

WORKING P A P E R

Harmonization of Cross- National Studies of Aging to the Health and Retirement Study

Cognition

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DAS

WR-861/7

July 2011

This paper series made possible by the NIA funded RAND Center for the Study of Aging (P30AG012815) and the NICHD funded RAND Population Research Center (R24HD050906).

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**HARMONIZATION OF CROSS-NATIONAL STUDIES OF AGING TO THE HEALTH AND
RETIREMENT STUDY**

USER GUIDE

Cognition

Version A

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July 2011

This project is funded by NIA/NIH (R24 AG037866).

ABSTRACT

This paper summarizes and compares measures of cognitive health and decline in the Health and Retirement Study (HRS) and its sister surveys from other countries: the English Longitudinal Study of Ageing (ELSA), the Survey of Health, Ageing, and Retirement in Europe (SHARE), the Korean Longitudinal Study of Aging (KLoSA), the Japanese Study on Aging and Retirement (JSTAR), the Chinese Health and Retirement Longitudinal Study (CHARLS), the Mexican Health and Aging Study (MHAS), the Indonesian Family Life Survey (IFLS), The Irish Longitudinal Study on Aging (TILDA), Study on Global Aging (SAGE), and the Longitudinal Aging Study in India (LASI). The authors analyze and discuss the extent to which these measures are comparable, the methodological differences in the way information was collected for these measures, and the implications for secondary data analysis. This paper is one in a series of similar papers, each comparing different domains (e.g., chronic medical conditions, employment and retirement, expectations, transfers, income, and wealth) across these surveys with an aim to encourage rigorous, cross-national and international comparison research on aging populations.

TABLE OF CONTENTS

LIST OF TABLES	9
INTRODUCTION	10
EXECUTIVE SUMMARY AND OVERVIEW	12
1. INVENTORY OF MEASURES	16
1.1 Verbal Memory	16
1.2 Orientation.....	18
1.3 Verbal Fluency	19
1.4 Numeracy and numeric ability.....	19
1.5 Prospective Memory.....	20
1.6 Attention.....	21
1.7 Visuoconstruction	21
1.8 Vocabulary.....	22
1.9 Visual Memory.....	22
1.10 Non verbal Intelligence	22
1.11 Language Skills	23
2. METHODOLOGICAL ISSUES	25
2.1 United States – Health and Retirement Study (HRS)	25
2.1.1 Verbal Memory.....	25
2.1.2 Orientation	25
2.1.3 Numeracy and Numeric Ability	26
2.1.4 Vocabulary.....	26
2.1.5 Language.....	26
2.2 United Kingdom– English Longitudinal Study of Ageing (ELSA)	27
2.2.1 Verbal memory.....	27
2.2.2 Orientation	27
2.2.3 Verbal Fluency	27
2.2.4 Prospective Memory	28
2.2.5 Attention	28
2.2.6 Numeracy and Numeric Ability	28
2.3 The Irish Longitudinal Study on Ageing (TILDA).....	29
2.3.1 Verbal Memory.....	29

2.3.2	Orientation	29
2.3.3	Verbal Fluency	30
2.3.4	Prospective Memory	30
2.4	<i>Europe – Survey of Health, Ageing, and Retirement in Europe (SHARE)</i>	30
2.4.1	Verbal Memory.....	30
2.4.2	Orientation	31
2.4.3	Verbal Fluency	31
2.4.4	Numeracy and Numeric Ability	31
2.5	<i>Korea – Korean Longitudinal Study of Aging (KLoSA)</i>	31
2.5.1	Verbal Memory.....	31
2.5.2	Orientation	32
2.5.3	Visuoconstruction.....	32
2.5.4	Numeracy and Numeric Ability	32
2.5.5	Language.....	32
2.5.6	Executive Functioning.....	32
2.6	<i>Japan – Japanese Study on Aging and Retirement (JSTAR)</i>	33
2.6.1	Verbal Memory.....	33
2.6.2	Orientation	33
2.6.3	Numeracy and Numeric Ability	33
2.7	<i>China – Chinese Health and Retirement Longitudinal Study (CHARLS)</i>	34
2.7.1	Verbal Memory.....	34
2.7.2	Orientation	34
2.7.3	Visuoconstruction.....	34
2.7.4	Numeracy and Numeric Ability	34
2.8	<i>India – Longitudinal Aging Study in India (LASI)</i>	35
2.8.1	Verbal memory.....	35
2.8.2	Orientation	35
2.8.3	Verbal Fluency	35
2.8.4	Numeracy and Numeric Ability	36
2.9	<i>Indonesian Family Life Survey (IFLS)</i>	36
2.9.1	Verbal Memory.....	36
2.9.2	Orientation	37

2.9.3	Numeracy and Numeric Ability	37
2.9.4	Non-verbal Intelligence	37
2.10	<i>Mexican Health and Aging Study (MHAS)</i>	37
2.10.1	Verbal Memory.....	37
2.10.2	Attention	38
2.10.3	Visuoconstruction.....	38
2.10.4	Visual Memory.....	38
2.11	<i>Study on Global Ageing and Adult Health (SAGE)</i>	38
2.11.1	Verbal Memory.....	38
2.11.2	Verbal Fluency	39
2.11.3	Attention	39
3.	USING MEASURES IN CROSS-COUNTRY ANALYSIS.....	41
3.1	<i>Verbal Memory</i>	41
3.1.1	Administration.....	41
3.1.2	Flags.....	42
3.1.3	Direct Comparison of Answers.....	42
3.2	<i>Orientation</i>	42
3.2.1	Direct Comparison of Answers.....	42
3.3	<i>Verbal Fluency</i>	43
3.3.1	Administration.....	43
3.3.2	Direct Comparison of Answers.....	43
3.4	<i>Prospective Memory</i>	43
3.4.1	Administration.....	43
3.4.2	Flags.....	43
3.4.3	Direct Comparison of Answers.....	44
3.5	<i>Attention</i>	44
3.5.1	Administration.....	44
3.5.2	Direct Comparison of Answers.....	44
3.6	<i>Visuoconstruction</i>	44
3.6.1	Administration.....	44
3.6.2	Flags.....	44
3.6.3	Direct Comparison of Answers.....	44

3.7	<i>Numeracy and Numeric Ability</i>	45
3.7.1	Administration	45
3.7.2	Flags	45
3.7.3	Direct Comparison of Answers	45
3.8	<i>Vocabulary</i>	46
3.8.1	Administration	46
3.9	<i>Visual Memory</i>	46
3.9.1	Administration	46
3.10	<i>Non-verbal Intelligence</i>	46
3.10.1	Administration	46
3.11	<i>Language</i>	47
3.11.1	Administration	47
3.11.2	Direct Comparison of Answers	47
4.	QUESTION CONCORDANCE	48
4.1	<i>Verbal Memory</i>	48
4.1.1	HRS	48
4.1.2	ELSA	48
4.1.3	TILDA	49
4.1.4	SHARE	50
4.1.5	KLoSA	51
4.1.6	JSTAR	52
4.1.7	CHARLS	54
4.1.8	LASI	56
4.1.9	IFLS	56
4.1.10	MHAS	59
4.1.11	SAGE	64
4.2	<i>Orientation</i>	66
4.2.1	HRS	66
4.2.2	ELSA	68
4.2.3	TILDA	69
4.2.4	SHARE	69
4.2.5	KLoSA	70

4.2.6	JSTAR	71
4.2.7	CHARLS	73
4.2.8	LASI	73
4.2.9	IFLS.....	75
4.3	<i>Verbal Fluency</i>	76
4.3.1	ELSA	76
4.3.2	TILDA.....	76
4.3.3	SHARE	77
4.3.4	LASI	77
4.3.5	SAGE	78
4.4	<i>Prospective Memory</i>	78
4.4.1	ELSA	78
4.4.2	TILDA.....	80
4.5	<i>Attention</i>	81
4.5.1	ELSA	81
4.5.2	MHAS.....	81
4.5.3	SAGE	82
4.6	<i>Visuoconstruction</i>	84
4.6.1	KLoSA.....	84
4.6.2	CHARLS	84
4.6.3	MHAS.....	84
4.7	<i>Numeracy and Numerical Ability</i>	85
4.7.1	HRS	85
4.7.2	ELSA	87
4.7.3	SHARE	88
4.7.4	KLoSA.....	90
4.7.5	JSTAR	92
4.7.6	CHARLS	95
4.7.7	LASI	95
4.7.8	IFLS.....	97
4.8	<i>Vocabulary</i>	98
4.8.1	HRS	98

4.9 <i>Visual Memory</i>	99
4.9.1 MHAS.....	99
4.10 <i>Non verbal Intelligence</i>	99
4.10.1 IFLS.....	99
4.11 <i>Language</i>	100
4.11.1 HRS	100
4.11.2 KLoSA.....	100

LIST OF TABLES

Table 1. Summary of Cognitive Domains Measured in Each Survey 24

INTRODUCTION

The Health and Retirement Study (HRS) has achieved remarkable scientific success, as demonstrated by an impressive number of users, and research studies and publications, utilizing the HRS. Its success has generated substantial interest in collecting similar data as population aging have experienced and is progressing in every region of the world. The result has been a number of surveys designed to be comparable with the HRS: the English Longitudinal Study of Ageing (ELSA), the Survey of Health, Ageing, and Retirement in Europe (SHARE), the Korean Longitudinal Study of Aging (KLoSA), the Japanese Study on Aging and Retirement (JSTAR), the Chinese Health and Retirement Longitudinal Study (CHARLS), and the Longitudinal Aging Study in India (LASI). The overview of this family of surveys, including their research designs, samples, and key domains can be found in Lee (2010).¹

As these surveys were designed with harmonization as a goal, they provide remarkable opportunities for cross-country studies. The value of comparative analyses, especially the opportunities they offer for learning lessons resulting from policies adopted elsewhere, is widely recognized. Yet there is only a limited number of empirical studies exploiting such opportunities. This is partly due to the difficulty associated with learning multiple surveys and the policies and institutions of each country.

