KNIGHT ADRC PSYCHOMETRIC TEST CODEBOOK

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Standard Knight ADRC Psychometric Battery (alphabetical order)

Test	Variable Name
Benson Complex Figure Copy, Immediate	UDSBENTC
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Recognition	UDSBENRS
Category Fluency (Animals, Vegetables)	ANIMALS, VEG
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Digit Symbol	DIGSYM
Wechsler Adult Intelligence Scale- III	
Letter-Number Sequencing	LETTNUM
Wechsler Memory Scale	
Associate Learning	PSY010,PSY011
Mental Control	PSY003

Adult Children Study (ACS) Psychometric Battery (alphabetical order)
(This battery is used for participants who begin the ACS study before age 65; participants who begin at 65 years or older receive the standard Knight ADRC psychometric battery)

Auditory Consonant Trigrams		trigrams
Benson Complex Figure Copy,	Immediate	UDSBENTC
	Delayed	UDSBENTD
	Recognition	UDSBENRS
Category Fluency (Animals)		ANIMALS
Color Only Stroop		stroopcolor

Free and Cued Selective Reminding Test	SRTfree
Handedness	
Simon Task	simonnumber
Switching Task (CVOE)	switchmixed
Stroop Switch	stroopswitch
Tapping Task	tapping
Trailmaking A and B	TMA, TRAILB
Wechsler Adult Intelligence Scale-R	
Digit Symbol	DIGSYM
Wechsler Adult Intelligence Scale-III	
Block Design	block
Information	inform
Similarities	SIM
Wechsler Memory Scale-III	
Letter-Number Sequencing	lettnum
Logical Memory I (Immediate)	logmem
and II (Delayed)	lmdelay
Verbal Paired Associates	pairs
Woodcock-Johnson Spatial Relations	spatial

Tests No Longer Used

American Version of Nelson Adult Reading Test (AMNART)
Bender Gestalt
Benton Line Orientation
Benton Visual Form Discrimination
Benton Visual Retention Test – Forms C and D
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- Rhythm

Positive and Negative Affect Schedule (PANAS)
Reaction Time
Reading Span
Sentence Formulation

Sentence Generation
Stroop
Syntax in Written Sentences
Token Test
Visual Neglect
Wechsler Adult Intelligence Scale
    Comprehension
    Picture Arrangement
Weschsler Adult Intelligence Scale –R
    Digit Symbol, UDS enlarged version
        Wechsler Adult Intelligence Scale III
    Similarities
Wechsler Memory Scale
    Digit Span
    Information
    Logical Memory
    Orientation
    (Sentence Recall
Wechsler Memory Scale-R
    Digit Span
    Logical Memory Story A Immediate and Delayed
    Logical Memory Story A – Verbatim
Word Fluency
Wisconsin Card Sorting Test
Zung Depression Scale

PSYCHOMETRIC BATTERY

Knight Alzheimer's Disease Research Center, Washington University, St. Louis, Missouri

Each entry in the SAS data set has a brief variable name as shown at the left margin followed by the descriptive, shorthand label used in the SAS data set. For example, Trailmaking A is:

TRAILA The number of seconds spent in connecting 25 numbered circles in sequential order.

That is, its variable name is TRAILA, and its shorthand label is Trailmaking A.

Following each variable name and label is the date the test was first included. Tests no longer given are listed in the Tests No Longer Used section. Some tests have been modified; the date such modifications occurred, as well as a description of what was done, are indicated. References for standard tests are included. The range of scores on the variable is specified and the direction of quantitative scales is indicated (e.g., high score = good).

The order of administration of the tests in the battery has changed over time. See files for time period of interest.

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MISSING DATA CODE

There are a variety of reasons why participants cannot always complete testing. The following codes are used to indicate what happened.

I INJURY/ILLNESS refers to missing data due to broken finger, amputated digit, or an illness like polyneuropathy, arthritis, stroke, Parkinson's disease, deafness, or severe loss of vision. This code is related to motor tasks such as writing or other movements. This should not be confused with the next code, C.

C COULDN'T DO because of memory loss or cognitive confusion. The tester has to attempt to administer the task to use this code.

M MISSING is coded when the tester chose not to give a measure because the participant was uncooperative, agitated, hostile, had already demonstrated severe language disturbance, or the test battery was terminated prior to completion because of time constraints.

R REFUSED is the code used when the tester tried to administer the task but the participant refused to do it, (e.g., "I don't want to do that").

. Originally a DOT was used to indicate missing data for any reason. Therefore, data from earlier times of testing will have this generic code.

T TREMOR is observed by the tester as the reason measures are not completed, specifically in the case of individuals in the Parkinson's disease sample but may be used with any tremor.

CODE FOR COMPUTERIZED TESTS

D No computerized test due to technical difficulties.

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IDENTIFICATION INFORMATION

ID Case identification number

PSY_DATE Date of psychometric assessment.

TESTER Identification of tester. Coded by number.

PLACE Where tested

1 = MAP office

2 = home

3 = nursing home

4 = hospital

5 = daycare

ADDITIONAL AVAILABLE INFORMATION

BIRTH Date of birth

EDUC Years of education

GENDER Sex of participant 1 = man 2 = woman

SES Socioeconomic status (Hollingshead index)

Range = 1 - 5 1 = high status

TESTDATE Date of clinical assessment

CDR Clinical Dementia Rating from clinical assessment by physician (name)

0 = not demented
0.5 = uncertain or very mild dementia
1 = mild dementia
2 = moderate dementia
3 = severe dementia

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Knight ADRC Standard Psychometric Battery
UDS v3 C2-based
(Listed alphabetically)

BENSON COMPLEX FIGURE

Date added: 3/16/2015

References: Possin, KL, Laluz VR, Alcantar OZ, Miller BL, Kramer JH. Distinct neuroanatomical substrates and cognitive mechanisms of figure copy performance in Alzheimer's disease and behavioral variant frontotemporal dementia. Neuropsychologia. 2011 Jan; 49(1):43-8.

In this task, the participant is presented with a figure composed of geometric shapes and asked to reproduce the figure on the same page. The purpose of this test is to assess the participant's visuoconstructional and visual memory functions. The accuracy of each shape and its placement is recorded. Scored according to NACC UDS 3 scoring rules.

BENSON FIGURE COPY

UDSBENTC Total score for copying the Benson figure

Range: 0-17 High Score = good

BENSON FIGURE RECALL

UDSBENTD Total score for drawing the Benson figure from memory following delay

Range: 0-17 High Score = good

UDSBENRS Recognition of original stimulus among four options

Range: 0-1 High Score = good

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CATEGORY FLUENCY - ANIMALS AND VEGETABLES

Date added: 9/1/05 Link to previous version used 3/17/97 to 9/1/05

Reference: Goodglass, H. & Kaplan, E., (1983). *Boston Diagnostic Aphasia Examination Booklet,* III, ORAL EXPRESSION, J. Animal Naming (Fluency in Controlled Association). Philadelphia: Lea & Febiger.

ANIMALS Participants name as many different animals as they can for a minute.

Range: 0 and above High score = good

VEG Participants name as many different vegetables as they can for a minute.

Range: 0 and above High score = good

COLOR ONLY STROOP

Date added: 9/1/2014

References: Stroop, J. R. (1935). Studies of interference in serial verbal reactions. Journal of Experimental Psychology: General, 18, 643-662.

Golden & Freshwater (2002). The Stroop Color and Word Test: A Manual for Clinical and Experimental Uses. Wood Dale, IL: Stoelting Co.

Davidson, D. J., Zacks, R. T., &Williams, C. C. (2003). Stroop Interference, practice and aging. Aging Neuropsychology and Cognition, 10, 85-98.

The participant sees a word printed in one of these 4 different colors (red, blue, yellow, green) and is directed to say the color in which the word is typed. A microphone is used to capture response time. The examiner hits the labeled key that reflects the participant's response, or hits the key labeled mic, for a mic error. A microphone error occurs when the participant's initial response is not picked up by the mic, or when participant triggers the mic by some accidental means (a cough, touching microphone, etc.) that would render the response time for that item irrelevant. For any response in which the participant self-corrects the original response is keyed in to reflect the response that corresponds with the reaction time. A practice trial consists of 16 items. The actual task consists of 104 trials. Practice trials are not included in the scoring.

stroopcolor Number of correct responses out of 104 trials

Range: 0 – 104 High score = good

CRAFT STORY 21

Date added: 3/16/2015

References: Craft S, Newcomer J, Kanne S, Dagogo-Jack S, Cryer P, Sheline Y, Luby J, Dagogo-Jack A, Alderson A. Memory improvement following induced

hyperinsulinemia in Alzheimer's disease. Neurobiology of Aging. 1996 Jan-Feb; 17(1):123-30.

A brief story is read to the participant, who is then asked to retell it from memory immediately. The primary measure of performance is the number of story units recalled both immediately after story is presented and after a delay.

CRAFT STORY RECALL (Immediate)

CRAFTVRS Total Story units recalled immediately after story presented, verbatim scoring

Range: 0-44 High Score = good

CRAFTURS Total story units recalled immediately after story presented, paraphrase scoring

Range: 0-25 High Score = good

CRAFT STORY 21 RECALL (Delayed)

CRAFTDVR Total story units recalled after delay, verbatim scoring

Range: 0-44 High Score = good

CRAFTDRE Total story units recalled after delay, paraphrase scoring

Range: 0-25 High Score = good

CRAFTDTI Delayed time

Range: Unknown High Score = NA

CRAFTCUE Cue (boy) needed

Range: 0-1 High Score = NA

FREE AND CUED SELECTIVE REMINDING TEST

Date added: 8/1/02

Reference: Grober, E., Buschke, H., Crystal, H., Bang, S., & Dresner, R. (1988). Screening for dementia by memory testing. *Neurology, 3*, 900-903.

During learning the participant is required to provide the name of a pictured item (e.g., grapes) when given the category cue (e.g., fruit). This 16-item list learning test includes immediate category-cued recall (four items at a time) to confirm initial

correct encoding and provide retrieval practice before the test phase. For scoring purposes there are three recall trials, each trial preceded by 20 seconds of interference by counting backwards from 97 by 3s. On each recall the participant is allowed up to 90 seconds to recall items. Then the participant is given the category cue for items that were not recalled. If the item is not retrieved in 10 seconds, the examiner tells the participant what it is. The scores are the number of items recalled on each of 3 trials under free and then cued recall.

Range for each trial: 0-16 High score = good

SRT1F Free & Cued SRT: Trial 1 Free Recall

SRT1C Free & Cued SRT: Trial 1 Cued Recall

SRT2F Free & Cued SRT: Trial 2 Free Recall

SRT2C Free & Cued SRT: Trial 2 Cued Recall

SRT3F Free & Cued SRT: Trial 3 Free Recall

SRT3C Free & Cued SRT: Trial 3 Cued Recall

There are two summary scores:

SRTfree SRT1F + SRT2F + SRT3F

Range: 0 - 48 High score = good

SRT total SRTfree + SRT1C + SRT2C + SRT3C

Range: 0 - 48 High score = good

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HANDEDNESS: **Administered only at entry into study.**

Date added: 2/22/84 Modified: 11/4/88

Reference: Kimura, D., & Vanderwolf, C. H. (1970). The relation between hand preference and the performance of individual finger movements by left and right hands. *Brain, 93,* 769-774.

The participant is asked to demonstrate 8 actions using objects (e.g., comb one's hair). The objects are placed in the center of the table prior to the request. The hand used to demonstrate the action is noted. When the object has 2 parts (e.g., the box with a lid, the hand used to demonstrate the action is still noted. In this case, the hand used to take off the lid) The normal rule for determining handedness is 6 out of 8 actions.
Testers also make a note when most or all of the actions on the handedness task are performed with a different hand used for writing during the testing session.

PSY232 HANDEDNESS LEFT

Score is number of actions using left hand.
Range: 0 - 8 High score = left handed

PSY233 HANDEDNESS BOTH

Score is number of actions using both hands. This is very rare.

