use with versions A, B, and C

"2" and "8"

6 2 6 7 2 3 1 3 8 5 5 5 8 1 7 9 1 7 2 7 4 5 7 6 1 3 9 6 2 1

9 4 6 9 5 7 1 8 9 5 6 5 4 2 7 1 5 2 7 9 1 7 1 1 1 4 2 8 5 8

1 9 7 9 7 1 6 7 8 6 5 5 7 2 9 6 5 9 5 4 7 3 2 4 5 6 1 4 3 4

4 6 8 4 1 4 1 7 2 4 7 1 7 6 7 5 4 9 8 7 5 6 2 1 6 9 3 1 4 8

7 8 6 7 1 7 1 3 4 3 9 8 6 5 1 8 3 4 2 6 9 9 6 1 6 4 3 9 3 4

4 9 3 8 7 2 5 4 4 8 7 6 4 1 4 7 2 6 8 7 5 6 3 2 6 4 4 6 8 4

4 8 3 4 7 5 4 4 7 9 7 3 6 8 6 5 4 7 4 3 4 9 2 5 3 5 4 7 3 5

4 9 3 3 8 1 8 4 2 6 5 6 6 1 7 2 4 2 9 7 9 7 6 1 5 1 4 1 9 8

A