Identifying comparable questions across surveys is the first step toward cross-country analyses. The RAND meta data repository² provides users a digital library of questions for all these surveys. Its search engines enable users to examine cross-country concordance at for each survey question. Using them, researchers can identify all questions related to particular key words or within a domain or a sub-domain. The RAND meta data repository also provides macro-level statistics compiled from multiple sources.³

Nevertheless, comparing these questions and evaluating comparability across surveys is still a labor-intensive process. Understanding all the idiosyncratic details in each survey takes still more effort. To facilitate such a process, we have prepared a series of domain-specific user guides. These user guides are designed to provide researchers with documentation about the concepts, measures and questions of particular domains in the all HRS-family surveys. For each domain, we reviewed all

¹ Lee, J. (2010). Data set for pension and health: Data collection and sharing for policy design, *International Social Security Review*, 63, (3-4), 197 - 222.

² <https://metadata.rand.org/>

³ Sources include: the Organization for Economic Cooperation and Development (OECD), the World Health Organization (WHO), the World Bank, the International Monetary Fund (IMF), the U.S. Census, Eurostat, national statistical offices of China, Indonesia, Japan, and Korea, International Labor Organization (ILO), and other publicly available information (i.e., Index Mundi, Doing Business).

relevant questions across all surveys. These guides expand upon the information found in codebooks, questionnaires and data descriptions. They also provide our evaluation of the comparability across surveys and recommendations for harmonized measures that can be exploited for cross-country analyses. We hope these guides, by helping researchers save time and better understanding what can be studied in HRS-family surveys, accelerate scientific advances.

EXECUTIVE SUMMARY AND OVERVIEW

This guide reviews various cognitive function items that survey respondents are asked about in the HRS and its sister surveys around the world, focusing on the year 2006 for HRS, and baseline years for the other HRS family of surveys. All surveys contained at least one question that assessed cognitive function. Cognitive function tasks were grouped into eleven cognitive domains, although many tests may tap into more than one domain. We assess the comparability of items within each of these eleven cognitive domains: verbal memory, orientation, verbal fluency, prospective memory, attention, visuoconstruction, numeracy or numeric ability, vocabulary, visual memory, non-verbal intelligence, and language ability.

This user guide identifies several important differences in cognitive function tasks within each domain, in terms of mode of administration, type and number of questions asked, flags associated with the administration of items, and scoring of responses.

These key differences across the surveys can be summarized as follows:

- Verbal Memory
 - Across the nine out of eleven surveys that included a verbal recall test using a ten-item word list, the administration was largely similar except for the TILDA and JSTAR studies which gave a one-minute interval to recall words, instead of the two-minute interval. TILDA had a second trial, and SAGE had three trials to recall words immediately after being read the word list.
 - Most word lists were read aloud by the interviewer face-to-face, but the HRS word list was administered over the telephone, and the ELSA and TILDA word lists were read by a computer.
- Orientation
 - All nine surveys that assessed temporal orientation are comparable assuming that coding of the responses are carefully examined since some surveys asked the respondent to provide the current date within one question, and other surveys asked three separate questions to obtain the month, day, and year.
 - The CHARLS and KLoSA studies contained an additional, similar question on the season; the HRS and LASI contained different person orientation items; and the JSTAR and KLoSA contained different place orientation items.

- Verbal Fluency
 - Across the five surveys that assessed verbal fluency, there was substantial variation in the criteria for classifying animal names as acceptable.
- Prospective Memory
 - There were no differences in the administration of the prospective memory tasks given in the TILDA and ELSA studies.
- Attention
 - The attention tasks given in the ELSA, MHAS, and SAGE studies are completely different; the ELSA study used a letter cancellation task, the MHAS included a figure searching task, and the SAGE study included a digit span task.
- Visuoconstruction
 - The MHAS visuoconstruction task used two figures that were not the same as the interlocking pentagon visuoconstruction task used in the CHARLS and KLoSA studies.
- Numeracy and Numeric Ability
 - The HRS and LASI asked the respondent to count backward from 20; the LASI contained an additional question to count backward from 100.
 - The Serial 7 task was administered using the same protocol for the HRS, JSTAR, KLoSA, CHARLS, and LASI studies.
 - Across the six studies that included “real-world”, applied computation items, items differed in terms of the number of items asked of the respondent. The IFLS computation questions were mathematical questions and were not similar to the “real-world” computation items.
- Vocabulary
 - Only the HRS contained questions on vocabulary
- Visual Memory
 - Only the MHAS contained a task to recall and draw a figure from memory.
- Non-verbal Intelligence
 - Only the IFLS contained non-verbal intelligence questions to assess matrix reasoning by filling in a smaller missing picture piece within a larger picture using one of six answer choices.

- Language

- The HRS language items asked the respondent to give the meaning of five words whereas the KLoSA assessed language ability using six items to name objects, repeat a phrase, follow a three-stage command, read and follow a written instruction, and write a sentence.

We suggest below some harmonized measures that can be exploited for cross-country analysis. These measures should be adapted and derived with careful scrutiny of the statistical distribution of answers, coding of answer choices, and consideration of any skip patterns (missing data for certain population) and any heterogeneity in responses by sub-populations.

- Verbal Memory

- The HRS, ELSA, IFLS, SHARE, CHARLS, LASI, and SAGE interviewers had relatively similar administration protocols and coded the answers in similar ways and are therefore fairly comparable given the assumption that differences in the mode of administration (telephone vs. in-person), the time limit allowed to recall words, and time elapsed between the immediate and delayed recall trials across survey are inconsequential.

- Orientation

- The temporal orientation items across the nine surveys are comparable. The HRS and LASI person orientation items cannot be directly compared since the HRS contained two items and the LASI had one item. The season orientation items in the CHARLS and KLoSA studies are comparable, and although the JSTAR and KLoSA place orientation items are different, these items could be compared. If a general orientation score is desired, the average of all items could be calculated and compared, assuming the researcher is not interested in whether all aspects of orientation (time, place, people) need to be included.

- Verbal Fluency

- The administration of the verbal fluency tasks was similar although the scoring is only comparable if the “number of correct responses” is used. This comparison assumes that the number of incorrect responses is minimal and that the differences in scoring criteria were negligible. The “number of correct minus incorrect responses” cannot be calculated for some studies (ESLA, TILDA, LASI) that did not record how many incorrect animals were named.

- Prospective Memory

- The scores on the TILDA and ELSA prospective memory tasks are directly comparable.

- Attention

- The attention tasks are very different across the ELSA, MHAS, and SAGE studies. Thus, comparison across tasks is not recommended. If the researcher so desires, z-scores could be computed and compared assuming each of the three tasks across the studies are considered attention tasks.
- Visuoconstruction
 - The KLoSA and CHARLS both used the same interlocking pentagon figure and scores are therefore comparable.
- Numeracy and Numeric Ability
 - The counting backward from 20 item is directly comparable in the HRS and LASI studies.
 - The Serial 7 task is comparable in the HRS, JSTAR, KLoSA, CHARLS, and LASI studies.
 - The computation items can be averaged and compared for the HRS, ELSA, IFLS, JSTAR, LASI, and SHARE studies. Alternatively, a comparison of a sub-set of matching questions could be compared across a smaller sub-set of studies.
- Vocabulary
 - There is no direct comparison to the HRS vocabulary item in the HRS family of surveys.
- Visual Memory
 - There is no direct comparison to the MHAS visual memory item in the HRS family of surveys.
- Non-verbal Intelligence
 - There is no direct comparison to the IFLS non-verbal intelligence item in the HRS family of surveys.
- Language
 - The language items are very different in the KLoSA and HRS, however a z-score comparison could be made.

1. INVENTORY OF MEASURES

Measures of cognitive function include tasks and questions that assess brain functioning across several domains. We focus on eleven, broad categories of cognitive function that are measured across the HRS-family of surveys including verbal and visual memory, orientation, verbal fluency, attention, prospective memory, visuoconstruction, numeracy, vocabulary, language, and intelligence. Some measures of cognitive function assess multiple constructs such as attention, memory and processing speed. For these measures, we categorized them according to the potential comparability of cognitive domains that are assessed in other HRS sister studies. In this user guide, we only include objective measures of cognitive function measured by items from established cognitive tests, and do not include measures of self-reported problems with cognitive functioning such as memory or general cognition. We also exclude questions asked of proxy respondents which are administered in the case that a respondent is not capable of responding to the objective tests of cognitive function.

We provide a brief overview below of the various items within each cognitive domain that survey respondents are asked about in HRS and its sister surveys around the world. All 11 surveys in the Meta Data Repository assessed at least one domain of cognitive function. We focus on the year 2006 for the HRS and for the remainder of the studies we focus on the baseline assessment years when cognitive function was measured. Table 1 summarizes the concepts that are measured in each survey and the accompanying survey year the cognition measures below were drawn from.

1.1 Verbal Memory

Verbal memory assesses the ability to remember information that is presented aurally and the ability to discriminate and prevent the intrusion of irrelevant information into recall and recognition.

All 11 surveys included a verbal memory task in which the interviewer read out a list of words to the subjects which the subjects were then asked to recall – once (or multiple times) immediately after the words are presented (immediate recall) and once (or multiple times) at a later point in time during the interview (delayed recall). The number of words in the list, the time the subject had to recall the word lists, the number of recall trials, and how the recall trials were scored all differed by study but the basic underlying task remained consistent across studies.

- HRS
 - Consisted of a list of ten words read slowly by the interviewer. The words were then were recalled by the respondent once immediately and once at a later point in time. The respondents were given up to 2 minutes to recall the words during the immediate and the delayed recall.

- ELSA
 - Subjects were assigned one of four lists consisting of 10 words each. These 10 words were read out by a computer at a slow steady rate of one word every two seconds. Similar to the HRS, the respondents were given up to 2 minutes to recall the words during the immediate and the delayed recall.

- TILDA
 - Consisted of a similar protocol of reading 10 words from one of four word lists, with up to 2 minutes given to recall the words but with two immediate recall tasks before which the interviewer read out the word list again. There was one delayed recall task.

- SHARE
 - The interviewer read a list of 10 words. No time limit was given to recall the words. The respondent was asked to recall the words again at a later point in time. The interviewer wrote down all the words and scored the correct words.