Range: 0 - 8 High score = handedness unresolved

PSY234 HANDEDNESS NO RESPONSE

Score is number of requests that yielded no response.
Range: 0 - 8 High score = unresponsive

PSY113 HANDEDNESS: RIGHT

Score is number of actions using right hand
Range: 0 - 8 High score = right handed

PSY114 GESTURAL IRREGULARITIES

Score is number of inappropriate responses (e.g., using a pencil to comb hair)

Range: 0 - 8 High score = poor

MULTILINGUAL NAMING TEST (MINT)

Date added: 3/16/2015

References: Ivano I, Salmon GP, Gollan TH. The Multilingual Naming Test in Alzheimer's Disease: Clues to the Origin of Naming Impairments. J Int Nauropsycol Soc. 2013; 19:272-283.

Gollan TH, Weissburger G, Runnqvist E, Montaya RI, Cera CM. Self-ratings of spoken language dominance: A Multilingual Naming Test (MINT) and preliminary norms for young and aging Spanish-English bilinguals. Bilingualism: Language and Cognition. 2011; 13:215-8.

The participant is presented with 30 objects and asked to name the object that appears in front of them. This test measures the ability of the participant to orally label (name) objects. This test measures aphasia and object naming deficits.

MINTTOTS Total score of correctly named items

Range: 0-32 High Score = good

MINTTOTW Total correct without semantic cue

Range: 0-32 High Score = good

MINTSCNG Number of Semantic cues given

Range: 0-32 High Score = NA

MINTSCNC Number correct with Semantic cues

Range: 0-32 High Score = NA

MINTPCNG Number of Phonemic cues given

Range: 0-32 High Score = poor

MINTPCNC Number correct with Phonemic cue

Range: 0-32 High Score = NA

NUMBER SPAN TEST: FORWARD

Date added: 3/16/2015

References: Reproduced by permission of the author, Joel Kramer, PsyD; do not copy or distribute without author's permission. Form created as part of the Uniform Data Set of the National Alzheimer's Coordinating Center, copyright © 2013 University of Washington.

The participant is read number sequences of increasing length and asked to repeat them. The longest span forward length is the length of the highest digit sequence the participant is able to repeat correctly. This is a widely used test of working memory (or attention).

DIGFORCT Number of correct trials

Range: 0-14 High Score = good

DIGFORSL Longest span forward

Range: 3-9 High Score = good

NUMBER SPAN TEST: BACKWARDS

Date added: 3/16/2015

References: Reproduced by permission of the author, Joel Kramer, PsyD; do not copy or distribute without author's permission. Form created as part of the Uniform Data Set of the National Alzheimer's Coordinating Center, copyright © 2013 University of Washington.

The participant is read number sequences at increasing length and then asked to repeat each sequence backwards. The primary measure of performance is the number of trials correctly reversed. The longest span backward length is the length of the highest digit sequence the participant is able to reverse. This is a widely used measure of working memory (attention).

DIGBACCT Number of correct trials

Range: 0-14 High Score = good

DIGBACLS Longest span backward

Range: 2-8 High Score = good

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SLOSSON ORAL READING TEST-REVISED (SORT-R): **Administered only at entry into study**.

Date Added: 12/9/98

Reference: Richard, L. & Nicholson, *Charles L. Slosson Oral Reading Test-Revised*. East Aurora, NY: Slosson Education Publications, Inc., 1990.

Scoring is from the SORT-R manual.

SLOSSON SORT-R Raw Score

Range: 0 - 200 High score = good

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SWITCHING TASK (CVOE)

Date Added: 4/1/09

Reference: Rogers, R.D., & Monsell, S. (1995). Costs of a switch between simple cognitive tasks. *Journal of Experimental Psychology: General, 124,* 207-231.

Participants see letter-digit pairs (e.g., N14) in the center of the screen. In the first block of 50 trials (10 practice, 40 test) they press the P key if the letter is a vowel and the Q key if it a consonant. For the next 50 trials (10 practice, 40 test) they press the P key if the digit is even and the Q key if it is odd. In the final block of 62 mixed trials (10 practice, 52 test) the instructions (consonant and vowel or odd and even) that are shown in the lower right and lower left corners of the screen change every two trials. Thus, the participant makes consonant vowel decisions for two trials and then the odd even decisions and so forth. Practice trials are not included in the scoring.

switchCV — Number of correct responses on consonant/vowel choice block out of 40 trials

Range: 0-40 — High score = good

switchOE — Number of correct responses on even/odd choice block out of 40 trials

Range: 0-40 — High score = good

switchmixed — Number of correct responses on mixed consonant/vowel and even/odd block out of 52 trials

Range: 0-52 — High score = good

switch — Percentage correct responses out of total 132 trials.

Range = 0 to 100 — High score = good

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STROOP SWITCH

Date added: 9/1/2014

References: Stroop, J. R. (1935). Studies of interference in serial verbal reactions. Journal of Experimental Psychology: General, 18, 643-662.

Golden & Freshwater (2002). The Stroop Color and Word Test: A Manual for Clinical and Experimental Uses. Wood Dale, IL: Stoelting Co.

Davidson, D. J., Zacks, R. T., &Williams, C. C. (2003). Stroop Interference, practice and aging. Aging Neuropsychology and Cognition, 10, 85-98.

Duchek, J.M., Balota, D.A., Tse, C.S., Holtzman, D.M., Fagan, A.M., Goate, A.M. (2009) The utility of intraindividual variability in selective attention tasks as an early marker for Alzheimer's disease. Neuropsychology, Nov 23; (6) 746-58.
Hutchison, K.A., Balota, D.A., Duchek, J.M. (2010) The utility of Stroop task switching as a marker for early-stage Alzheimer's disease. Psychol Aging, Sep; 25(3): 545-59

The participant again sees a word (red, blue, yellow or green) printed in one of these 4 different colors. A prompt for either WORD or COLOR appears on the screen before each trial. If the prompt reads WORD, the participant reads the word. If the prompt reads COLOR, the participant says the color in which the word is written. A microphone is used to capture response time and examiner records on a paper answer sheet whether the response was correct, incorrect, self-corrected or a microphone error occurred. There are two practice trials containing 40 trials total, and the actual task consists of 88 items. Practice trials are not included in the scoring.

stroopswitch Number of correct responses out of 88 trials

Range 0 to 88 High score = good

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TAPPING TASK

Date added: 9/1/2014

References: Duchek JM, Balota DA, Ferraro FR (1994) Component analysis of a rhythmic finger tapping task in individuals with senile dementia of the Alzheimer type and in individuals with Parkinson's disease. Neuropsychology 8: 218–226.

Bangert AS, Balota DA (2012) Keep up the pace: declines in simple repetitive timing differentiate healthy aging from the earliest stages of Alzheimer's disease. J Int Neuropsychol Soc Nov 29;18 (6):1052-63.

The participant hears a set of tones that create a regular beat and is directed to tap the spacebar in time with the beat. After practicing tapping in time with the tones, the participant is told that the tones will discontinue after several repetitions but that they should continue to tap on the spacebar in the same rhythm until STOP appears on the screen. There are two practice trials before the actual test consisting of 24 trials total with a rhythm of 1250ms . During the actual test, the tones are sounded at a rhythm of 1500 ms. and 109 trials are required. Practice trials are not included in the scoring.

tapping Median response time out of 109 trials

Range: Undefined High Score = NA

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TRAILMAKING A AND B

Date added: 9/1/05 Link to previous versions used

Reference: Armitage, S.G. (1945). An analysis of certain psychological tests used

for the evaluation of brain injury. *Psychological Monographs, 60* (1, Whole No. 177), 1-48.

TRAILA The score is the number of seconds spent in connecting 25 numbered circles in sequential order. UDS variable reported maximum is 150 seconds.

Range: 0 - 150 High score = poor

TRAILA_C TRAILMAKING FORM A NUMBER OF DIGITS CONNECTED
Date added: 3/24/94

The score is the number of digits in circles (1-25) connected in sequential order within 180 seconds.

Range: 0 – 24 High score = good

TRAILARR Number of commission errors

Date added: 2/25/2008

The score is the number of errors of commission made while connecting 25 numbered circles in sequential order within the 150 second time limit.

Range: 0 – 40 High score = poor

TRAILALI Number of correct lines

Date added: 2/25/2008

The score is the number of lines correctly connected to 25 numbered circles in sequential order within the 150 second time limit.

Range: 0 – 24 High score = good

TRAILB The score is the number of seconds spent connecting numbered circles (1-13) to circles containing letters of the alphabet (A-L) in alternating sequential order. A maximum of 300 seconds is allowed.

Range: 0 - 300 High score = poor

TRAILB_C TRAILMAKING FORM B NUMBER DIGITS AND LETTERS CONNECTED

Date added: 3/24/94

The score is the number of digits (1-13) connected to letters (A-L) in alternating sequential order within 180 seconds.

Range: 0 - 24 High score = good

TRAILBRR Number of commission errors

Date added: 2/25/2008

The score is the number of errors of commission made while connecting numbered circles (1-13) to lettered circles (A-L) in alternating sequential order within the 300 second time limit.

Range: 0 – 40 High score = poor

TRAILBLI Number of correct lines

Date added: 2/25/2008

The score is the number of lines correctly connected between numbered circles (1-13) and lettered circles (A-L) in alternating sequential order within the 300 second time limit.

Range: 0 – 24 High score = good

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WECHSLER ADULT INTELLIGENCE SCALE (WAIS)

Date added: 7/79

Reference: Wechsler, D. (1955). *Manual: Wechsler Adult Intelligence Scale.* New York: Psychological Corporation.

PSY021 WAIS BLOCK DESIGN

The participant replicates models or pictures of two-color designs with blocks.

Administered and raw scored according to WAIS manual

Range: 0 - 48 High score = good

PSY019 WAIS INFORMATION

The participant answers a series of questions about factual information. Administered and raw scored according to WAIS manual

Range: 0 - 29 High score = good

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WECHSLER ADULT INTELLIGENCE SCALE (WAIS-R)

Date added: 9/1/05

Reference: Wechsler, D. (1981). *Manual: Wechsler Adult Intelligence Scale - Revised*. New York: Psychological Corporation.

WAIS-R DIGIT SYMBOL (Standard form)

Date added: 9/1/05 Link to previous **WAIS** version used
Dropped: 9/1/2014
Date added back: 3/16/2015

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DIGSYM Administered and raw scored according to WAIS-R manual.

Range: 0 - 93 High score = good

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WECHSLER MEMORY SCALE (WMS)

Date added: 7/79

Reference: Wechsler, D., & Stone, C.P. (1973). *Manual: Wechsler Memory Scale.* New York: Psychological Corporation.

ASSOCIATE LEARNING

Scored according to WMS manual.

PSY010 WMS ASSOCIATES RECALL: EASY

Sum of correctly recalled easy pairs over 3 trials.

Range: 0 -18 High score = good

PSY011 WMS ASSOCIATES RECALL: HARD

Sum of correctly recalled hard pairs over 3 trials.

Range: 0 - 12 High score = good

asscmem Summary score = (PSY010 divided by 2) + PSY011

Range: 0 - 21 High score = good

MENTAL CONTROL

PSY003 WMS MENTAL CONTROL COUNT BACK FROM 20

Range: 0 - 3 High score = good
Scored according to WMS manual.

PSY072 WMS MENTAL CONTROL ALPHABET

Range: 0 - 3 High score = good
Scored according to WMS manual.

PSY078 WMS MENTAL CONTROL SERIAL COUNTING BY 3

Range: 0 - 3 High Score = good

Scored according to WMS manual.

MENTCONT Summary score = PSY003 + PSY072 + PSY078

Range: 0 - 9 High score = good

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WECHSLER MEMORY SCALE-III (WMS-III)

Date added: 4/1/09

Reference: Wechsler, D. (1997). *Wechsler Memory Scale (3rd ed.): Administration and scoring manual.* San Antonio, TX: Psychological Corporation.

LETTER-NUMBER SEQUENCING

The participant is read a combination of numbers and letters and is asked to repeat them, saying the numbers first in ascending order and then the letters in alphabetical order. Administered and scored according to the WMS-III manual.

lettnum WMS-III Letter Number Sequencing

Range: 0 to 21 High Score = good

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VERBAL FLUENCY: PHONEMIC TEST

Date added: 3/16/2015

In this task, the participant is told a letter of the alphabet (F) and asked to state as many words as possible that begin with that letter within 60 seconds. After 60 seconds, this is repeated with a second letter (L). The primary measure of performance is the total number of correct F-words and L-words.