- KLoSA
 - The interviewer read three words (from any one of the five word lists). The respondent recalled the words once immediately and again later during the delayed recall trial.

- JSTAR
 - A list of 10 words was given but in this case the respondent was given approximately one minute to recall the words. The respondent was asked to remember the words later.

- CHARLS
 - Consisted of a list of 10 words which were recalled once immediately and once at a later point in time. The subject was given approximately two minutes to recall the words.
- LASI
 - Included 10 words (from one of three randomly assigned word lists) once immediately and once at a later point in time. The subject was given approximately two minutes to recall the words.
- IFLS
 - Consisted of 10 words from one of four separate wordlists assigned by the interviewer. The subject was given two minutes to recall the words (for both immediate and delayed recall).
- MHAS
 - This task used an 8-item word list which was read out loud three times by the interviewer with each reading followed by an immediate recall by the respondent. There was one delayed recalls.
- SAGE
 - Consisted of a list of ten words with three immediate recalls trials and one delayed recall trial. The subject was given approximately two minutes to recall the words.

1.2 Orientation

Orientation is one's understanding of the self and the relationships between the self and our environments both in the past and in the present. Place, time and person are the common categories of orientation. Nine of the surveys had items on orientation. SAGE and MHAS were the two surveys that did not include questions on orientation. These questions were largely adapted from the Mini-Mental State Examination (MMSE) test. All nine surveys had questions on time orientation eliciting the date (day, month, and year) and the day of the week. In addition, the specific surveys covered the following:

- HRS and LASI
 - Contained additional questions on person orientation asking the respondents to name the current heads of their nations (President and Vice President for the U.S., Prime Minister for India).

- KLoSA
 - Contained an additional question on temporal orientation asking the respondent to name the season. A more detailed question for place orientation asked the respondent's complete address and an additional question on the uses or type of the place where the interview was being conducted.

- JSTAR
 - Contained additional questions on place orientation asking the respondent to name the prefecture (Japanese equivalent of a state) and city of residence.

- CHARLS
 - Contained an additional question on temporal orientation asking the respondent to name the season.

1.3 Verbal Fluency

Verbal fluency measures the speed and ease of verbal production. Five surveys (ELSA, LASI, SHARE, SAGE and TILDA) included questions on verbal fluency. This task is often also categorized as “categorical fluency” in the cognition literature and the ELSA also categorizes this test as an executive function task. In this task, the respondents are asked to name members of a specific class of objects or beings (e.g. animals, birds) within a limited time span of one minute. All five surveys asked for names of animals.

1.4 Numeracy and Numeric Ability

Eight surveys included a numeracy task in which the respondents were asked to count backward and do simple computations involving basic mathematical operations like addition, subtraction, division, multiplication and percentages. The MHSA, SAGE and TILDA did not include any questions on numeracy.

- HRS and LASI asks the respondent to count backward as quickly as possible from the number 20. The respondent is asked to stop after correctly counting backward from 20 to 11 or from 19 to 10. The LASI study also asked the respondent to count backward from 100 and gave the respondent 2 minutes to complete the task.
- CHARLS, HRS, JSTAR, KLoSA, and LASI shared a common numeracy test called “Serial 7” task in which the respondent was asked to subtract seven from 100 in the first step and asked to continue subtracting seven from the previous number in each subsequent step. This task was taken from the MMSE scale.
- ELSA, HRS, IFLS, JSTAR, LASI and SHARE shared a series of similar questions asking the respondent questions such as computing the price of an object after a sale, the amount accrued as bank interest, and fraction-based calculations of the original price of an item.

1.5 Prospective Memory

Prospective memory, sometimes referred to as “remembering to remember” is a form of memory that involves remembering to perform a future planned action or intention at the appropriate time and does not depend on memory of events from a previous event or time. Examples of tasks involving prospective memory would be remembering to take one’s medication at the designated time or remembering to return a movie rental before it becomes overdue.

- ELSA and TILDA
 - Both studies incorporated one test of prospective memory each. Early in the course of the interview protocol the interviewer instructed the respondent that the interviewer would like the respondent to write down his/her initials on the top left of the page when the interviewer hands the respondent a piece of paper sometime during the remainder of the interview and also remind the interviewer of the time when they end the concentration tasks. After these instructions are given, the interviewer would resume conducting other parts of the interview which keep the respondent occupied until they come to the point where the interviewer would hand the respondent the agreed upon piece of paper and see if the respondent remembered to write his/her initials at the agreed upon place or reminded the interviewer of the time when the concentration tasks ended as they had

planned earlier. The interviewer notes the response and if they needed prompts to be reminded of the earlier instructions.

1.6 Attention

Attention involves selectively concentrating on one aspect of the environment while ignoring other stimuli. Three surveys included different items to assess attention.

- ELSA
 - Includes a letter cancellation task that assesses attention, processing speed, and visual scanning. The respondent is asked to go through a list of letters as quickly as they can cancel (or cross) out all the P's and W's within a one-minute interval.

- MHSA
 - The respondent is shown a figure and then asked to find all such figures and circle them within 60-seconds.

- SAGE
 - Involved a forward and backwards digit span. The interviewer would give the respondent a short string of numbers and the respondent would be asked to repeat the digits in the same order as the interviewer in the “forward” version of the task. In the “backward” version, the respondent is asked to repeat the digits in the reverse order of the one used by the interviewer. The number of digits in each round increases by one digit with the maximum digit string size of eight.

1.7 Visuoconstruction

Visuoconstruction is the ability to coordinate fine motor skills with visuospatial abilities, usually in the reproduction of geometric figures. This domain takes into account both the individual's aptitude for copying a figure as well as the planning and organization that went into creating that figure. The surveys assessed visuoconstruction.

- CHARLS, KLoSA
 - Respondents are shown a picture of two overlapping pentagons and asked to replicate that picture on a piece of paper. The interviewer notes whether the respondent drew a figure or failed to do so.

- MHAS
 - The respondent is instructed to draw the figures exactly like the two figures presented by the interviewer.

1.8 Vocabulary

Vocabulary knowledge measures the degree to which a respondent comprehends and can verbally express vocabulary. This test is also measure of crystallized intelligence.

- HRS
 - The respondent is asked two questions to name an object used to cut paper and to name the prickly plant that grows in the desert. Both these items are taken from the Modified Telephone Interview for Cognitive Status (TICS) scale.

1.9 Visual Memory

Visual memory assesses the ability to remember information that is presented visually and the ability to discriminate and prevent the intrusion of irrelevant information into recall and recognition.

- MHAS
 - The respondent is asked to recall the two figures drawn from the visuoconstruction task given earlier and to draw it from memory on a piece of paper.

1.10 Non verbal Intelligence

Non-verbal intelligence is the ability to analyze information and solve problems using visual and hands-on-reasoning. Non-verbal tasks include the following skills: recognizing and remembering visual sequences; understanding meaning and relationships between visual

concepts; performing visual analogies and recognition of causal relationships from visual information.

- IFLS

- The respondent is shown a picture and is asked to guess which matrix piece from six answer choices (picture a, b, c, d, e or f) should belong where there is a "blank" spot in the original picture. There are 12 such matrices to solve.

1.11 *Language Skills*

Language skills assess verbal behavior including domains such as spontaneous speech, repetition of words, speech comprehension, naming, reading, and writing.

- HRS

- Respondents were given five words and asked to give the meanings/definitions of five words.

- KLoSA

- There were five items that assessed language ability. First, in two questions, the interviewer points to two different objects and asks the respondent to name the objects. Second, the respondent is asked to repeat "Seeing is believing." Third, a three-stage command task is given to take a piece of paper from the interviewer, turn it over, fold it in half, and give it back to the interviewer. Fourth, a piece of paper was given to the respondent with the instructions to read and then complete the task to "Close your eyes". And fifth, the respondent was asked to write a sentence about how they felt on that day or about that day's weather conditions.

Table 1. Summary of Cognitive Domains Measured in Each Survey

	<i>HRS</i>	<i>ELSA</i>	<i>TILDA</i>	<i>SHARE</i>	<i>KLoSA</i>	<i>JSTAR</i>	<i>CHARLS</i>	<i>LASI</i>	<i>IFLS</i>	<i>MHAS</i>	<i>SAGE</i>
Year of Assessment	2006	2002	2010	2004	2006	2007	2008	2010	2007	2001	2007
Verbal Memory	x	x	x	x	x	x	x	x	x	x	x
Orientation	x	x	x	x	x	x	x	x	x		
Verbal Fluency		x	x	x				x			x
Prospective Memory		x	x								
Attention		x								x	x
Visuoconstruction					x		x			x	
Numeracy and numeric ability	x	x		x	x	x	x	x	x		
Vocabulary	x										
Visual Memory										x	
Non-verbal intelligence									x		
Language	x				x						
Executive functioning					x						

2. METHODOLOGICAL ISSUES

We now discuss some methodological issues related to the cognition domains assessed in each of the surveys. In particular, we focus on differences in test administration, flags that are used by interviewers to indicate problems in the administration of test items, and response or scoring options.

2.1 *United States – Health and Retirement Study (HRS)*

All of the items from the HRS 2006 battery of cognitive tests come from the TICS and were administered via telephone. At the end of the cognition tests, the interviewer could indicate in a flag, how often the respondent received assistance with answers in the cognition section.

2.1.1 *Verbal Memory*

The interviewer is instructed to read out loud a list of 10 words, approximately one word every two seconds. The word list was randomly assigned from four potential word lists. The respondent is asked to immediately recall the list of words, with as much time given as needed up to 2 minutes. The words can be recalled in any order. The interviewer notes all of the correctly recalled words and also notes how many wrong words were given (although not necessarily the exact incorrect word that was given). The same guidelines applied to the delayed recall task. The depressive symptom, counting backward and Serial 7 task were administered in between the immediate and delayed recall trials.

Several flags are associated with the immediate recall task. The interviewer can note whether the respondent had any difficulty hearing any of the words, an interruption occurred while reading the list, or if and what any other problems occurred. The interviewer could also note whether the respondent definitely used an aid, if he or she suspects the respondent used an aid, or had no reason to think that the respondent used an aid.