UDSVERFC Number of correct F-words produced in 1 minute

Range: 0-40 High Score = good

UDSVERFN Number of F-words repeated in 1 minute

Range: 0-15 High score = poor

UDSVERNF Number of non-F-words and rule violation errors in 1 minute

Range: 0-15 High Score = poor

UDSVERLC Number of correct L-words produced in 1 minute

Range: 0-40 High Score = good

UDSVERLR Number of correct L-words repeated in 1 minute

Range: 0-15 High Score = poor

UDSVERLN Number of non-L-words and rule violation errors in 1 minute

Range: 0-15 High Score = poor

UDSVERTN Total number of F-words and L-words

Range: 0-80 High Score = good

UDSVERTE Total number of F-word and L-word repetition errors

Range: 0-30 High Score = poor

UDSVERTI Total number of non-F/L-words and rule violation errors

Range: 0-30 High Score = poor

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Range: 0 and above

ADULT CHILDREN STUDY (ACS) BATTERY
(Tests listed alphabetically)

AUDITORY CONSONANT TRIGRAMS (BROWN-PETERSON)

Date added: 7/14/05

References:
Brown, J. (1958). Some tests of the decay theory of immediate memory. *Quarterly Journal of Experimental Psychology, 10*, 12-21.

Peterson, L., & Peterson, M. J. (1959). Short-term retention of individual verbal items. *Journal of Experimental Psychology, 58,* 193-198.

Three consonants are read to the participant followed immediately by a random number. The participant is asked to count out loud backwards from that number by threes for either 9, 18, or 36 seconds determined randomly. The participant then recalls the consonant trigram. The score is the sum of the number of consonants recalled correctly over 20 trials.

trigrams Auditory Consonant Trigrams

Range: 0 to 60 High score = good

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BENSON COMPLEX FIGURE

Date added: 2/13/2017

References: Possin, KL, Laluz VR, Alcantar OZ, Miller BL, Kramer JH. Distinct neuroanatomical substrates and cognitive mechanisms of figure copy performance in Alzheimer's disease and behavioral variant frontotemporal dementia. Neuropsychologia. 2011 Jan; 49(1):43-8.

In this task, the participant is presented with a figure composed of geometric shapes and asked to reproduce the figure on the same page. The purpose of this test is to assess the participant's visuoconstructional and visual memory functions. The accuracy of each shape and its placement is recorded. Scored according to NACC UDS 3 scoring rules.

BENSON FIGURE COPY

UDSBENTC Total score for copying the Benson figure

Range: 0-17 High Score = good

BENSON FIGURE RECALL

UDSBENTD Total score for drawing the Benson figure from memory following delay

Range: 0-17 High Score = good

UDSBENRS Recognition of original stimulus among four options

Range: 0-1 High Score = good

CATEGORY FLUENCY - ANIMALS

Date added: 7/14/05

Reference: Goodglass, H. & Kaplan, E. (1983). *Boston Diagnostic Aphasia Examination Booklet,* III, ORAL EXPRESSION, J. Animal Naming (Fluency in Controlled Association). Philadelphia: Lea & Febiger.

animals Participants name as many different animals as they can for a minute.

Range: 0 and above High score = good

COLOR ONLY STROOP

Date added: 9/1/2014

References: Stroop, J. R. (1935). Studies of interference in serial verbal reactions. Journal of Experimental Psychology: General, 18, 643-662.

Golden & Freshwater (2002). The Stroop Color and Word Test: A Manual for Clinical and Experimental Uses. Wood Dale, IL: Stoelting Co.

Davidson, D. J., Zacks, R. T., &Williams, C. C. (2003). Stroop Interference, practice and aging. Aging Neuropsychology and Cognition, 10, 85-98.

The participant sees a word printed in one of these 4 different colors (red, blue, yellow, green) and is directed to say the color in which the word is typed. A microphone is used to capture response time. The examiner hits the labeled key that reflects the participant's response, or hits the key labeled mic, for a mic error. A microphone error occurs when the participant's initial response is not picked up by the mic, or when participant triggers

the mic by some accidental means (a cough, touching microphone, etc.) that would render the response time for that item irrelevant. For any response in which the participant self-corrects the original response is keyed in to reflect the response that corresponds with the reaction time. A practice trial consists of 16 items. The actual task consists of 104 trials. Practice trials are not included in the scoring.

stroopcolor Number of correct responses out of 104 trials

Range: 0 – 104 High score = good

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FREE AND CUED SELECTIVE REMINDING TEST

Date added: 7/14/05

Reference: Grober, E., Buschke, H., Crystal, H., Bang, S., & Dresner, R. (1988). Screening for dementia by memory testing. *Neurology, 3*, 900-903.

During learning the participant is required to provide the name of a pictured item (e.g., grapes) when given the category cue (e.g., fruit). This 16-item list learning test includes immediate category-cued recall (four items at a time) to confirm initial correct encoding and provide retrieval practice before the test phase. For scoring purposes there are three recall trials, each trial preceded by 20 seconds of interference by counting backwards from 97 by 3s. On each recall the participant is allowed up to 90 seconds to recall items. Then the participant is given the category cue for items that were not recalled. If the item is not retrieved in 10 seconds, the examiner tells the participant what it is. The scores are the number of items recalled on each of 3 trials under free and then cued recall. For each of these six scores, the range is 0-16.

Range: 0-16 High score = good

Range for each trial: 0-16 High score = good

SRT1F Free & Cued SRT: Trial 1 Free Recall

SRT1C Free & Cued SRT: Trial 1 Cued Recall

SRT2F Free & Cued SRT: Trial 2 Free Recall

SRT2C Free & Cued SRT: Trial 2 Cued Recall

SRT3F Free & Cued SRT: Trial 3 Free Recall

SRT3C Free & Cued SRT: Trial 3 Cued Recall

There are two summary scores:

SRTfree = SRT1F + SRT2F + SRT3F

Range: 0 - 48 High score = good

SRT total = SRTfree + SRT1C + SRT2C + SRT3C

Range: 0 - 48 High score = good

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HANDEDNESS: Administered only at entry into study

Date added: 7/14/05

Reference: Kimura, D., & Vanderwolf, C. H. (1970). The relation between hand preference and the performance of individual finger movements by left and right hands. *Brain, 93,* 769-774.

The participant is asked to demonstrate 8 actions using objects (e.g., comb one's hair). The objects are placed in the center of the table prior to the request. The hand used to demonstrate the action is noted. When the object has 2 parts (e.g., the box with a lid), the hand used to demonstrate the action is still noted; (in this case, the hand used to take off the lid). The normal rule for determining handedness is 6 out of 8 actions.

Testers also make a note when most or all of the actions on the handedness tasks are performed with the opposite hand that was used for writing during the testing session.

PSY232 HANDEDNESS LEFT

Score is number of actions using left hand.
Range: 0 - 8 High score = left handed

PSY233 HANDEDNESS BOTH

Score is number of actions using both hands. This is very rare.

Range: 0 - 8 High score = handedness unresolved

PSY234 HANDEDNESS NO RESPONSE

Score is number of requests that yielded no response.
Range: 0 - 8 High score = unresponsive

PSY113 HANDEDNESS: RIGHT

Score is number of actions using right hand

Range: 0 - 8 High score = right handed

PSY114 GESTURAL IRREGULARITIES

Score is number of inappropriate responses (e.g., using a pencil to comb hair)

Range: 0 - 8 High score = poor

SIMON TASK

Date added: 4/1/09

References: Simon, J.R. (1969). Reactions toward the source of stimulation. Journal of Experimental Psychology, 81, 174-176.

Castel, A.D., Balota, D.A., Hutchison, K.A., Logan, J.M., & Yap, M.J. (2007). Spatial attention and response control in healthy younger and older adults and individuals with Alzheimer's disease: Evidence for disproportionate selection breakdowns in the Simon task. *Neuropsychology, 21*, 170-182.

The participant sees a large arrow pointing to the right (60 trials) or left (60 trials) on the computer and presses the P key when the arrow points right and the Q key when it points left. One third of the trials represent the neutral condition; the arrows (half pointing right, half point right) are shown in the middle of the screen. One third of the trials represent the congruent condition; arrows pointing right are shown on the right side of the screen and arrows pointing left are shown on the left side of the screen. The remaining third of the trials reflect a mismatch between the direction of the arrow and the position on the screen; arrows pointing right are on the left side and arrows pointing left are on the right side.

simonnumber Number of correct responses on all 120 trials.

Range: 0 to 120 High score = good

SIMON Percentage correct responses on all 120 trials

Range 0 to 100 High score = good

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SWITCHING TASK (CVOE)

Date Added: 4/1/09

Reference: Rogers, R.D., & Monsell, S. (1995). Costs of a switch between simple cognitive tasks. *Journal of Experimental Psychology: General, 124,* 207-231.

Participants see letter-digit pairs (e.g., N14) in the center of the screen. In the first block of 50 trials (10 practice, 40 test) they press the P key if the letter is a vowel and the Q key if it a consonant. For the next 50 trials (10 practice, 40 test) they press the P key if the digit is even and the Q key if it is odd. In the final block of 62 mixed trials (10 practice, 52 test) the instructions (consonant and vowel or odd and even) that are shown in the lower right and lower left corners of the screen change every two trials. Thus, the participant makes consonant vowel decisions for two trials and then the odd even decisions and so forth. Practice trials are not included in the scoring.

switchCV	Number of correct responses on consonant/vowel choice block out of 40 trials	
	Range: 0-40	High score = good
switchOE	Number of correct responses on even/odd choice block out of 40 trials	
	Range: 0-40	High score = good
switchmixed	Number of correct responses on mixed consonant/vowel and even/odd block out of 52 trials	
	Range: 0-52	High score = good
switch	Percentage correct responses out of total 132 trials.	
	Range = 0 to 100	High score = good

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STROOP SWITCH

Date added: 9/1/2014

References: Stroop, J. R. (1935). Studies of interference in serial verbal reactions. Journal of Experimental Psychology: General, 18, 643-662.

Golden & Freshwater (2002). The Stroop Color and Word Test: A Manual for Clinical and Experimental Uses. Wood Dale, IL: Stoelting Co.

Davidson, D. J., Zacks, R. T., &Williams, C. C. (2003). Stroop Interference, practice and aging. Aging Neuropsychology and Cognition, 10, 85-98.

Duchek, J.M., Balota, D.A., Tse, C.S., Holtzman, D.M., Fagan, A.M., Goate, A.M. (2009) The utility of intraindividual variability in selective attention tasks as an early marker for Alzheimer's disease. Neuropsychology, Nov 23; (6) 746-58.

Hutchison, K.A., Balota, D.A., Duchek, J.M. (2010) The utility of Stroop task switching as a marker for early-stage Alzheimer's disease. Psychol Aging, Sep; 25(3): 545-59

The participant again sees a word (red, blue, yellow or green) printed in one of these 4 different colors. A prompt for either WORD or COLOR appears on the screen before each trial. If the prompt reads WORD, the participant reads the word. If the prompt reads COLOR, the participant says the color in which the word is written. A microphone is used to capture response time and examiner records on a paper answer sheet whether the response was correct, incorrect, self-corrected or a microphone error occurred, There are two practice trials containing 40 trials total, and the actual task consists of 88 items. Practice trials are not included in the scoring.

stroopswitch Number of correct responses out of 88 trials

Range 0 to 88 High score = good

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TAPPING TASK

Date added: 9/1/2014

References: Duchek JM, Balota DA, Ferraro FR (1994) Component analysis of a rhythmic finger tapping task in individuals with senile dementia of the Alzheimer type and in individuals with Parkinson's disease. Neuropsychology 8: 218–226.

Bangert AS, Balota DA (2012) Keep up the pace: declines in simple repetitive timing differentiate healthy aging from the earliest stages of Alzheimer's disease. J Int Neuropsychol Soc Nov 29;18 (6):1052-63.

The participant hears a set of tones that create a regular beat and is directed to tap the spacebar in time with the beat. After practicing tapping in time with the tones, the participant is told that the tones will discontinue after several repetitions but that they should continue to tap on the spacebar in the same rhythm until STOP appears on the screen. There are two practice trials before the actual test consisting of 24 trials total with a rhythm of 1250ms . During the actual test, the tones are sounded at a rhythm of 1500 ms. and 109 trials are required. Practice trials are not included in the scoring.

tapping Median response time out of 109 trials

Range: Undefined High Score = NA

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TRAILMAKING A and B

Date added: 7/14/05
Reference: Armitage, S.G. (1945). An analysis of certain psychological tests used for the evaluation of brain injury. *Psychological Monographs, 60* (1, Whole No. 177), 1-48.