2.1.2 *Orientation*

The HRS includes four temporal orientation items that ask the respondent to provide the month, day of month, year, and day of week. One point is given for each correct response. Two person-orientation items ask the respondent to provide the name of the current President and Vice President of the United States. A correct response is given one point if the last name is correct.

2.1.3 Numeracy and Numeric Ability

For the first test of numeric ability, the respondent is asked to count backward as quickly as he/she can from the number 20. The test is stopped once the respondent has counted 10 numbers (19 to 10 or 20 to 11). If the response is coded as incorrect or correct, the next numeracy item (Serial 7 task) is given. If the respondent would like to choose to start over, he or she can re-do this item, counting backward again from 20. After this second optional trial, the interviewer then proceeds to the Serial 7 task.

The Serial 7 task asks the respondent to subtract 7 from 100. If the respondent adds 7 instead of subtracting, the question is repeated. The interviewer then asks the respondent to subtract 7 from the prior number and then three more times after that. The interviewer can raise a flag if the interviewer felt that the respondent definitely used an aid, the interviewer suspects that the respondent used an aid, or had no reason to think that the respondent used an aid.

Two additional numeracy items were given to assess computations skills which asked (1) the number of people out of 1,000 who would be expected to get a disease if there is a 10% chance of getting the disease; (2) how much each of five people would get if they all have the winning numbers for a 2 million dollar prize; (3) how much total money the respondent would have in a savings account at the end of two years if the account earned 10% interest on \$200. Responses were coded as integers.

2.1.4 Vocabulary

The respondent is asked the name of the object used to cut paper. Scissors or shears are marked as correct responses. A second question asks the respondent to name the prickly plant that grows in the desert. Either the word "cactus" or the name of a type of cactus is considered a correct response.

2.1.5 Language⁴

The respondent is asked five questions to give the meanings of five words: repair, fabric, domestic, remorse, and plagiarize. The interviewer records the definition for each word. An

⁴ These language items were administered for new interviewees in 2006 and were not administered if the respondent was younger than 65 years and if they were being reinterviewed after having a prior wave of data.

alternative word set that can be given include conceal, enormous, perimeter, compassion, and audacious. One of the two word sets is chosen randomly. These items were adapted from the Wechsler Adult Intelligence Scale-Revised (WAIS-R) vocabulary sub-test of the verbal comprehension index of intelligence.

2.2 United Kingdom– English Longitudinal Study of Ageing (ELSA)

All of the cognition items given in ELSA were administered via CAPI. At the end of the interview, the interviewer notes whether there was anyone other than the interviewer and respondent in the room, and also whether there were any factors (and what they were) that may have impaired performance on the tests.

2.2.1 Verbal memory

A list of 10 words is read to the respondent by the computer. If the respondent cannot hear the test message given from the computer after two tries, the interviewer is instructed to read the word list approximately one word every two seconds. The word list was randomly assigned from four potential word lists which were the same word lists as the HRS. The respondent is asked to immediately recall the list of words, with as much time given as needed up to 2 minutes. The words can be recalled in any order. The interviewer notes all of the correctly recalled words but is not asked to count any words that the respondent gives that are not on the list. The same guidelines applied to the delayed recall task. The verbal fluency and letter cancellation tasks were administered in between the immediate and delayed recall trials.

2.2.2 Orientation

The ELSA includes four temporal orientation items that ask the respondent to provide the month, day of month, year, and day of week. One point is given for each correct response.

2.2.3 Verbal Fluency

The interviewer asks the respondent to name as many different animals as he/she can think of and is given one minute. The interviewer tells the respondent when to begin, and a computer voice instructs the respondent when to stop. The interviewer writes the name of the animals mentioned. Repetitions, redundancies (white cow, brown cow), animals with names (Bambi,

Spot), different breeds, gender- or generation-specific names are not counted. The interviewer does not note any incorrect responses (non-animals).

2.2.4 Prospective Memory

Respondents are informed about two actions that they will be asked to carry out at a later point in time, without reminder during the cognition session. The first task is to remember to write their initials in the top left-hand corner of a page that the interviewer shows to them when they are later handed that page and a pen. The second task is to remember to remind the interviewer to record the time that the cognition section is finished. When this time comes, the interviewer gives the respondent with paper and pen and pauses and says “These are for you”. The interviewer pauses for exactly 5 seconds to see if the respondent remembered to write his/her initials at the agreed upon place or remind the interviewer of the time when the concentration tasks ended as they had planned earlier. If he or she fails to carry out the correct actions, the interviewer provides a prompt that reminds the respondent that the respondent was going to do something. The first task is based on a similar task from the Medical Research Council Cognitive Function and Ageing Study (Steel, Huppert, McWilliams & Melzer, 2004 www.ifs.org.uk/elsa/report03/ch7.pdf). The second task is based on a similar task used in the Rivermead Behavioral Memory Test. (Lezak, Howieson, Loring & Hannay, 2004) Neuropsychological assessment, page 491)

2.2.5 Attention

The respondent is asked to go through a list of letters as quickly as they can cancel (or cross) out all the P's and W's starting at the top left hand corner and working in a line as if reading a page within a one-minute interval. The respondent is asked to work as quickly and as accurately as possible. The interviewer notes number of letters canceled correctly. In addition, a “search efficiency” score was calculated which was the number of target letters correctly cancelled as a percentage of total letters searched.

2.2.6 Numeracy and Numeric Ability

Six numeracy items were given which asked (1) the cost of a £300 sofa at half price; (2) the number of people out of 1,000 who would get a disease if there is a 10% chance of getting the disease; (3) the cost of a car when it was new if the car was currently £6000 and two-thirds

the cost of what is was new; (4) the amount of change that should be given for a 85 pence drink paid with a one pound coin; (5) how much each of five people would get if they all have the winning numbers for a £2million prize; (6) how much total money the respondent would have in a savings account at the end of two years if the account earned 10% interest on £200. The correct number of answers on all numeracy items was summed.

2.3 The Irish Longitudinal Study on Ageing (TILDA)

At the end of the interview, the interviewer notes whether there were any factors (and what they were) that may have impaired performance on the tests, and how often the respondent received assistance with questions in the cognition module.

2.3.1 Verbal Memory

A list of 10 words is read by a computer, pausing two seconds after each word. The word list was randomly selected from four potential word lists which were the same word lists as the HRS and ELSA. The respondent is asked to immediately recall the list of words, with as much time given as needed up to 1 minute, and then again allowing up to 2 minutes. The interviewer noted the total number of correct words recalled. A second immediate recall trial is given before which the interviewer read out the word list again. The respondent was given up to two minutes to recall words on the list. The interviewer noted the total number of correct words recalled. The words can be recalled in any order. The interviewer notes all of the correctly recalled words but is not asked to count any words that the respondent gives that are not on the list. There was one delayed recall task and the same guidelines applied to the delayed recall task. It is unclear the sequencing of tests that were administered in between the immediate and delayed recall trials.

2.3.2 Orientation

TILDA includes four temporal orientation items that ask the respondent to provide the month, day of month, year, and day of week. One point is given for each correct response. These items were taken from the MMSE.

2.3.3 Verbal Fluency

The interviewer asks the respondent to name as many different animals as he/she can think of and is given one minute. If the respondent stops before the end of one minutes, the interviewer encourages the respondent to try to find more words. The score is the sum of all acceptable animals, real or mythical. Repetitions and proper nouns are not counted. A species name, accompanying breeds within a species, male, female, and infant names within the species all get credit. The interviewer does not note any incorrect responses (non-animals).

2.3.4 Prospective Memory

Respondents are informed about two actions that they will be asked to carry out at a later point in time, without reminder during the cognition session. The first task is to remember to write their initials in the top left-hand corner of a page that the interviewer shows to them when they are later handed that page and a pen. The second task is to remember to remind the interviewer to record the time that the cognition section is finished. When this time comes, the interviewer gives the respondent with paper and pen and pauses for five seconds to see if the respondent performs the correct actions. If he or she fails to carry them out, the interviewer provides a prompt that reminds the respondent that the respondent was going to do something. The first task is based on a similar task from the Medical Research Council Cognitive Function and Ageing Study. The second task is based on a similar task used in the Rivermead Behavioral Memory Test

2.4 Europe – Survey of Health, Ageing, and Retirement in Europe (SHARE)

At the beginning of the interview, the interviewer is to make sure that no third party is present. If the respondent is not capable of answering any of the questions on his/her own, the interviewer flags that question and makes a remark at the end of the section.

2.4.1 Verbal Memory

A list of 10 words is read to the respondent. The respondent is asked to immediately recall the list of words. It is unclear how much time is given. The interviewer notes the number of correctly recalled words but is not asked to count any words that the respondent gives that are not on the list. The same guidelines applied to the delayed recall task except that the

interviewer is given instructions to write the words down. The verbal fluency and numeracy items were administered in between the immediate and delayed recall trials.

2.4.2 Orientation

SHARE includes four temporal orientation items that ask the respondent to provide the month, day of month, year, and day of week. One point is given for each correct response. These items were taken from the MMSE.

2.4.3 Verbal Fluency

The interviewer asks the respondent to name as many different animals as he/she can think of and is given one minute. If the respondent stops before the end of one minute, the interviewer encourages the respondent to try to find more words. It is unclear what exclusion criteria are for acceptable animals are, and whether the interviewer writes down the names of animals or records any incorrect responses.

2.4.4 Numeracy and Numeric Ability

SHARE asks four numeracy items which assess (1) the number of people out of 1,000 who would get a disease if there is a 10% chance of getting the disease; (2) the cost of a 300 [local currency] sofa at half price; (3) the cost of a car when it was new if the car was currently 6,000 of the local currency and two-thirds the cost of what it was new; (4) how much total money the respondent would have in a savings account at the end of two years if the account earned 10% interest on 2,000 worth of the local currency. Answer choices were not read aloud for any of the questions.

2.5 Korea – Korean Longitudinal Study of Aging (KLoSA)

The KLoSA administered the Korean version of the MMSE via CAPI. At the end of the session, the interviewer notes whether the respondent received any assistance with the cognition items.

2.5.1 Verbal Memory

Three words are read aloud to the respondent as part of the Korean version of the MMSE. These three words are chosen from a list of five sets of word lists. The participant is asked to immediately recall the words and the interviewer scores how many words are correctly recalled.

The interviewer instructs the respondent to remember the words because they will be asked to recall them later. The delayed recall trial occurs after the Serial 7 task, and the interviewer scores how many words are correctly recalled.

2.5.2 Orientation

Time orientation items asked the respondent to provide the month, day of month, year, day of week, and season. Another question asked the respondent what is the place (of interview) that used for (e.g., hospital, market, living room, nursing home). The respondent was then asked for their address (city, gun, dong, and street). Four points were given if they gave their address information correctly.

2.5.3 Visuoconstruction

This task involved giving the respondent a picture of two overlapping pentagons. The respondent was asked if he or she could see the picture, and if so, to copy the picture.

2.5.4 Numeracy and Numeric Ability

The Serial 7 task asks the respondent to subtract 7 from 100. The interviewer then asks the respondent to subtract 7 from the prior number and then three more times after that. The interviewer notes whether each subtraction was correct or incorrect. For respondents who were unable to solve the first calculation, the question is marked as incorrect.

2.5.5 Language

There were three items that assessed language ability. First, in two questions, the interviewer points to a specific object and asks the respondent to name the object. The answer is marked as correct or incorrect. Second, another question asked the respondent to repeat "Seeing is believing." The answer is marked as correct or incorrect.

2.5.6 Executive Functioning

There was one item in this category. A three-stage command task is given to take a piece of paper from the interviewer, turn it over, fold it in half, and give it back to the interviewer. Three points are given if each task is completed successfully. All of these items are part of the Korean version of the MMSE.

2.6 Japan – Japanese Study on Aging and Retirement (JSTAR)

The cognition items in JSTAR were given by face-to-face interview. Before beginning the cognition tests, the interviewer noted subjectively whether the respondent may be incapable of taking the test due to vision, hearing, speaking, or similar problems. The interviewer is also asked if anyone other than respondent is present, and if so, to ask them to leave the immediate area, or to refrain from speaking and helping the respondent with the answers. At the end of the cognition section, the interviewer is flagged to note whether any problems occurred during this section that prevented the respondent from answering.

2.6.1 Verbal Memory

A list of 10 words is read to the respondent by the interviewer. The respondent is asked to immediately recall the list of words in any order. The respondent is given up to one minute. If the respondent did not hear a word, the interviewer is allowed to repeat the word just once. The interviewer notes whether each of the 10 words is recalled correctly but is not asked to count any words that the respondent gives that are not on the list. The interviewer can raise a flag if the respondent had difficulty hearing the words or if there was an interruption occurred by telephone, etc., while reading words. The same guidelines applied to the delayed recall task. The numeracy items were administered in between the immediate and delayed recall trials.

2.6.2 Orientation

The orientation items assessed temporal orientation with four questions about the year, month, date, day of week. Two additional items assessed place orientation by asking what prefecture they were currently located in, and what city or town they were currently located in. One point was given for each correct answer.

2.6.3 Numeracy and Numeric Ability

The Serial 7 task asks the respondent to subtract 7 from 100. The interviewer then asks the respondent to subtract 7 from the prior number and then three more times after that. The interviewer notes the answer for each subtraction.

Four additional questions asked about numeracy which assessed (1) the number of people out of 1,000 who would get a disease if there is a 10% chance of getting the disease; (2) the cost of a £300 product at half price; (3) the cost of a used dictionary when it was new if the book was

currently 6,000 yen and two-thirds the cost of what is was new; (4) how much total money the respondent would have in a savings account at the end of two years if the account earned 10% interest on 2,000 yen. Answer choices were not read aloud for any of the questions.

2.7 China – Chinese Health and Retirement Longitudinal Study (CHARLS)

The cognition items in CHARLES were given by face-to-face interview.

2.7.1 Verbal Memory

A list of 10 words is read to the respondent. There is only one list of 10 words to choose from. The respondent is asked to immediately recall the list of words in any order, and is given up to two minutes to respond. The interviewer marks a check for each correctly recalled word on the list but is not asked to count any words that the respondent gives that are not on the list. The same guidelines applied to the delayed recall task. The self-reported attention question, numeracy, and visuoconstruction items were administered in between the immediate and delayed recall trials.

2.7.2 Orientation

The orientation items assessed temporal orientation by first asking for the date; one point each is given if the year, month, and date given are correct. The interviewer also asks the day of week and season and one point each is given if the correct day of week or season is given.

2.7.3 Visuoconstruction

This task involved giving the respondent a picture of two overlapping pentagons. The respondent was asked if he or she could see the picture, and if so, to copy the picture. This task is part of the MMSE.

2.7.4 Numeracy and Numeric Ability

The Serial 7 task asks the respondent to subtract 7 from 100. The interviewer then asks the respondent to subtract 7 from the prior number and then three more times after that. The interviewer notes the answer for each subtraction.

2.8 India – Longitudinal Aging Study in India (LASI)

The LASI cognition items were administered via CAPI. At the end of the cognition section, the interviewer is flagged to note whether any problems occurred during this section that prevented the respondent from answering. The interview was done in the language of respondent's choice.

2.8.1 Verbal memory

A list of 10 words is read to the respondent. This list is chosen randomly from a three potential lists of 10 words. These lists are not the same as in HRS, ELSA, and TILDA. The words were chosen to reflect the same level of difficulty in different languages (i.e., Hindi, Malayalam, Kannada, Punjabi). The respondent is asked to immediately recall the list of words in any order, and is given up to two minutes to respond. The interviewer notes the number of words correctly recalled but is not asked to write down the words or account for any words that the respondent gives that are not on the list. The same guidelines applied to the delayed recall task. The verbal fluency and numeracy, items were administered in between the immediate and delayed recall trials. The interviewer can note whether the respondent had difficulty hearing any of the words, whether an interruption occurred while you were reading the list, and if there was any other problem (and what it was).

2.8.2 Orientation

The orientation items assessed temporal orientation with four questions about the year, month, date, and day of week. An additional items assessed person orientation by asking the name of the prime minister of India. One point was given for each correct answer.

2.8.3 Verbal Fluency

The interviewer asks the respondent to name as many different animals as he/she can think of and is given one minute. If the respondent stops before the end of one minute or if there is a silence of more than 15 seconds, the interviewer encourages the respondent to try to find more words. The interviewer was instructed to note the total number of errors, including anything that is not an animal or bird. Categories of animals, any member of the animal kingdom real or mythical is scored as correct, except repetitions and proper nouns.

2.8.4 Numeracy and Numeric Ability

Two items asked the respondent to count backward from either the number 20 or 100. The respondent is asked to do so as quickly as possible. The interviewer stops the respondent when they have counted backwards from 19 to 10 or 20 to 11 and notes if the respondent correctly counted without error. If they made an error, they skip the question that asks the respondent to count backward from 100. For the item that uses 100 as the starting number, the respondent is told they will be given two minutes. The interviewer recorded whether the respondent correctly counted from 100-91 or 99-90, and to which number the respondent counted within the two minute interval.

The next numeracy task was the Serial 7 task which asks the respondent to subtract 7 from 100. The interviewer then asks the respondent to subtract 7 from the prior number and then three more times after that. The interviewer notes the answer for each subtraction.

Two subsequent items assess numeracy by asking (1) the cost of a R300 sari at half price; and (2) if 5 people all have winning lottery numbers and the prize is R1,000, how much each person would get. The interviewer records whether the respondent gave the correct answer for each question.

2.9 Indonesian Family Life Survey (IFLS)

The cognition items in the IFLS were given by face-to-face interview.

2.9.1 Verbal Memory

A list of 10 words is read to the respondent by the interviewer with a two second pause between each word. The word list was assigned by the interviewer from four potential word lists which were the same word lists as the HRS, ELSA, and TILDA, with some cultural/language translations of some of the words. The respondent is asked to immediately recall the list of words, with as much time given as needed up to two minutes. The words can be recalled in any order. The interviewer circles all of the correctly recall words and notes all of the words mentioned that are not on the list. The same guidelines applied to the delayed recall task. The time at the end of the immediate recall and beginning of delayed recall was noted.

2.9.2 Orientation

One question was administered which asked the respondent to provide today's date. The response could be recorded on the Gregorian, Islamic, or local calendar year. The interviewer notes if one, two, or all three aspects (day, month, year) were correctly given. The day of week was also asked in a separate question.

2.9.3 Numeracy and Numeric Ability

Seven numeracy items ask the respondent to provide the answer to addition, subtraction, division and multiplication math problems. It is unclear whether the multiple answer choices are read aloud to the respondent as answers to choose from. Two additional items assessed numeric ability, but their English translations were unavailable.

2.9.4 Non-verbal Intelligence

The respondent is shown a colored picture and is asked to indicate which matrix piece from six answer choices (picture a, b, c, d, e or f) should belong where there is a "blank" spot in the original picture. There are 12 such questions and the interviewer records the respondent's answer choice. This task resembles Raven's colored progressive matrices and Wechsler Adult Intelligence Scale matrix reasoning tests.

2.10 Mexican Health and Aging Study (MHAS)

2.10.1 Verbal Memory

A list of eight words was given to the respondent. This list was chosen by the interviewer from two lists, determined by birth month in the case that the interviewer was interviewing a couple. The eight item word list was read out loud three times by the interviewer with each reading followed by an immediate recall by the respondent. The words could be recalled in any order. The sequencing of words in each immediate recall reading by the interviewer was different. The interviewer noted how many of the eight words were correctly recalled in each immediate recall trial. The best score from the three trials was noted. There was one delayed recall trial. The interviewer noted if less than or more than 4 words were recalled. The attention and visual memory tasks were given in between the last immediate recall trial and the delayed recall trial.

2.10.2 Attention

The respondent is shown a figure and then asked to find all such figures and circle them within 60-seconds. The interviewer scores the total number objects that the respondent circled correctly. Objects that were circled but do not correspond to the target figure were not counted. The respondent is considered to have passed with a grade of 24 or greater.

2.10.3 Visuoconstruction

The respondent is instructed to draw two figures exactly like the figures presented by the interviewer. Each figure is graded as either “intact” or “impede”; a figure was graded as impede if there were major distortions in the shape or orientation of more than one element out of a total of five elements. The interviewer noted if the respondent could not attempt or successfully complete the task due to vision problems.