TMA — The score is the number of seconds spent in connecting 25 numbered circles in sequential order. A maximum of 180 seconds is allowed.

Range: 0 - 180 — High score = poor

TrailA_C — The score is the number of digits in circles (1-25) connected in sequential order within 180 seconds.

Range: 0 – 24 — High score – good

TRAILB — The score is the number of seconds spent in connecting numbered circles (1-13) to lettered circles (A-L) in alternating sequential order. A maximum of 300 seconds is allowed; data are also gathered at 180 seconds

Range: 0 - 300 — High score = poor

TrailB_C — The score is the number of digits (1-13) connected to letters (A-L) in alternating sequential order within 180 seconds.

Range: 0 – 24 — High score = good

TRAILBLI — The score is the number of lines correctly connected between numbered circles (1-13) and lettered circles (A-L) in alternating sequential order within the 300 second time limit.

Date added: 1/1/2009

Range: 0 – 24 — High score = good

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WECHSLER ADULT INTELLIGENCE SCALE (WAIS-R)

Reference: Wechsler, D. (1981). *Manual: Wechsler Adult Intelligence Scale - Revised*. New York: Psychological Corporation.

WAIS-R DIGIT SYMBOL (Standard form)

Date added: 2/13/2017

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DIGSYM Administered and raw scored according to WAIS-R manual.

Range: 0 - 93 High score = good

WECHSLER ADULT INTELLIGENCE SCALE - III (WAIS-III)

Reference: Wechsler, D. (1997). *Wechsler Adult Intelligence Scale (3rd ed.): Administration and scoring manual.* San Antonio, TX: Psychological Corporation.

BLOCK DESIGN

Date added: 7/14/05

The participant replicates models or pictures of two-color designs with blocks. Administered and raw scored according to the WAIS-III manual

block WAIS-III Block Design

Range: 0 to 68 High score = good

INFORMATION

Date added: 7/14/05

The participant answers a series of questions about factual information. Administered and raw scored according to WAIS-III manual.

inform WAIS-III Information

Range: 0 to 28 High score = good

SIMILARITIES

Date added: 7/14/05

The participant is asked how two objects or concepts are alike. Score reflects abstract reasoning abilities. Raw scored according to WAIS-III manual.

SIM WAIS-III Similarities

Range: 0-33 High Score = good

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WECHSLER MEMORY SCALE-III (WMS-III)

Date added: 7/14/05

Reference: Wechsler, D. (1997). *Wechsler Memory Scale (3rd ed.): Administration and scoring manual.* San Antonio, TX: Psychological Corporation.

LETTER-NUMBER SEQUENCING

The participant is read a combination of numbers and letters and is asked to repeat them, saying the numbers first in ascending order and then the letters in alphabetical order. Administered and scored according to the WMS-III manual.

lettnum WMS-III Letter Number Sequencing

Range: 0 to 21 High Score = good

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LOGICAL MEMORY I - IMMEDIATE RECALL

The participant is read two short stories and is asked to recall them. Administered and scored according to WMS-III manual with the exception that Story B is only given once.

logmem WMS-III Logical Memory Immediate

Range: 0 to 50 High Score = good

LOGICAL MEMORY II - DELAYED RECALL

Delayed recall trial administered and scored (recall total score) according to WMS-III manual.

lmdelay WMS-III Logical Memory Delayed

Range: 0 to 50 High score = good

VERBAL PAIRED ASSOCIATES

The participant learns eight paired associates of low association over 4 trials. Administered and scored according to WMS-III manual.

pairs WMS-III Verbal Paired Associates I

Range: 0 to 32 High score = good

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WOODCOCK-JOHNSON SPATIAL RELATIONS

Date added: 7/14/05

Reference: Wooodcock, Richard W., McGrew, Kevin S., and Mather, Nancy (2001). *Examiner's Manual. Woodcock-Johnson III Tests of Cognitive Abilities.* Itaska, IL: Riverside Publishing

Participant looks at a series of "whole" shapes with interior lines dividing the shape into regular and irregular pieces. Next to the whole shape is a group of six shape pieces, labeled with letters of the alphabet. The participant indicates which of the shape pieces would be needed to make up the "whole" shape. The 33 test items are presented in order of ascending difficulty and require two or three responses. The score is the number of correctly identified pieces.

spatial Spatial Relations

Range: 0 - 81 High score = good

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TESTS NO LONGER USED

AMERICAN VERSION OF NELSON ADULT READING TEST (AMNART)

Date added: 3/15/93 Date dropped: 1/2/04

Reference: Grober, E. & Sliwinski, M. (1991). Development and Validation of a Model for Estimating Premorbid Verbal Intelligence in the Elderly. *Journal of Clinical and Experimental Neuropsychology*, *13*, 933-949.

Beginning 9/12/94 the test items were reduced from 50 to 45. The tests prior to that time were rescored retrospectively so that the items and scores in the database are the same.

PSY254 Range: 0 - 45 High score= good

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BENDER GESTALT

Date added: 7/79 Date dropped: 12/30/89

References: Bender, L. (1963). *Bender Visual Motor Gestalt Test*. New York: American Orthopsychiatric Corporation.

Lacks, P. (1984). *Bender Gestalt Screening for Brain Dysfunction*. New York: John Wiley & Sons.

PSY037 BENDER GESTALT Total error score.

Score is the total of PSY118+...PSY129. Each of these variables is scored 1 if the participant made that type of error or 0 if not. Scoring is according to a modified Hutt-Briskin system (Lacks, 1984).
Range: 0 - 12 High score = poor

PSY118 ROTATION
Range: 0 - 1 High score = poor

PSY119 OVERLAPPING DIFFICULTY
Range: 0 - 1 High score = poor

PSY120 SIMPLIFICATION
Range: 0 - 1 High score = poor

PSY121 FRAGMENTATION
Range: 0 - 1 High score = poor

PSY122 RETROGRESSION
Range: 0 - 1 High score = poor

PSY123 PERSEVERATION
Range: 0 - 1 High score = poor

PSY124 COLLISION
Range: 0 - 1 High score = poor

PSY125 IMPOTENCE
Range: 0 - 1 High score = poor

PSY126 CLOSURE DIFFICULTY
Range: 0 - 1 High score = poor

PSY127 MOTOR INCOORDINATION
Range: 0 - 1 High score = poor

PSY128 ANGULATION DIFFICULTY
Range: 0 - 1 High score = poor

PSY129 COHESION
Range: 0 - 1 High score = poor

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BENTON JUDGMENT OF LINE ORIENTATION FORM V

Date added: 7/14/05 (ACS Battery) Date dropped: 2/13/2017

Reference: Benton, A.L., Hamsher, K. deS., Varney, N.R., & Spreen, O. (1983). *Contributions to neuropsychological assessment: A clinical manual.* New York: Oxford University Press.

Participant judges which two lines drawn at different angles on a response card correspond to the placement of two lines drawn at different angles on a stimulus card.

line Line Orientation

Range: 0 to 30 High score = good

BENTON VISUAL FORM DISCRIMINATION

Date added: 4/27/88 Date dropped: 10/28/92

Reference: Benton, A. L., deS. Hamsher, K., Varney, N. R., & Spreen, O. (1983). *Contributions to Neuropsychological Assessment*. New York: Oxford University Press.

PSY247 VISUAL FORM DISCRIMINATION # CORRECT
Range: 0 - 16 High score = good

PSY248 VISUAL FORM DISCRIMINATION PERIPHERAL ERROR
Range: 0 - 16 High score = poor

PSY249 VISUAL FORM DISCRIMINATION MAJOR ROTATION
Range: 0 - 16 High score = poor

PSY250 VISUAL FORM DISCRIMINATION MAJOR DISTORTION
Range: 0 - 16 High score = poor

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BENTON VISUAL RETENTION TEST – Form C

Date added: 7/79 Date dropped: 4/1/09

Reference: Benton, A. L. (1963). *The Revised Visual Retention Test: Clinical and experimental applications.* New York: Psychological Corp.

PSY023 BENTON FORM C DELAY # CORRECT

Form C of the Benton Visual Retention Test administered with a 10-second viewing time. Score is number correct.
Range: 0 - 10 High score = good

PSY090 BENTON FORM C ERRORS: OMISSIONS

Score is number of omission errors
Range: 0 - 26 High score = poor

PSY091 BENTON FORM C ERRORS: DISTORTIONS

Score is number of distortion errors
Range : 0 - 26 High score = poor

PSY092 BENTON FORM C ERRORS: PERSEVERATIONS

Score is number of perseveration errors
Range: 0 - 25 High score = poor

PSY093 BENTON FORM C ERRORS: ROTATIONS

Score is number of rotation errors
Range: 0 - 26 High score = poor

PSY094 BENTON FORM C ERRORS: MISPLACEMENTS

Score is number of misplacement errors
Range: 0 - 23 High score = poor

PSY095 BENTON FORM C ERRORS: SIZE

Score is number of size errors
Range: 0 - 16 High score = poor

Summary score (errors): PSY090 + ... + PSY095

Range: 0 - 65 High score = poor

PSY235 BENTON FORM C ERRORS RIGHT

Score is number of errors on right side of figure
Range: 0 - 26 High score = poor

PSY236 BENTON FORM C ERRORS LEFT

Score is number of errors on left side of figure
Range: 0 - 26 High score = poor

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BENTON VISUAL RETENTION TEST – Form D

Date added: 7/79 Date dropped: 1/2/04

Reference: Benton, A. L. (1963). *The Revised Visual Retention Test: Clinical and Experimental Applications*. New York: Psychological Corp.

PSY025 BENTON FORM D COPY # CORRECT

Form D of the Benton Visual Retention Test is administered with no delay; stimulus present when copied. Score is number correct.

Range: 0 - 10 High score = good

PSY096 BENTON FORM D ERRORS: OMISSIONS

Score is number of omission errors
Range: 0 - 26 High score = poor

PSY097 BENTON FORM D ERRORS: DISTORTIONS

Score is number of distortion errors
Range: 0 - 26 High score = poor

PSY098 BENTON FORM D ERRORS: PERSEVERATIONS

Score is number of distortion errors
Range: 0 - 25 High score = poor

PSY099 BENTON FORM D ERRORS: ROTATIONS

Score is number of rotation errors
Range: 0 - 26 High score = poor

PSY100 BENTON FORM D ERRORS: MISPLACEMENTS

Score is number of rotation errors
Range: 0 - 23 High score = poor

PSY101 BENTON FORM D ERRORS: SIZE

Score is number of rotation errors
Range: 0 - 16 High score = poor

Summary score (errors) = PSY096 + ... + PSY101
Range: 0 - 65 High score = poor

PSY237 BENTON FORM D ERRORS RIGHT
Score is number of errors on right
Range: 0 - 26 High score = poor

PSY238 BENTON FORM D ERRORS LEFT

Score is number of errors on left
Range: 0 - 26 High score = poor

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BOSTON NAMING TEST (85 item version)

Date added: 7/79 Date dropped: 9/1/84

All tests were rescored to conform to revised 60-item version; rescored data available in PSY027.

Reference: Kaplan, E., Goodglass, H., & Weintraub, S. (1976). *Boston Naming Test Scoring Booklet, Experimental Edition*. Boston: Veterans Administration Hospital.

According to the 1976 experimental scoring booklet, administration was begun with item 39. If any of the next 8 items are failed, proceed backward from item failed until a total of 8 consecutive preceding items are passed. Then resume in a forward direction until 6 consecutive errors; stop.

PSY27 BOSTON NAMING TEST 85 ITEMS

PSY27 is the correct variable name, not to be confused with PSY027; it is not a typographical error.

Score is number correct
Range: 0 - 85 High score = good

PSY028 BOSTON NAMING TEST: # CORRECT WITHOUT CUE AT T1

Range: 0 - 85 High score = good

PSY029 BOSTON NAMING TEST: # CORRECT WITH CUE AT T1
Range = 0 - 85 High score could be either good or poor, depending on number correct without cue.