2.10.4 Visual Memory

The respondent is asked to recall the two figures drawn from the visuoconstruction task given earlier and to draw it from memory on a piece of paper. They are given 3 minutes to complete the two figures. The interviewer can suggest to the respondent that he/she can guess and can give partial answer if he/she seems insecure. If the respondent produces the figure from the attention task the interviewer is told to draw the other figures that he/she drew before. The interviewer scores the number of figures drawn correctly with the option of noting if vision problems affected the respondent’s performance on this task. This task appears to be a modified version of the Benton Visual Retention test.

2.11 Study on Global Ageing and Adult Health (SAGE)

The SAGE cognition items are administered via face-to-face interview.

2.11.1 Verbal Memory

A list of 10 words is read to the respondent. This list is not the same as in HRS, ELSA, and TILDA, but is a modified version of the list from the Rey Auditory Verbal Learning Test. The respondent is asked to immediately recall the list of words in any order, with no time limit indicated to respond. The interviewer notes the words recalled from the list and also notes words that are substituted. The number of words correctly recalled, failed to recall, and number

of words substituted are recorded. There were two additional trials for a total of three immediate recall trials in which the list is read again, and the respondent is asked to recall the words. During the delayed recall task the list is not read again, and the interviewer only notes the number of words correctly recalled, failed to recall, and number of words substituted are recorded. The verbal fluency and attention items were administered in between the immediate and delayed recall trials.

2.11.2 Verbal Fluency

The interviewer asks the respondent to name as many different animals as he/she can think of and is given one minute. If the respondent stops before the end of one minute the interviewer encourages the respondent to try to find more words. If there is a silence of more than 15 seconds, the interviewer prompts them to continue or repeats the basic instructions. The interviewer was instructed to note the total number of animals named correctly, and the total number of errors, including anything that is not an animal. The list of accepted animals include birds, insects, and fish.

2.11.3 Attention

This task was two parts involving forward and backwards digit span. The interviewer gives a short string of numbers at the rate of one per second, and the respondent would be asked to repeat the digits in the same order as the interviewer in the “forward” version of the task. The number of digits increases from two digits to eight digits for a total of seven series with the last series having eight digits to repeat forwards. If the respondent responds incorrectly in any of the series, the interviewer gives the second trial in that series. In the “backward digit span” version, the respondent is asked to repeat the digits in the reverse order of the one given by the interviewer. For example, if the interviewer said 2-1-4, then the correct response would be 4-1-2 in the backward digit span task. In this example, there are only 3 digits, but if the respondent is successful in remembering these digits, the number of digits in each round increases from two digits to a maximum digit string size of eight. To start, the respondent is given an example with two digits (series 2) and if the forward or backward digit span is incorrect, even after one other example, the item is scored as a zero, and the next task in the cognition battery is given. For the total score, the interviewer indicates the series number in the longest string of digits that were

repeated without error. The digit span task was taken from the Wechsler Adult Intelligence Scale (WAIS).

3. USING MEASURES IN CROSS-COUNTRY ANALYSIS

The objective of this section is to propose harmonized measures of cognition that can be best exploited for cross-country analysis using the HRS family of surveys. We present the exact wording of those questions in Section 4.

3.1 Verbal Memory

All surveys asked about verbal memory. While the wording of questions was similar across surveys, there were key differences in (1) the number of words presented; (2) the number of immediate and delayed recall trials; (3) the time elapsed between the immediate and delayed recall tests; (4) whether and how correct and incorrect answers were scored; (5) what tasks were given between the immediate and delayed recall; and (6) whether flags were raised when problems arose during this task.

3.1.1 Administration

The HRS, ELSA, TILDA and IFLS used the same four word lists to choose a word list from (the IFLS used some slightly difference translations for a few words). LASI used a slightly different word list. In some cases, the words in LASI were similar to the point of being synonyms (e.g. home in ELSA vs. house in LASI or rock in ELSA vs. stone in LASI). The administration of the word list was the same across these studies in terms of speed of reading the word list, and how much time was given to response. However, the HRS word list was presented over the telephone, the ELSA word list was read by a computer, and the IFLS and LASI word lists were read by the interviewer. The TILDA word list was also read by a computer at the same speed as for HRS and ELSA, and used the same four word list options as the ELSA and HRS but the respondent was given only one minute and gave a second immediate recall trial. The SHARE and JSTAR studies also used a ten-word list, but these word lists were not the same, or the same as for HRS, ELSA, and TILDA. The speed of reading was not specified for SHARE. JSTAR allowed the respondent up to one minute. The CHARLS also used a ten-word list and gave the respondent 2 minutes to respond, however it is unclear what words were on the list. SAGE also administered 10 words by the interviewer, and had no specified time limit to respond but was given three immediate recall trials. The KloSA administered only three words and the MHAS administered a list of eight words with three immediate recall trials.

3.1.2 Flags

In the ELSA, TILDA, SHARE, KLoSA, CHARLS, IFLS, MHAS, and SAGE studies, no flags were available to indicate whether the interviewer suspected that the respondent used an aid, had problems with hearing the word lists or if there was an interruption during the administration of the word lists.

3.1.3 Direct Comparison of Answers

The HRS, IFLS, and SAGE interviewers noted both correctly recalled words and how many wrong words were given. ELSA, TILDA, SHARE, KLoSA, JSTAR, LASI, MHAS, and CHARLS interviewers noted the number of correctly recalled words but did not record whether any words were given that were not on the list.

The scores from SHARE, CHARLS, ELSA, HRS, IFLS are comparable outcomes assuming there were no substantial differences in performance due to differences in administration via telephone versus in person and if the SHARE unlimited recall time can be considered to be comparable to the 2-minute interval given, and unspecified speed of reading in SHARE is negligible. The scores from these studies can only be compared when using the score that assess number of correct answers (without accounting for substituted/incorrectly recalled words). The TILDA is not comparable to any of these studies because the respondent was given only one minute and there were two recall trials. Also, the MHAS score is not comparable due to he multiple trials and because the score was recorded as less or more than 4 words recalled. The KLoSA test only administered three words and comparison with verbal memory performance using 10 words is not recommended.

3.2 Orientation

3.2.1 Direct Comparison of Answers

All of the orientation questions across the nine surveys that assessed this domain were largely adapted from the Mini-Mental State Examination (MMSE) test. A direct comparison across all nine surveys on time orientation using the date (day, month, and year) and the day of the week is amenable. Care must be taken when coding the question since some surveys asked about the date in separate questions (day, month, and year), and other surveys asked for the date in one question and coded how many of the three aspects were correctly given. In

addition, HRS and LASI included person orientation items, although the HRS had two items compared with the one LASI person orientation item. Both the CHARLS and KLoSA studies contained an additional temporal orientation question about the season. Although the JSTAR and KLoSA place orientation items were not the same, a comparison could be feasible.

3.3 Verbal Fluency

3.3.1 Administration

The administration of the verbal fluency task is similar in the ELSA, TILDA, SHARE LASI, and SAGE studies. The respondent is given one minute to recall as many animals as possible. However, one small difference is that if a pause is detected, the interviewer prompts the respondent for more animals in all studies except the ELSA.

3.3.2 Direct Comparison of Answers

The ELSA, TILDA, and LASI studies have clear criteria for what is considered an acceptable animal, but each of these criteria differ slightly. For instance, the TILDA allows mythical animals and different breeds within a species, but the ELSA does not. Only the SAGE and LASI studies note both the number of correct animals, and also the number of incorrect responses. Thus, a comparison could be made on a “correct minus incorrect” verbal fluency scores between the SAGE and LASI studies, if the criteria for what is considered an acceptable animal response does not substantially alter scores.

3.4 Prospective Memory

3.4.1 Administration

The administration of the two prospective memory tasks is similar in the TILDA and ELSA studies.

3.4.2 Flags

The prompts given in each of the two studies is similar.

3.4.3 Direct Comparison of Answers

The scores on the prospective memory tasks are similar (whether a prompt was given, and what the respondent did). Thus, the scores on this task for the two studies is directly comparable.

3.5 Attention

3.5.1 Administration

The attention tasks given the ELSA, MHAS, and SAGE studies are completely different; the ELSA study includes a letter cancellation task, the MHAS study includes a figure searching task, and the SAGE study includes a digit span task.

3.5.2 Direct Comparison of Answers

Although the tests are different, to the extent that the tests can each be considered attention tasks (these tasks tap into more domains than just attention), z-scores could be computed and then compared across the three tasks.

3.6 Visuoconstruction

3.6.1 Administration

The visuoconstruction tests in the CHARLS and KLoSA studies consist of copying the interlocking pentagon figure. The MHAS includes two figures.

3.6.2 Flags

The MHAS interviewer could note whether the respondent could not attempt or successfully complete the task due to vision problems, whereas the CHARLS and KLoSA items do not assess any impairment that would impeded copying the figure.

3.6.3 Direct Comparison of Answers

The CHARLS and KLoSA visuoconstruction items both come from the MMSE, and are therefore directly comparable.

3.7 Numeracy and Numeric Ability

3.7.1 Administration

There are several numeracy items that were assessed across eight studies. These include counting backward, the serial 7 task, and computation items.

The HRS and LASI studies ask the respondent to count backward as quickly as possible from the number 20. In both studies, the respondent is asked to stop after correctly counting backward from 20 to 11 or from 19 to 10. The LASI also asked the respondent to count backward from 100 and gave the respondent 2 minutes to complete the task.

The HRS, JSTAR, KLoSA, CHARLS, and LASI studies each gave the “Serial 7” task in which the respondent was asked to subtract seven from 100 in the first step and asked to continue subtracting seven from the previous number in each subsequent step. The administration of this task was the same across these studies.

The HRS, ELSA IFLS, JSTAR, LASI and SHARE studies shared a series of similar set of computational questions asking the respondent questions such computing the price of an object after a sale, the amount accrued as bank interest, and fraction-based calculations of the original price of an item. However, the exact items administered were not always the same. The wording of these questions was minimally different due to the local currency value of items (e.g., used book instead of used sofa) but the numbers used in the calculations were the same. The IFLS questions were not “real-world” based questions, but rather mathematical problems the respondent was asked to solve. The HRS administered three computation items; ELSA gave six questions; SHARE and JSTAR gave the same four items; LASI gave two items; IFLS gave seven questions

3.7.2 Flags

The SHARE provides a flag to simply encourage the respondent to answer all numeracy questions if necessary. The CHARLS prompts the interviewer to persuade the respondent to answer all of the Serial 7 items if the respondent refuses to answer.

3.7.3 Direct Comparison of Answers

For the counting backward from 20 item the HRS provides three answer choices: correct, incorrect, and wants to start over. The LASI has response options: respondent correctly counted,

respondent made an error, and respondent cannot count. If either of the last two answer choices applied, the respondent then skipped the counting backward from 100 question and proceeded to the Serial 7 task. If a researcher chooses to exclude respondents who cannot in the LASI, the answers in the HRS and LASI can be compared.

The answer choices for Serial 7 task were coded the same way in the HRS, JSTAR, KLoSA, CHARLS, and LASI studies such that a specific integer was recorded. Thus, these studies provide a direct comparison of numeracy using the Serial 7 task.

Because the number and type of computation items given in the HRS, ELSA IFLS, JSTAR, LASI and SHARE were slightly different, a comparison could be made between the computation items for these studies if an average was computed of all the items in each study. Some re-coding of answers may be necessary, since in the HRS, the answer was provided as an integer; the ELSA, SHARE, JSTAR, and IFLS studies had multiple answer choices for the interviewer to choose from (these answers were not read aloud to the respondent); and in LASI, the interviewer could choose correct or incorrect as the answer.

3.8 Vocabulary

3.8.1 Administration

Only the HRS contained questions on vocabulary by asking the respondent to name the object used to cut paper (scissors or shears), and to name the prickly plant that grows in the desert (cactus or name of a type of cactus)

3.9 Visual Memory

3.9.1 Administration

Only the MHAS contained a task that asked the respondent to recall and draw a figure presented earlier during the visuoconstruction task.

3.10 Non-verbal Intelligence

3.10.1 Administration

Only the IFLS contained a question about non-verbal intelligence using a set of 12 matrices.

3.11 Language

3.11.1 Administration

The HRS and KLoSA each contained items that assessed language ability. In the HRS, this was assessed using five questions for the respondent to give the meaning of five words. The KLoSA assessed language ability using six questions that assessed different aspects of language ability including naming objects, repeating a phrase, following a three-stage command, reading and following written instructions, and then writing a sentence about how they felt that day or about the day's weather conditions.

3.11.2 Direct Comparison of Answers

The variability of language constructs captured in the KLoSA makes it difficult to compare to the HRS items on language ability, although z-scores of the sum of items in the HRS and of the items in the KLoSA could be compared.

4. QUESTION CONCORDANCE

We present the question number, exact wording, and answer choices for each of the HRS studies, by domain.

4.1 Verbal Memory

4.1.1 HRS

((D103)) [F1]-- I'll read a set of 10 words and ask you to recall as many as you can. We have purposely made the list long so that it will be difficult for anyone to recall all the words -- most people recall just a few. Please listen carefully as I read the set of words because I cannot repeat them. When I finish, I will ask you to recall aloud as many of the words as you can, in any order. Is this clear? » PROBE as needed for understanding of task. Read the items at a slow, steady rate as they come up on the screen, Approximately one word every two seconds » If R refuses during or after the preamble and before any words are read, enter [Ctrl-R] at this screen

Answer:

1 Continue

((D182)) (All answer choices stored in this variable)

Answer:

STRING

4.1.2 ELSA

((CfLisEn)) I/the computer will now read a set of 10 words. I would like you to recall as many as you can. We have purposely made the list long so it will be difficult for anyone to recall all the words. Most people recall just a few. Please listen carefully to the set of words as they cannot be repeated. When I have finished, I will ask you to recall aloud as many of the words as you can, in any order. Is this clear? IF NO, EXPLAIN FURTHER READ OUT WORD LIST BELOW AT A SLOW STEADY RATE APPROXIMATELY ONE WORD EVERY 2 SECONDS. WORD LIST A: Hotel River Tree Skin Gold Market Paper Child King

WORD LIST B: Sky Ocean Flag Dollar Wife Machine Home Earth College Butter IF word list C is being used: WORD LIST C: Woman Rock Blood Corner Shoes Letter Girl House Valley Engine WORD LIST D: Water Church Doctor Palace Fire Garden Sea Village

Now please tell me the words you can recall. _____ from whichever word list selected at CfWrds WRITE WORDS IN BOOKLET PROVIDED. ALLOW AS MUCH TIME AS RESPONDENT WISHES - UP TO 2 MINUTES ENTER NUMBER OF WORDS RESPONDENT CORRECTLY RECALLS

Answer:

0-10

((CfLisD)) A little while ago, you were read a list of words and you repeated the ones you could remember. Please tell me any of the words that you can remember now. _____ from whichever word list selected at CfWrds WRITE WORDS IN BOOKLET PROVIDED. ALLOW AS MUCH TIME AS RESPONDENT WISHES - UP TO 2 MINUTES ENTER NUMBER OF WORDS RESPONDENT CORRECTLY RECALLS.

Answer:

0..10

4.1.3 TILDA

((PH116_random)) word list A B C D

Answer:

INTEGER

((PH116 & PH116_wordlist)) Now, I am going to read a list of 10 words from my computer screen. We have purposely made the list long so it will be difficult for anyone to recall all the words. Most people recall just a few. Please listen carefully to the set of words, as they cannot be repeated. When I have finished, I will ask you to recall aloud as many of the words as you can, in any order. Is this clear? [IWER: IF RESPONDENT IS NOT CLEAR REPEAT INSTRUCTIONS.] [IWER: PAUSE FOR 2 SECONDS AFTER EACH WORD][IWER: WRITE WORDS ON SHEET PROVIDED.] [IWER: ALLOW UP TO ONE MINUTE FOR RECALL.]

Machine; Home; Earth;College;Butter;Women;Rock;
Blood;Corner;Shoes;Letter;Girl;House;Valley;Engine;Water;Church;Doctor;Palace;Fire;Garden;Sea;Village;Baby;Table Now please tell me all the words you can recall. [IWER: ENTER THE NUMBER OF WORDS THE RESPONDENT CORRECTLY RECALLS.] [IWER: WRITE THE WORDS IN THE BOOKLET PROVIDED. ALLOW AS MUCH TIME AS THE RESPONDENT WISHES, UP TO 2 MINUTES. ENTER THE NUMBER OF WORDS THE RESPONDENT CORRECTLY RECALLS.]

Answer:

RANGE 0..10

((PH117)) Now I am going to read the same words out again. When I have finished, I will ask you to recall aloud as many of the words as you can, in any order, including the words you recalled earlier. Is this clear? [IWER: IF RESPONDENT IS NOT CLEAR REPEAT INSTRUCTIONS.]
Machine; Home; Earth;College;Butter;Women;Rock;
Blood;Corner;Shoes;Letter;Girl;House;Valley;Engine;Water;Church;Doctor;Palace;Fire;Garden;Sea;Village;Baby;Table. Now please tell me all the words you can recall? [IWER: ENTER THE NUMBER OF WORDS THE RESPONDENT CORRECTLY RECALLS.] [IWER: WRITE THE WORDS IN THE BOOKLET PROVIDED. ALLOW AS MUCH TIME AS THE RESPONDENT WISHES, UP TO 2 MINUTES. ENTER THE NUMBER OF WORDS THE RESPONDENT CORRECTLY RECALLS.]

Answer:

RANGE 0..10

((PH712_1)) A little while ago, I read you a list of words twice, and you repeated the ones you could remember. Please tell me any of the words that you can remember now? _____
[IWER: ENTER THE NUMBER OF WORDS THE RESPONDENT CORRECTLY RECALLS.]

Answer:

RANGE 0..10

4.1.4 SHARE

((CF007_LEARN1INTRO)) Now, I am going to read a list of words from my computer screen. We have purposely made the list long so it will be difficult for anyone to recall all the words. Most people recall just a few. Please listen carefully, as the set of words cannot be repeated. When I have finished, I will ask you to recall aloud as many of the words as you can, in any order. Is this clear? IWER: PRESS ENTER TO BEGIN TEST AND HAVE BOOKLET READY

Answer:

1. Continue

((CF008_LEARN1)) Ten words list learning first trial total

Answer:

None

((CF908_LEARN1TOT)) CODE TOTAL NUMBER OF WORDS RECALLED (0..10)

Answer:

0..10

((CF016_LEARN4)) A little while ago, I read you a list of words and you repeated the ones you could remember. Please tell me any of the words that you can remember now? IWER:

WRITE THE WORDS ON A SHEET AND THEN SCORE THE RIGHT WORDS

Answer:

1. Butter
2. Arm
3. Letter
4. Queen
5. Ticket
6. Grass
7. Corner
8. Stone
9. Book
- 10 Stick
96. None of these

((CF916_LEARN4TOT)) CODE TOTAL NUMBER OF WORDS RECALLED (0..10)

Answer: 0..10

4.1.5 KLoSA

((Cd06)) Please listen carefully as I read three words because I cannot repeat them. When I finish, I will ask you to recall aloud as many of the words as you can, in any order. Are you ready? LIST 1: airplane, pencil, pine tree LIST 2: snowman, chair, peach LIST 3: teacher, factory, washing machine LIST 4: chopsticks, apple, hanger LIST 5: bat, shoes, sea water. Try to

remember the words I just read to you. I'll ask you to recall them later.[IWER: Read once more if R did not recall any of the words, up to 3 times and go on. If R does not recall, ensure them it is OK so R would feel comfortable]

Answer:

- 1) Only one of the three words is correct, in any order
- 2) Two of the three words are correct, in any order
- 3) All of the three words are correct, in any order
- 5) None of the three words is correct

((Cd12)) A little while ago, I read you a list of words and you repeated the ones you could remember. Please tell me any of the words that you remember now.