PSY030 BOSTON NAMING TEST: # TOTAL CORRECT AT T1

Range = 0 - 85 High score = good

PSY031 BOSTON NAMING TEST: LAST CORRECT RESPONSE AT T1

Range = 0 - 85 High score = good

BOSTON NAMING TEST (60 item version)

Date added: 4/1/84 (but see PSY27, Boston Naming Test, 85-item version. Data from rescored tests from 7/79 to 4/1/84 included here.)
Date dropped: 9/1/05

References: Kaplan, E., Goodglass, H., & Weintraub, S. (1983). *Boston Naming Test scoring booklet*. Philadelphia: Lea & Febiger.

Goodglass, H., & Kaplan, E. (1983). *The assessment of aphasia and related disorders* (2nd ed.). Philadelphia: Lea & Febiger.

PSY027 BOSTON NAMING TEST (60 item version)

Administration altered to begin with the first item (effective 4/1/84 to 8/1/04). Effective August 1, 2004, administration changed back to standard procedure (i.e., begin with item 30). No cues are given. The score is the number named correctly; beginning 8/1/04 credit is given for earlier items not administered. Maximum viewing time for each item is 20 seconds.

Range: 0 - 60 High score = good

PSY027 recoded as BNT as of 9/1/05

PSY105 BOSTON NAMING TEST NUMBER CORRECT PRINTED CUE

Date added: 5/84 Date dropped: 11/20/91

Reference: Devised for this project.

If no response is given within 20 seconds, a card containing the stimulus drawing with four printed words arranged horizontally below it is presented. One printed word is the name of the stimulus item. The three other words are matched for frequency and number of syllables. The three incorrect words are not semantically related to the stimulus. The score is the number of items correctly named after presentation of printed cue.

Range: 0 - 60 High score = good or poor, depends on score on PSY027

PSY109 BOSTON NAMING TEST NUMBER CORRECT OBJECT CUE

Date added: 2/22/84 Date dropped: 9/18/86

Reference: Devised for this project.

If the stimulus is not named after administration of the printed cue, the real object or a miniature is presented.

Range: 0 - 60 High score = good or poor, depends on score in PSY027

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BOSTON NAMING TEST (ODD NUMBERED ITEMS)

Date added: 9/1/05 Date dropped: 2/13/2017

Link to previous versions used from 7/79-9/05

References: Kaplan, E., Goodglass, H., & Weintraub, S. (1983). *Boston Naming Test scoring booklet*. Philadelphia: Lea & Febiger.

Goodglass, H., & Kaplan, E. (1983). *The assessment of aphasia and related disorders* (2nd ed.). Philadelphia: Lea & Febiger.

Mack, W. J., Freed, D. M., Williams, B. W., & Henderson, V. W. (1992). Boston Naming Test: Shortened versions for use in Alzheimer's disease. *Journal of Gerontology: Psychological Sciences, 45*, 154-158.

Fisher, N. J., Tierney, M. C., Snow, W. G., & Szalai, J. P. (1999). Odd/even short forms of the Boston Naming Test: Preliminary geriatric norms. *Clinical Neuropsychologist, 13,* 359-364.

Begin at item 1 and present all 30 (odd numbered) items in order. Allow 20 seconds for each response. If participant gives a response that indicates a misperception of the picture, administer the printed stimulus cue. Allow 20 seconds for response. Total score is the number of items named correctly including those named following

given stimulus cues and then multiplied by 2 so as to be consistent with previous 60-item version.

BOSTON Total correct

Range: 0 - 60 High score = good

BRADBURN AFFECT BALANCE SCALE

Date added: 4/93 Date dropped: 11/94

Reference: Bradburn, N. (1969). *The Structure of Psychological Well-Being*. Chicago, IL: Aldine.

BRAD1 - BRAD10 1 = YES, 0 = NO, Response to each question

BRADP Positive affect
Range 0 - 5 Score is number of YES answers to items 1, 3,5,7,9

BRADN Negative affect
Range 0 - 5 Score is number of YES answers to items 2, 4, 6,8,10

BRADBAL Affect balance - the difference between BRADP and BRADN

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CATEGORY FLUENCY--ANIMAL NAMING

Date added: 3/17/97 Date modified to conform to UDS: 9/1/05
Rescored using only first four 15-second intervals.

Reference: Goodglass, H. & Kaplan, E., (1983). *Boston Diagnostic Aphasia Examination Booklet*, III, ORAL EXPRESSION, J. Animal Naming (Fluency in Controlled Association). Philadelphia: Lea & Febiger.

Participants are asked to name as many different animals as they can for about a minute. Total score is based on the most productive consecutive 60 seconds. They are actually allowed 90 seconds.

animal 1 Number of animal names recorded verbatim in first 15 seconds

animal 2 Number of animal names recorded verbatim in 15-30 second interval

animal 3 Number of animal names recorded verbatim in 30 - 45 second interval

animal 4 Number of animal names recorded verbatim in 45-60 second interval

animal 5 Number of animal names recorded verbatim in 60-75 second interval

animal 6 Number of animal names recorded verbatim in 75-90 second interval

Animal Total of animal 1 through animal 4

Range: 0 and above High score = good

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CROSSING OFF

Date added: 7/79 Date dropped: 4/1/09

Reference: Botwinick, J., & Storandt, M. (1973). Speed functions, vocabulary ability, and age. *Perceptual and Motor Skills*, *36*, 1123-1128.

The score is the number of lines crossed off divided by the number of seconds taken to complete the page. This quotient is then multiplied by 100. A maximum of 180 seconds is allowed.

PSY017L CROSSING OFF # LINES

Range: 0 - 96 High score = good

PSY017S CROSSING OFF # SECONDS

Range: 1 - 180

PSY017 Summary score = (PSY017L divided by PSY017S) x 100

Range: 0 and above High score = good

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WECHSLER ADULT INTELLIGENCE SCALE - REVISED (WAIS-R)

DIGIT SYMBOL (Standard form)

Date added: 9/1/05
Date dropped: 9/1/2014
Date added back: 3/16/2015
Link to previous **WAIS** version used
Reference: Wechsler, D. (1981). *Manual: Wechsler Adult Intelligence Scale - Revised*. New York: Psychological Corporation.

DIGSYM Administered and raw scored according to WAIS-R manual.

Range: 0 - 93 High score = good

DOUBLE MEMORY TEST: Category Cued Recall

Date added: 4/7/97 Date dropped: 9/17/98

Reference: Buschke, H., Sliwinski, M.J., Kuslansky, G., Lipton, R.B. (1997). Diagnosis of early dementia by the Double Memory Test: encoding specificity improves diagnostic sensitivity and specificity. *Neurology 48*(4), 989-97.

BUSCH01 -- BUSCH64

During the acquisition phase, participant is shown 4 words, each from a different category on a screen. Appropriate category cues are shown one at a time in the center of the screen. There are 16 different categories with a total of 64 screens. Immediately after participant is asked to name the four items from each category in any order.

Range: 0 - 64 High score = good

This test can be obtained from Dr. Herman Buschke. His email address is: buschke@aecom.yu.edu.

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DUAL TASK

Date added: 4/10/02 Date dropped: 4/17/03
Reference: Devised for this project

DUAL This task measures the effects of divided attention that can be done by very mildly and mildly demented participants as well as healthy older participants. Participants first complete a letter trails task similar to Trailmaking A in which they draw a line through a sequence of letters from A to Z on an 8.5- x 11-inch sheet of paper. The letters are placed so that it is possible to connect the entire 26-letter sequence without crossing any previously drawn line. The length of time it takes to finish this task is noted. Then the participant is asked to count backward by 1s from 100. This continues for the length of time the participant required to mark the alphabet trail. For both these single tasks the participant is instructed to work as quickly and as accurately as possible. Finally, the participant is asked to perform the two tasks simultaneously.

Time and errors are scored according to manual.

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ENTERTAINMENT QUESTIONNAIRE

Date added: 7/79 Date dropped: 6/82

References: Storandt, M., Grant, E.A., & Gordon, B.C. (1978). Remote memory as a function of age and sex. *Experimental Aging Research*, *4*, 365-375.

Botwinick, J., & Storandt, M. (1980). Recall and recognition of old information in relation to age and sex. *Journal of Gerontology*, *35*, 70-76.

PSY034 ENTERTAINMENT QUESTIONNAIRE: RECALL T1

Range: 0 - 12 High score = good

PSY035 ENTERTAINMENT QUESTIONNAIRE: RECALL &/OR RECOG T1

Range: 0 - 12 High score = good

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HALSTEAD-REITAN TACTILE/SENSORY

Date added: 6/82 Date dropped: 12/1/88

Reference: Reitan, R., & Davison, L. A. (1974). *Clinical Neuropsychology*: *Current Status and Applications*. New York: Winston/Wiley.

PSY051 REITAN # ERRORS FINGER AGNOSIA RIGHT

Finger agnosia (PSY051 and PSY052) is Item 17a of the Halstead battery. Score is # of errors.

Range = 0 - 20 High score = poor

PSY052 REITAN # ERRORS FINGER AGNOSIA LEFT

Finger agnosia (PSY051 and PSY052) is Item 17a of the Halstead battery. Score is # of errors.
Range = 0 - 20 High score = poor

PSY053 REITAN # ERRORS FINGER NUMBER WRITING RIGHT

Finger number writing is Item 25 from the Halstead battery. Score is # of errors.
Range = 0 - 20 High score = poor

PSY054 REITAN # ERRORS FINGER NUMBER WRITING LEFT

Finger number writing is Item 25 from the Halstead battery. Score is # of errors.
Range = 0 - 20 High score = poor

Summary score = PSY051 + PSY052 + PSY053 + PSY054
Range: 0 - 80 High score = poor

HALSTEAD-REITAN ASTEREOGNOSIS Item 26, Halstead Battery

Date added: 6/82 Date dropped: 3/15/95

PSY055 REITAN # ERRORS COINS SINGLY RIGHT
Range = 0 - 3 High score = poor

PSY056 REITAN # ERRORS COINS SINGLY LEFT
Range = 0 - 3 High score = poor

PSY057 REITAN # ERRORS COINS BOTH RIGHT
Range = 0 - 3 High score = poor

PSY058 REITAN # ERRORS COINS BOTH LEFT
Range = 0 - 3 High score = poor

Summary score = PSY055 + PSY056 + PSY057 + PSY058
Range = 0 - 12 High score = poor

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LINE BISECTION TEST

Date added: 12/83 Date dropped: 8/8/86

Reference: Schenkenberg, T., Bradford, D. C., & Ajax, E. T. (1980). Line bisection and unilateral visual neglect in patients with neurologic impairment. *Neurology*, *30*, 509-517.

Details of administration and scoring are provided in the reference. The participant chooses the first hand (right or left) to use.

PSY138 LINE BISECT, R HAND OMISSIONS RT.

PSY139 LINE BISECT, R HAND OMISSIONS LFT.

PSY140 LINE BISECT, R HAND OMISSIONS CTR.

PSY142 LINE BISECT, R HAND RT., NO. LINES RT.

PSY143 LINE BISECT, R HAND RT., % LINES RT.

PSY144 LINE BISECT, R HAND RT., NO. LINES LFT.

PSY145 LINE BISECT, R HAND RT., % LINES LFT.

PSY146 LINE BISECT, R HAND RT., NO. LINE CTR.

PSY149 LINE BISECT, R HAND LFT., NO. LINES RT.

PSY150 LINE BISECT, R HAND LFT., % LINES RT.

PSY151 LINE BISECT, R HAND LFT., NO. LINES LFT.

PSY152 LINE BISECT, R HAND LFT., % LINES LFT.

PSY153 LINE BISECT, R HAND LFT., NO LINES CTR.

PSY156 LINE BISECT, R HAND CTR., NO LINES RT.

PSY157 LINE BISECT, R HAND CTR., % LINES RT.

PSY158 LINE BISECT, R HAND CTR., NO LINES LFT.

PSY159 LINE BISECT, R HAND CTR., % LINES LFT.

PSY160 LINE BISECT, R HAND CTR., NO. LINES CTR.

PSY163 LINE BISECT, R HAND TIME

PSY167 LINE BISECT, L HAND OMISSIONS RT.

PSY168 LINE BISECT, L HAND OMISSIONS LFT.

PSY169 LINE BISECT, L HAND OMISSIONS CTR.

PSY171 LINE BISECT, L HAND RT., NO. LINES RT.

PSY172 LINE BISECT, L HAND RT., % LINES RT.

PSY173 LINE BISECT, L HAND RT., NO LINES LFT.

PSY174 LINE BISECT, L HAND RT., % LINES LFT.

PSY175 LINE BISECT, L HAND RT., NO. LINES CTR.

PSY178 LINE BISECT, L HAND LFT., NO LINES RT.

PSY179 LINE BISECT, L HAND LFT., % LINES RT.

PSY180 LINE BISECT, L HAND LFT., NO. LINES LFT

PSY181 LINE BISECT, L HAND LFT., % LINES LFT.

PSY182 LINE BISECT, L HAND LFT., NO. LINES CTR.

PSY185 LINE BISECT, L HAND CTR., NO LINES RT.

PSY186 LINE BISECT, L HAND CTR., % LINES RT.

PSY187 LINE BISECT, L HAND CTR., NO. LINES LFT.

PSY188 LINE BISECT, L HAND CTR., % LINES LFT.

PSY189 LINE BISECT, L HAND CTR., NO. LINES CTR.

PSY192 LINE BISECT, L HAND TIME

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LURIA-NEBRASKA NEUROPSYCHOLOGICAL BATTERY

Date added: 6/82 Date dropped: 10/31/91

Reference: Golden, C. J., Hammeke, T. A., & Purisch, A. D. (1980). *The Luria-Nebraska Neuropsychological Battery: Manual.* Los Angeles: Western Psychological Services.

The score is the number of incorrectly executed motor tasks.

PSY045 LURIA MOTOR: OPPOSITE KNOCKS # ERRORS

Item 48 on Luria-Nebraska Motor Function scale. The score is the number of incorrectly executed motor tasks.

Range: 0 - 10 High score = poor

PSY046 LURIA MOTOR: HAND SQUEEZES # ERRORS

Item 49 on Luria-Nebraska Motor Function scale. The score is the number of incorrectly executed motor tasks.

Range: 0 - 4 High score = poor

PSY047 LURIA MOTOR: KNOCK 1 LEFT 2 RIGHT # ERRORS

Item 50 on Luria-Nebraska Motor Function scale. The score is the number of incorrectly executed motor tasks.

Range: 0 - 4 High score = poor

PSY048 LURIA MOTOR: OPPOSITE INTENSITY # ERRORS

Item 51 on Luria-Nebraska Motor Function scale. The score is the number of incorrectly executed motor tasks.

Range: 0 - 4 High score = poor

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LURIA-NEBRASKA NEUROPSYCHOLOGICAL BATTERY

(Subtest of the Seashore Tests of Musical Talent;)

Reference: Golden, C.J., Hammeke, T.A., & Purisch, A.D. (1980). *The Luria-Nebraska Neuropsychological Battery: Manual*. Los Angeles: Western Psychological Services.

PSY136 LURIA RHYTHM ERRORS PITCH

Date added: 4/14/83 Date dropped: 8/31/96

Items 52, 53, and 54 from Luria-Nebraska Rhythm. Score is numbers of errors.

Range: 0 - 16 High score = poor

PSY242 HAPPY BIRTHDAY

Date added: 4/19/84 Date dropped: 2/26/92

Item 57, Luria-Nebraska Rhythm
Range: 0 - 1 High score = poor

PSY137 LURIA RHYTHM ERRORS NUMBER

Date added: 4/14/83 Date dropped: 8/31/96

Items 58, 59, and 60, Luria-Nebraska Rhythm. Score is number of errors.

Range: 0 - 10 High score = poor

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POSITIVE AND NEGATIVE AFFECT SCHEDULE (PANAS) First Administration

Date added: 4/93 Date dropped: 11/94

Reference: Watson, D., & Clark, L.A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Social Psychology Journal of Personality*, *54*, 1063-1070.

This 20 item test was given twice. The first administration was the first measure of the psychometric battery and the second administration was at the end of the testing. The data include all 20 items of the first administration and all 20 items of the second administration.

PANAS1 - PANAS20 1 = YES, 0 = NO, Response to each word

PANASP Positive affect at first administration
Range 0 - 10 Score is number of YES answers to items 1, 3, 5, 9, 10, 12, 14, 16, 17, 19

PANASN Negative affect at first administration
Range 0 - 10 Score is number of YES answers to items 2, 4, 6, 7, 8, 11, 13, 15, 18, 20

POSITIVE AND NEGATIVE AFFECT SCHEDULE (PANAS) Second Administration

Date added: 4/93 Date dropped: 11/94

Reference: Watson, D., & Clark, L.A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology*, *54*, 1063-1070.

PANAS21 - PANAS40 1 = YES, 0 = NO, Response to each word

PANASPR Positive affect at second administration

Range 0 - 10 Score is number of YES answers in items 21, 23, 25, 29, 30, 32, 34 36, 37, 39

PANASNR Negative affect at second administration

Range 0 - 10 Score is number of YES answers in items 22, 24, 26, 27, 28, 31, 33, 35, 38, 40.

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REACTION TIME TESTS

Date added: 3/1/99 Date dropped: 9/6/01

Reference for software: Abboud, A. & Sugar, D. (1990-97). *SuperLab* (Version 1.03). [Computer Software]. Phoenix: Cedrus Corporation.

SIMPLERT SIMPLE REACTION TIME TEST

Median reaction time from four blocks of nine trials each (total = 36) of key press ("X" for left handers, "M" for right handers) with the index finger in response to the appearance of a square in the middle of a laptop computer screen following preparatory intervals (PI) of 1, 2, or 3 seconds indicated by the written phrase 'Get Ready' printed in the center of the screen.

Four 1-second, three 2-second, and two 3-second PI trials are randomized within a block (order varies). The inter-trial interval is 500 ms. Each trial is terminated with the key press. Six practice trials with two 1-second, two 2-second, and two 3-second PIs precede the 36 trials. Participant was instructed to keep their index finger on key throughout the entire experiment. If the key was pressed too soon, the phrase "not yet" appeared on the screen and the trial was repeated.

Instructions, provided verbally and appearing on the screen before the start of the test read as follows:

"Please rest your wrists on the keyboard in a way where you avoid pressing any keys beside the one you will be asked to press. You will see the words "Get Ready" on the screen, followed by a square. As soon as the square appears, hit the square button. If you press the button before the square appears, you will see the words "Not Yet" on the screen. If you hit an incorrect button, the word "Wrong" will appear on the screen."

CHOICERT CHOICE REACTION TIME TEST (NO DISTRACTION)

This task was similar to the simple reaction time task but there were four blocks of 18 trials each (total trials = 72). On half of the 18 trials in a block, the stimulus is "X" and on the other half the stimulus is "O." Participant pressed the "X" key (marked with an "X") if the stimulus was "X" and the "M" key (marked with an "O") if the stimulus was "O." Within a block there were four 1-second, three 2-second, and two 1-second PIs for the "X" stimuli and a like number of "O" stimuli. Trials were randomized within a block. There were six practice trials, one for each stimulus (X, O) at each PI (1, 2, or 3 seconds). If the wrong key was pressed the word "Wrong" appeared on the screen.

Instructions: "Please rest your wrists on the keyboard so that you avoid pressing any keys beside the one you will be asked to press. You will see the words, "Get Ready" on the screen followed by an X or an O. If an X appears, hit the X button, and if an O appears, hit the O button. Press the correct key as soon as the X or O appears. If you press the button before the X or O appears, you will see the words, "Not Yet" on the screen. If you hit an incorrect button, the word "Wrong" will appear on the screen."

INTERFRT CHOICE REACTION TIME WITH DISTRACTION

Identical to the choice reaction time experiment but done while listening to a tape recording of a weather report.

Instructions are identical to above except they begin with the sentence: "This test is the same as the last test except that you will hear a recording of a weather report during the test."

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READING SPAN

Date added: 11/16/09 Date dropped: 9/1/2014

Reference: Daneman, M., & Carpenter, P.A. (1980). Individual differences in working memory and reading. Journal of Verbal Learning and Verbal Behavior, 19, 450-466.

Participants must remember the last word of sentences presented on the computer screen while judging if the sentence makes a statement that is true or false. The number of sentences read prior to recall increases from 1 to 7 in blocks of three trials for each span length (i.e., number of sentences read prior to recall). For

example, on each trial in the first block, the participant reads the sentence and judges if it is true or false; the next screen displays question marks and the participant immediately recalls the last word of the sentence. On each trial of the second block, the participant reads the first sentence and judges if it is true or false, then reads the second sentence and judges if it is true or false, is presented with the screen with question marks and then recalls the last word of each of the two preceding sentences. For a trial to be scored as correct the order of the recalled words must be the same as the order in which the sentences were presented. The test is discontinued when the participant fails to get at least two correct trials in a block of three trials.
One of two scores can be used: readspan or readtot.

.

readspan Reading span length

The number of sentences in each trial for the last block of trials for which participant had at least two correct trials.

Range: 0 – 7 High score = good

readtot Reading total correct trials

The total number of correct span trials through the block for which participant had at least two correct trials (i.e., block that determined the variable readspan).

Range: 0 – 21 High score = good

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SENTENCE FORMULATION

Date added: 2/22/84 Date dropped: 8/15/91
Reference: Devised for this project.

The participant was asked, "Tell me a sentence". After verbally stating a sentence, the participant was asked, "Please write it for me." Beginning 7/29/89 the sentence was tape-recorded; the tapes are available in the MAP office.

PSY201 SENTENCE FORMULATION REQUEST

1 = Yes, a verbal sentence was produced

0 = No, a verbal sentence was not produced

PSY210 WRITTEN: CURSIVE 1 PRINTED 2 ILLEGIBLE 3

1 = sentence written in cursive

2 = sentence printed

3 = sentence written illegibly

PSY253 **SENTENCE GENERATION**

Date added: 5/6/92 Date dropped: 7/1/96

Reference: Devised to collect data for replication of earlier analyses of PSY201.

The participant is asked to "Write any complete sentence on this piece of paper."

1 = Participant was engaged in the task and produced recognizable words.

"C", "M", "R", "T" are other scores that may apply.

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STROOP

Date added: 11/21/96 Date dropped: 7/24/00

Reference: Stroop, J.R. (1935). Studies of Interference in Serial Verbal Reactions. *Journal of Experimental Psychology*, *18*, 643-661.

MDNRTC
MDNRTI
MDNRTN
ERRORC
ERRORI
ERRORN

Administered and scored on computer. Scoring consists of median latencies and errors scored for each of the three different conditions: neutral, congruent, incongruent.

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SYNTAX IN WRITTEN SENTENCES

Date added: 2/22/84 Date dropped: 7/1/96

DEVELOPMENTAL SENTENCE SCORING (DSS)

Reference: Lee, L. (1974). *Developmental Sentence Analysis*. Evanston, IL: Northwestern University Press.

DSS was developed to analyze the growth of children's language. Points are assigned to eight categories of grammatical constructions based on the order or emergence of different forms in children's speech. An utterance total (derived by summing together the total points for each category plus 1 point if the utterance is a grammatical sentence) and/or a language sample average can be computed. The categories of personal pronouns and indefinite pronouns are combined into a single pronoun category and the categories of yes/no questions and wh-questions are combined into a single question category.

FIRST VB MAIN VERB

PRONS PRONOUNS (INDEFINITE AND PERSONAL)

SECONDVB EMBEDDED AND SUBORDINATE VERBS

NEG NEGATIVES

CONJ CONJUNCTIONS

QUESTS YES/NO & WH-QUESTIONS

SENT1 GRAMMATICAL SENTENCE

TOTAL SUM OF THE ABOVE

MLU MEAN LENGTH OF UTTERANCE

Reference: Brown, R. (1974). *A First Language*. Cambridge, MA: Harvard University Press.

Mean length of utterance is widely used in child language literature as a measure of grammatical development. It is computed by totaling the number of words in each response.

MCU MEAN CLAUSES PER UTTERANCE

Reference: Cheung, H., & Kemper, S. (1991). Competing complexity metrics and adults' production of complex sentences. *Applied Psycholinguistics*, *13*, 53-76.

Mean clause per utterance was developed as an alternative to MLU to assess the complexity of language samples obtained from older adults. Mean clause per utterance is computed by totaling the number of each main, embedded, and subordinate clause in a sentence.

PROPTOT COUNT FOR PROPOSITIONS

Turner, A., & Greene, E. (1977*). The Construction and Use of Propositional Text Base*. Boulder, CO: University of Colorado Psychology Department.

Kintsch, W., & Keenan, J.M. (1973). Reading rate and retention as a function of the number of propositions in the base structure of sentence. *Cognitive Psychology*, *5*, 257-274.

Propositions are widely used in cognitive psychology to describe the semantic or propositional content of texts. A proposition corresponds to a basic idea. In general, each proposition is a predicate, expressing an action or state, a modification of a predicate such as a qualification, a quantification, or a negation, and connections between predicates, such as conjunction, disjunction, or contrast. The total number of propositions in each sentence is counted.

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TOKEN TEST

Date added: 6/82 Date dropped: 1/17/90

Reference: DeRenzi, E. (1979). A shortened version of the Token Test. In F. Boller & M. Dennis (Eds.), *Auditory comprehension: Clinical and Experimental Studies with the Token Test*. New York: Academic Press.

PSY130 TOKEN TEST # CORRECT PART 1
Range: 0 - 7 High score = good

PSY131 TOKEN TEST # CORRECT PART 2
Range: 0 - 4 High score = good

PSY132 TOKEN TEST # CORRECT PART 3
Range: 0 - 4 High score = good

PSY133 TOKEN TEST # CORRECT PART 4
Range: 0 - 4 High score = good

PSY134 TOKEN TEST # CORRECT PART 5
Range: 0 - 4 High score = good

PSY135 TOKEN TEST # CORRECT PART 6
Range: 0 - 13 High score = good

Summary score = PSY130 + PSY131 + PSY132 + PSY133 + PSY134 + PSY135

Range: 0 - 36 High score = good

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TRAILMAKING FORM A

Reference: Armitage, S.G. (1945). An analysis of certain psychological tests used for the evaluation of brain injury. *Psychological Monographs*, *60* (1, Whole No. 177), 1-48.

PSY018 TRAILMAKING FORM A IN SECONDS Trailmaking, Part A
Date added: 7/79 Date modified to conform to UDS: 9/1/05

The score is the number of seconds spent in connecting 25 numbered circles in sequential order. A maximum of 180 seconds is allowed.

Range: 0 - 180 High score = poor

PSY018 5 recoded as TMA as of 9/1/05

TMA TRAILMAKING A: The score is the number of seconds spent in connecting 25 numbered circles in sequential order in 180 seconds. UDS variable reported to maximum of 150 seconds. Recoded to TRAILA 2/25/2008 per UDS.

Range: 0 - 180 High score = poor

TMASEC TRAILA_C divided by TMA

Range: 0 and above High score = good

TRAILMAKING FORM B

Reference: Armitage S.G. (1945). An analysis of certain psychological tests used for the evaluation of brain injury. *Psychological Monographs 60* (1, Whole No. 177), 1-48.

PSY252 TRAILMAKING FORM B IN SECONDS Trailmaking, Part B

Date added: 9/91 Date dropped: 1/27/94
Date reinstated: 3/24/94 Date modified to conform to UDS: 9/1/05

The score is the number of seconds spent in connecting numbered circles (1-13) alternately to letters of the alphabet (A-L) in sequential order. A maximum of 180 seconds is allowed.

Range: 0 - 180 Low score = good

PSY252 recoded as TMB as of 9/1/05

TRAIL300 TRAILMAKING FORM B IN SECONDS Trailmaking, Part B

Date added: 1/28/94 Date dropped: 3/23/94

This variable was dropped and the data purged from database. The 5-minute time limit was too long. The 3-minute time limit was reinstated

Range 0 – 300 Low score = good

TMB TRAILMAKING B: The score is the number of seconds spent in connecting numbered circles (1-13) to lettered circles (A-L) in alternating sequential order.. A maximum of 180 seconds is allowed. Time noted during the 300-s administration in the UDS. Recoded to TRAILB. 2/25/2008 per UDS.

Range: 0 - 180 High score = poor

TMBSEC TRAILB_C divided by TMB

Range: 0 and above High score = good

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VISUAL NEGLECT

Date added: 12/83 Date dropped: 12/31/89

Reference: Albert, M. L. (1973). A simple test of visual neglect. *Neurology*, *23,* 658-664.

PSY196 VISUAL NEGLECT LINES NEGLECTED RIGHT

Score is number of lines omitted
Range: 0 - 12 High score = poor

PSY197 VISUAL NEGLECT LINES NEGLECTED LEFT

Score is number of lines omitted
Range: 0 - 12 High score = poor

PSY198 VISUAL NEGLECT LINES NEGLECTED CENTER

Score is number of lines omitted
Range: 0 - 16 High score = poor

Summary score = PSY196 + PSY197 + PSY198

Range: 0 - 40 High score = poor

PSY199 VISUAL NEGLECT TIME (in seconds)

Range: 0 - 180 High score = poor

PSY200 VISUAL NEGLECT HANDEDNESS

1 = Right
0 = Left High score = poor

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WECHSLER ADULT INTELLIGENCE SCALE (WAIS)

PSY020 WAIS COMPREHENSION

Date added: 7/79 Date dropped 12/2/88
Raw score according to *WAIS* manual
Range: 0 - 14 High score = good

PSY022 WAIS DIGIT SYMBOL

Date added: 7/79 Date modified to conform to UDS: 9/1/05

Raw score according to **WAIS** manual

Range: 0 - 90 High score = good

PSY022 recoded as variable DIGSYM as of 9/1/05

PSY089 DIGIT SYMBOL COPY

Date added: 12/83 only for those who could not do the Digit Symbol (PSY022)
8/5/86, for everyone Date dropped: 10/03/96
Reference: Devised for this project.

Participant just copies the digits; no coding. A maximum of 90 seconds is allowed.

Range: 0 - 90 High score = good

PSY241 DIGIT SYMBOL, COPY TIME

Date added: 12/83 only for those who could not do the Digit Symbol (PSY022)
8/5/86, for everyone Date dropped: 10/03/96

Reference: Devised for this project.

Time taken to complete Digit Symbol Copy (PSY089)

Range: 0 - 90 High score = poor

PSY245 INCIDENTAL MEMORY RECALL: TOTAL

Date added: 5/1/87 Date dropped: 8/15/91

Reference: Hart, R. P., Kwentus, J. A., Wade, J. B., & Hamer, R. M. (1987). Digit symbol performance in mild dementia and depression. *Journal of Consulting and Clinical Psychology*, *55*, 236-238.

Participant is asked to recall the Digit Symbol pairings. Score equals number of symbols recalled.

Range: 0 - 9 High score = good

PSY246 INCIDENTAL MEMORY RECALL: MATCHED

Date added: 5/1/87 Date dropped: 8/15/91

Same as PSY245 but score equals number of symbols recalled and correctly matched to numbers.

Range: 0 - 9 High score = good

WAIS PICTURE ARRANGEMENT
Date added: 5/15/84 Date dropped: 2/12/92

Reference: Wechsler, D. (1955). *Manual: Wechsler Adult Intelligence Scale*. New York: Psychological Corporation

Only the first three items are administered. No time limits were used.

PSY230 WAIS PICTURE ARRANGEMENT COULD NOT DO

Range: 0 - 1 High score = could not do

PSY231 WAIS PICTURE ARRANGEMENT # CORRECT

Score is the number of correct sequences
Range: 0 - 3 High score = good

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WECHSLER ADULT INTELLIGENCE SCALE - REVISED (WAIS-R)

DIGIT SYMBOL (Enlarged Form)

Date added: 3/06/06 Date dropped 3/16/2015

Reference: Wechsler, D. (1981). *Manual: Wechsler Adult Intelligence Scale - Revised*. New York: Psychological Corporation.

WAIS This is an enlarged Digit Symbol form that measures 15 x 24 cm rather than 9.5 x 13 cm as in the standard WAIS-R. Otherwise administered and raw scored according to WAIS-R manual.

Range: 0 - 93 High score = good

WECHSLER ADULT INTELLIGENCE SCALE III (WAIS-III)

SIMILARITIES

Date added: 8/1/02
Date dropped from standard Knight ADRC battery: 4/1/09, retained in ACS battery

Reference: Wechsler, D. (1997). *Manual: Wechsler Adult Intelligence Scale-III*. New York: Psychological Corporation.

Participant is asked how two objects or concepts are alike. Score reflect abstract reasoning abilities.

SIM Raw scored according to WAIS-III manual

Range: 0-33 High score = goo

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WECHSLER MEMORY SCALE (WMS)

Reference: Wechsler, D., & Stone, C.P. (1973). *Manual: Wechsler Memory Scale*. New York: Psychological Corporation.

PSY001 WMS INFORMATION
Subtest I. Personal and Current Information

Date added: 7/79 Date dropped: 1/84

Scored according to WMS manual. The names of persons incumbent at the time of testing were scored as correct in Question 5 (the governor of Missouri) and Question 6 (the mayor of St. Louis). Similar questions were asked in the Clinical Assessment administered by physicians.

Range: 0 - 6 High score = good

PSY070 MAP INFORMATION Alternate form of WMS Information

Date added: 1/84 Date dropped: 8/14/91

Reference: Devised for this project.

This is a simplified version of WMS Information. It is scored for content accuracy by comparison with the current clinical assessment. The score is the sum of correct responses to Questions 1-6.

Range: 0 - 6 High score = good

PSY002 WMS ORIENTATION
Subtest II. Orientation

Date added: 7/79 Date dropped: 1/84

Scored according to WMS manual. Similar questions were asked in the Clinical Assessment administered by physicians.

Range: 0 - 5 High score = good

PSY071 MAP ORIENTATION Alternate form of WMS Orientation

Date added: 1/84 Date dropped: 8/14/91

Reference: Devised for this project.

Simplified version of WMS Orientation. Score is sum of correct responses to Questions 1-5.

Range: 0 - 5 High score = good

MAP MENTAL CONTROL Simplified version of WMS Mental Control

Date added: 1/84 Date dropped: 10/31/91

Reference: Devised for this project.

Each of the three parts is scored in the same manner as WMS Mental Control (i.e., bonus points for rapid performance and penalties for errors).

PSY079 MAP MENTAL CONTROL COUNT BACK FROM 10
Range: 0 - 3 High score = good

PSY080 MAP MENTAL CONTROL SPELL NAME
Range: 0 - 3 High score = good

PSY081 MAP MENTAL CONTROL SERIAL COUNTING BY 2
Range: 0 - 3 High score = good

Summary score = PSY079 + PSY080 + PSY081
Range: 0 - 9 High score = good

PSY004 WMS LOGICAL MEMORY
Subtest IV. **WMS** Logical Memory

Date added: 7/79 Date dropped: 9/1/05

Scored according to **WMS** manual.

Range: 0 - 23 High score = good

PSY073 **WMS LOGICAL MEMORY DELAYED RECALL**

Date added: 2/22/84 Date dropped: 6/16/91

Reference: Russell, E. W. (1975). A multiple scoring method for the assessment of complex memory functions. *Journal of Consulting and Clinical Psychology*, *43*, 800-809.

This measure is administered 30 minutes after the first **WMS** Logical Memory presentation (PSY004), thus the placement among other tests varies for each individual. It is scored according to the standard instructions for the Logical Memory in the **WMS** manual (see PSY004).

Range = 0 - 23 High score = good

PSY251 **WMS** LOGICAL MEMORY - 10 MINUTE RECALL
Date added: 6/17/91 Date dropped: 9/1/05

Range = 0 - 23 High score = good

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WMS LOGICAL MEMORY - VERBATIM SCORING

Date added: 1/2/04 Date revised: 9/1/05

Reference: Johnson, D.K., Storandt, M., & Balota, D. (2003). A discourse analysis of Logical Memory recall in normal aging and in dementia of the Alzheimer type. *Neuropsychology*, *17*, 82-92.

This is an alternate, verbatim scoring of the **WMS** Logical Memory stories A & B as used by Johnson et al. (2003). Record only those propositions that are recalled verbatim. No synonyms allowed.

LMVERA Story A: Range 0 – 35 High Score = good

LMVERA Story A: Range 0 - 35

LMVERB Story B: Range 0 – 34 High Score = good

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MAP SENTENCE RECALL Simplified WMS Logical Memory

Date added: 2/22/84 PSY074 and PSY076
Date added: 7/9/86 PSY239 and PSY240
Date dropped: 9/11/91

Reference: Devised for this project.

This procedure is administered immediately after the WMS Logical Memory Delayed Recall trial. Participant is asked to recall three sentences (PSY074) each containing only three pieces of information and then three sentences (PSY076) each containing only four pieces of information. Subsequently three additional phrases, each containing only two pieces of information (PSY239) and three additional phrases, each only one piece of information (PSY240) were added. The score is the sum of the pieces of information in the sentences repeated (almost verbatim). Some minor omissions are allowed. If only one word in a two-word byte is repeated, a half point (.5) is allowed.

PSY074 SENTENCE RECALL 3 BYTES A+B+C
Range: 0 - 9 High score = good

PSY076 SENTENCE RECALL 4 BYTES D+E+F
Range: 0 - 12 High score = good

PSY239 SENTENCE RECALL 2 BYTES G+H+I

Range: 0 - 6 High score = good

PSY240 SENTENCE RECALL 1 BYTE J+K+L
Range: 0 - 3 High score = good

Summary score (until 9/86) = PSY074 + PSY076
Range = 0 - 21 High score = good

Summary score (after 9/86) = PSY074 + PSY076 + PSY239 + PSY240

Range = 0 - 30 High score = good

WMS DIGIT SPAN Subtest V. **WMS** Digit Span

Date added: 7/79
Date modified to conform to UDS: 9/1/05

Scored according to the **WMS** manual.

PSY005 DIGITS FORWARD
Range: 0 - 8 High score = good

PSY005 recoded as variable DIGFOR as of 9/1/05

PSY006 DIGITS BACKWARD
Range: 0 - 7 High score = good

PSY006 recoded as variable DIGBACK as of 9/1/05

PSY008 VISUAL DIGIT SPAN: SIMULTANEOUS

Date added: 7/79 Date dropped: 8/14/91

Reference: Devised for this project.

This procedure is modeled after the auditory digit span subtest of the Wechsler Memory Scale. Strings of numbers ranging in length from 2 to 8 digits are printed horizontally on cards. There are two cards with strings of each length. Presentation of each string is for as many seconds as there are digits on the card. If the first string of a particular length is passed, the second string with that number of digits is not administered. For example, the first card with a string of 2 digits is presented for 2 seconds; then the card is removed. If the participant repeats the 2 digits correctly, the first string of 3 digits is presented next for 3 seconds. If the participant does not repeat the first card with a string of 2 digits correctly, the second card with a string of 2 digits is presented for 2 seconds. Testing is discontinued when a participant fails to repeat both of the strings of a particular length. The score is the number of digits in the longest string reported correctly.

Range: 0 - 8 High score = good

PSY009 VISUAL DIGIT SPAN: SEQUENTIAL

Date added: 7/79 Date dropped: 8/14/91

Reference: Devised for this project.

This procedure is also modeled after the auditory digit span subtest of the Wechsler Memory Scale. Single digits, rather than strings of digits, are printed on cards. The cards are grouped in sets of 2 through 8 cards. There are two sets of cards at each level (i.e., 2 through 8) or a total of 14 sets of cards. Cards are presented serially with each card shown for 1 second. After the last card in the group is taken away, the participant is asked to recite the numbers from the cards in that set in the order given. If the first set at a level is recited correctly, the second set at that level is not administered. For example, if the participant repeats the first set of 2 digits correctly, the first set of 3 cards is presented next. If the participant does not recite the 2 digits from the first set of 2 cards correctly, the second set of 2 cards is presented. Testing is discontinued when a participant fails to recite in the correct order the digits on both sets of cards at a particular level (i.e., number of cards in a set). The score is the number of digits in the longest set recited correctly.

Range: 0 - 8 High score = good

WMS ASSOCIATE LEARNING: RECOGNITION

Date added: 7/79 Date dropped: 1/2/04

Reference: Devised for this project.

A recognition trial for the pairs from the WMS Associate Learning subtest is administered immediately following the third recall trial of the WMS Associate Learning subtest. The stimulus word of each pair is printed in large type at the top of a card with four words (including the correct response) printed in smaller type horizontally below. The easy and hard pairs are interspersed, as in the WMS Associate Learning subtest, and are presented in a different random order than used on any of the recall trials. This recognition trial is scored in the same manner as the standard recall version except there is only one recognition trial.

PSY013 WMS ASSOCIATES RECOGNITION: EASY Easy pairs
Range: 0 - 6 High score = good

PSY014 WMS ASSOCIATES RECOGNITION: HARD Hard pairs
Range: 0 - 4 High score = good

Summary score = (PSY013 divided by 2) + PSY014
Range: 0 - 5 High score = good

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WECHSLER MEMORY SCALE - REVISED (WMS-R)

WMS-R DIGIT SPAN FORWARD

Date added: 9/1/05 Date dropped: 2/13/2017

Reference: Wechsler, D. (1987). *Manual: Wechsler Memory Scale-Revised.* San Antonio, Texas: Psychological Corporation.

Administered according to WMS-R manual. Scored according to UDS guidebook, which yields two scores:

DIGIF Total number of trials correct prior to two consecutive errors at the same digit length

Range: 0 - 12 High score = good

DIGIFLEN Digit span forward length

Range: 0 - 8 High score = good

WMS-R DIGIT SPAN BACKWARD

Date added: 9/1/05 Date dropped: 2/13/2017

Reference: Wechsler, D. (1987). *Manual: Wechsler Memory Scale-Revised.* San Antonio, Texas: Psychological Corporation.

Administered according to WMS-R manual. Scored according to UDS guidebook, which yields two scores:

DIGIB Total number of trials correct prior to two consecutive errors at the same digit length

Range: 0 - 12 High score = good

DIGIBLEN Digit span backward length

Range: 0 - 7 High score = good

Date added: 9/1/05 Link to previous **WMS** versions Date dropped: 2/13/2017

Reference: Wechsler, D. (1987). *Manual: Wechsler Memory Scale-Revised.* San Antonio, Texas: Psychological Corporation.

LOGICAL MEMORY IA – Immediate

LOGIMEM Only Story A is administered. Scored according to WMS-R manual

Range: 0-25 High score = good

LOGICAL MEMORY IIA – Delayed

MEMUNITS Administered after WAIS-R Digit Symbol in prescribed UDS order, and scored according to WMS-R manual

Range: 0-25 High score = good

MEMTIME Minutes elapsed since Logical Memory IA-Immediate

Range: 0 and above

WMS-R LOGICAL MEMORY Story A – Verbatim Scoring

Date added: 9/1/05 Link to previous WMS version Dropped 2/13/2017

WMS-R LOGICAL MEMORY IA - Immediate

Date added: 9/1/05 Date dropped: 2/3/2017

Reference: Wechsler, D. (1987). *Manual: Wechsler Memory Scale-Revised.* San Antonio, Texas: Psychological Corporation.

LOGIMEM Only Story A is administered. Scored according to WMS-R manual

Range: 0-25 High score = good

WMS-R LOGICAL MEMORY IIA - DELAYED

Date added: 9/1/05 Date dropped: 2/13/2017

Reference: Wechsler, D. (1987). *Manual: Wechsler Memory Scale-Revised.* San Antonio, Texas: Psychological Corporation.

MEMUNITS Administered after WAIS-R Digit Symbol and scored according to WMS-R manual

Range: 0-25 High score = good

MEMTIME Minutes elapsed since Logical Memory IA-Immediate

Range: 0-85 minutes

WISCONSIN CARD SORTING TEST: Computer Version 4, Research Edition

Date added: 2/19/04 Date dropped: 12/31/08

References:

Berg, E.A. (1948). A simple objective test for measuring flexibility in thinking. *Journal of General Psychology, 39*, 15-22.

Grant, D.A. (1948). A behavioral analysis of degree of reinforcement and ease of shifting to new responses in a Weigl-type card-sorting problem. *Journal of Experimental Psychology, 34*, 404-411.

Heaton, R.K., Chelune, G.J., Talley J.L., Kay, G.G., & Curtis, G. (1993). *Wisconsin Card Sorting Test manual: revised and expanded*. Odessa, FL: Psychological Assessment Resources.

Computerized administration and scoring of the WCST according to Heaton et al. (1993). Note following change in procedure: the participant points to choice on the screen and the tester manipulates the mouse to make the response. The participant tells the tester if he or she wants to change the response and the tester clicks on the screen. See manual for definition of scores.

wcstspsc Special score
R = refused
C = cognitive confusion
I = physical difficulties
M = examiner decided to not administer (cooperation not possible)
A = all administered

wcsttrad Number trials administered
Range: 0 - 128 High score = poor

wcsttotc Total number correct trials
Range: 0 - 128 High score = good

wcsttote Total errors
Range: 0 - 128 High score = poor

wcstperr Perseverative responses
Range: 0 - 126 High score = poor

wcstpere Perseverative errors
Range: 0 - 126 High score = poor

wcstnpe Nonperseverative errors
Range: 0 - 128 High score = poor

wcstclre	Conceptual level responses (%) Range: 0 - 100	High score = good
wcstcatc	Categories completed Range: 0 - 6	High score = good
wcsttrcm	Trials to first category Range: 10 - 129	High score = poor
wcstfail	Failure to maintain set Range: 0 - 21	High score = poor
wcstlrn	Learning to learn (%) Range: negative to positive	High score = good

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WORD FLUENCY

Date added: 7/79 Date dropped: 2/13/2017

Reference: Thurstone, L. E., & Thurstone, T. G., (1949). *Examiner manual for the SRA Primary Mental Abilities Test.* Chicago: Science Research Associates.

PSY032 WORD FLUENCY LETTER S

Participants are asked to name as many words that begin with the letter S as they can in 1 minute.
Range: 0 and above High score = good

PSY033 WORD FLUENCY LETTER P

ZUNG DEPRESSION SCALE

Date added: 7/79 Date dropped: 6/82

PSY036 ZUNG DEPRESSION: SDS SCALE AT T1

Reference: Zung, W. W. K. (1967). Depression in the normal aged. *Psychosomatics*, *8*, 287-292.

Raw scores were converted to SDS scores using the conversion table.

Range: 0 - 100 High score = more depressed

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A
American Version of Nelson Adult Reading Test (AMNART)
Auditory Consonant Trigrams

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Benton Line Orientation
Benton Visual Form Discrimination
Benton Visual Relations Test – Form D
Benton Visual Retention Test – Form C
Boston Naming Test
- 30 (Odd Numbered Items)
- 60 Item Version
- 85 Item Version
- Number Correct Object Cue
- Number Correct Printed Cue

Bradburn Affect Scale

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Category Fluency (Animals)
Category Fluency (Vegetables)
Color Only Stroop
Craft Story 21 Recall – Immediate and Delayed
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Double Memory Test: Category Cued Recall
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Free and Cued Selective Reminding Test

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L
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Luria-Nebraska Neuropsychological Battery
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M
Multilingual Naming Test (MINT)

N
Number Span Test (Forward and Backward)

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Positive and Negative Affect Schedule (PANAS)

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Reaction Time
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Simon Task
Slosson Oral Reading Test
Stroop Switch
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Syntax in Written Sentences

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Tapping Task
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U

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Verbal Fluency Phonemic Test: F & L
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Wechsler Adult Intelligence Scale
- Block Design
- Comprehension
- Digit Symbol
  - Digit Symbol Copy (MAP)
  - Incidental Memory Recall
- Information
- Picture Arrangement

Wechsler Adult Intelligence Scale-Revised
- Digit Symbol – standard form
- Digit Symbol – UDS enlarged form

Wechsler Adult Intelligence Scale-III
- Block Design
- Information
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Wechsler Memory Scale
- Associate Learning
- Digit Span
  - Visual Digit Span: Sequential (MAP)
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- Information
  - MAP Information
- Logical Memory
  - Verbatim Scoring (MAP)
- Mental Control
  - MAP Mental Control - Count Back From 10
  - MAP Mental Control - Serial Counting by 2
  - MAP Mental Control - Spell Name
- Orientation
  - MAP Orientation
- Sentence Recall
  - MAP Sentence Recall

Wechsler Memory Scale-Revised
- Digit Span Forward and Backward
- Logical Memory Story A Delayed
- Logical Memory Story A Immediate
  - Verbatim Scoring (MAP)

Wechsler Memory Scale-III

Letter-Number Sequencing
Logical Memory I (Immediate) and II (Delayed)
Verbal Paired Associates
Wisconsin Card Sorting Test
Woodcock-Johnson Spatial Relations
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Zung Depression Scale

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