Answer:

- 1) Only one of the three words is correct, in any order
- 2) Two of the three words are correct, in any order
- 3) All of the three words are correct, in any order
- 5) None of the three words is correct

4.1.6 JSTAR

((B-004)) I will now test your memory for words. I will read a list of several items slowly, one time each. There are many words on the list, so most people cannot memorize all of them the first time they hear them. I will let you know when I have finished reading. Then you will try to repeat as many words as you can remember. You do not have to remember them in the order I read them. Just listen carefully and try to remember. Do you understand these instructions?

Answer:

1. Yes
2. Refused to answer
3. Did not understand instructions

((B-005)) [Interviewer: Read the following words slowly and clearly, pausing after each word. As a rule, try to read the words only once, but if the respondent did not hear, you may repeat a word once. Wait up to a minute for respondent to answer. The order of the response is

not important. Indicate below whether respondent was able to answer. If respondent takes more than one minute to answer, say "Thank you," and continue to the next question.]

[If respondent stops in the middle of his or her answer, place a check next to the words respondent was able to remember and also next to "Could not answer after trying for one minute or more."] I will now read each word once: Dog, Knife, Train, Baseball, Cat, Pot, Airplane, Horse, Swimming, Bicycle Did you hear the words? Please repeat all the words you can remember.

Answer:

Dog

Knife

Train

Baseball

Cat

Pot

Airplane

Horse

Swimming

Bicycle

Refused to answer after starting

Could not answer after trying for one minute or more

((B-011)) Thank you. Please try to remember the words I read to you earlier, and repeat any of them you can remember.

[Interviewer: Even if respondent cannot remember, please wait about one minute for him or her to try to remember the words. The order of the words is not important. Indicate below which words respondent could remember. If respondent takes more than one minute to answer, say "Thank you," and continue to the next question.]

[If respondent stops in the middle of his or her answer, place a check next to the words respondent was able to remember and also next to "Could not answer after trying for one minute or more."]

Answer:

Dog

Knife
Train
Baseball
Cat
Pot
Airplane
Horse
Swimming
Bicycle
Refused to answer after starting
Could not answer after trying for one minute or more

4.1.7 CHARLS

((CC005)) We are going to read a list consisting of 10 words and we would like you to memorize as many as you can. We deliberately made the list long to make it difficult for anyone to memorize all of the words, most people will only remember a few of them. Please listen carefully as we read the list, because we cannot repeat it. When we finish reading the list, we will ask you to recall and tell us as many words as you can remember, and they don't have to be in order. Is this explanation clear? [IWER: Note, do not allow proxy answers.] [IWER: PROBE WHETHER RESPONDENT NEED MORE EXPLANATION.] [IWER: Can R answer this memory question?]

Answer:

1 Yes

2 No

((CC006)) Now please let us know the words you are able to recall. [IWER: check all item which are in words list recalled by Respondent] [INTERVIEWER CHECK: GIVE RESPONDENT ENOUGH TIME TO RECALL, APPROXIMATELY UP TO TWO MINUTES.]

Answer:

1 _____[1]

2 _____[2]

3 _____[3]

- 4 _____[4]
- 5 _____[5]
- 6 _____[6]
- 7 _____[7]
- 8 _____[8]
- 9 _____[9]
- 10 _____[10]
- 11 None

((CC008)) Enter the current time: hour and minute.] (formate: 17:15) Try to remember the words I just read to you. I'll ask you to recall them later. [IWER: Read once more if R did not recall any of the words, up to 3 times and go on. If R does not recall, ensure them it is OK so R would feel comfortable]

Answer:

Strings

((CC027)) [IWER: Answers are displayed only for interviewer. Please do not show the screen to R.] A little while ago, I read you a list of words and you repeated the ones you could remember. Please tell me any of the words that you remember now.

Answer:

- 1 _____[1]
- 2 _____[2]
- 3 _____[3]
- 4 _____[4]
- 5 _____[5]
- 6 _____[6]
- 7 _____[7]
- 8 _____[8]
- 9 _____[9]
- 10 _____[10]
- 11 None

4.1.8 LASI

((HT504)) I'll read a set of 10 words and ask you to recall as many as you can. We have purposely made the list long so that it will be difficult for anyone to recall all the words. Most people recall just a few. Please listen carefully as I read the set of words because I cannot repeat them. When I finish, I will ask you to recall aloud as many of the words as you can, in any order. Is this clear?

Answer:

Integer

((HT505_animal_list_)) River Tree Temple School Hospital Dog Cat Radio Chair Gold

Answer:

Integer

((HT505_animal_list_2)) Monkey Car Stone Doctor Phone Fire Road Silver Flower Cow

((HT505_animal_list_3)) Elephant Bike Kite Teacher House Water Job Book Market Baby

Answer:

Integer

((HT505_intro)) Now please tell me the words you can recall from: (the previous 3 animal lists) _____[IWER: PERMIT AS MUCH TIME AS R WISHES, UP TO 2 MINUTES]

Answer:

Integer

((HT505)) Number of words R correctly recalls

Answer:

Integer

4.1.9 IFLS

((CO06)) INTERVIEWER CHECK COV9 AND CIRCLE THE LIST OF WORDS TO USE:

Answer:

1. A

2. B

3. C

4. D

READ THE LIST SLOWLY, WITH INTERVAL AROUND 2 SECONDS BETWEEN EACH WORD. LIST

A LIST B LIST C LIST D

A01. HOTEL B01. SKY C01. MOUNT D01. WATER

A02. RIVER B02. OCEAN C02. STONE D02. MOSQUE

A03. TREE B03. FLAG C03. BLOOD D03. DOCTOR

A04. SKIN B04. RUPIAH C04. CORNER D04. CASTLE

A05. GOLD B05. WIFE C05. SHOES D05. FIRE

A06. MARKET B06. MACHINE C06. LETTER D06. GARDEN

A07. PAPER B07. HOUSE C07. GIRL D07. SEA

A08. CHILD B08. EARTH C08. HOUSE D08. VILLAGE

A09. KING B09. SCHOOL C09. VALLEY D09. BABY

A10. BOOK B10. BUTTER C10. CAR D10. TABLE

Now please let us know the words you are able to recall.

INTERVIEWER CHECK: GIVE RESPONDENT ENOUGH TIME TO RECALL, APPROXIMATELY UP TO TWO MINUTES.

((C007)) INTERVIEWER CHECK: CIRCLE ALL THE WORDS MENTIONED BY THE RESPONDENT ON THE COLUMN AND LIST ALL OF THE WORDS MENTIONED WHICH ARE NOT ON THE LIST IN ROW 51-55

Answer:

Words A1-A10 OR

Words B1-B10 OR

Words C1-C10 OR

Words D1-D10

((C007_A51, C007_A52, C007_A53, C007_A54, C007_A55)) Wrong Words from List A

Answer:

String

((C007_B51, C007_B52, C007_B53, C007_B54, C007_B55)) Wrong Words from List B

Answer:

String

((C007_C51, C007_C52, C007_C53, C007_C54, C007_C55)) Wrong Words from List C

Answer:

String

((C007_D51, C007_D52, C007_D53, C007_D54, C007_D55)) Wrong Words from List D

Answer:

String

((C007_A96, C007_B96, C007_C96, C007_D96))

Answer:

None recalled

((C007_A97, C007_B97, C007_C97, C007_D97))

Answer:

Refused to recall

((CO10)) INTERVIEWER CHECK: CIRCLE ALL THE WORDS MENTIONED BY THE RESPONDENT
ON THE COLUMN AND LIST ALL OF THE WORDS MENTIONED WHICH ARE NOT ON THE LIST IN
ROW 51-55

Answer:

Words A1-A10 OR

Words B1-B10 OR

Words C1-C10 OR

Words D1-D10

((C010_A51, C010_A52, C010_A53, C010_A54, C010_A55)) Wrong Words from List A

Answer:

String

((C010_B51, C010_B52, C010_B53, C010_B54, C010_B55)) Wrong Words from List B

Answer:

String

((C010_C51, C010_C52, ,C010_C53, C010_C54, C010_C55)) Wrong Words from List C

Answer:

String

((C010_D51, C010_D52, C010_D53, C010_D54, C010_D55)) Wrong Words from List D

Answer:

String

((C010_A96, C010_B96, C010_C96, C010_D96))

Answer:

None recalled

((C010_A97, C010_B97, C010_C97, C010_D97))

Answer:

Refuse to recall

4.1.10 MHAS

((E10)) Indicate list for exercise in verbal immediate recall

Answer:

1. List A
2. List B
8. RF

((E11_1)) I'm going to read you a list of words. Listen carefully. When I finish reading them, you should repeat all the words that you can. [It does not matter the order in which you repeat them. IN CASE OF INTERVIEW WITH A COUPLE, ASK THE MONTH OF BIRTH OF EACH PERSON. USE LIST A FOR THE PERSON BORN IN THE EARLIER MONTH OF THE CALENDAR YEAR AND LIST B FOR THE LATTER ONE.]

Answer:

- a. Cat (Yes/No)
- b. Arm (Yes/No)
- c. Pear (Yes/No)
- d. Lime (Yes/No)
- e. Chair (Yes/No)
- f. House (Yes/No)
- g. Mouse (Yes/No)
- h. Skirt (Yes/No)

((E11_1i)) Total number of words remembered, immediate, List A, Attempt 1

Answer:

0..8

((E11_2)) I am going to read the same list one more time. Again, when I stop, tell me all the words that you can remember, including those that you said before.

Answer:

- a. Pear (Yes/No)
- b. Skirt (Yes/No)
- c. Chair (Yes/No)
- d. Cat (Yes/No)
- e. Mouse (Yes/No)
- f. Arm (Yes/No)
- g. House (Yes/No)
- h. Lime (Yes/No)

((E11_2i)) Total number of words remembered, immediate, List A, Attempt 2

Answer:

0..8

((E11_3)) I am going to read the same list one more time. Again, when I stop, tell me all the words that you can remember, including those that you said before.

Answer:

- a. Mouse (Yes/No)
- b. Lime (Yes/No)
- c. Arm (Yes/No)
- d. House (Yes/No)
- e. Cat (Yes/No)
- f. Skirt (Yes/No)
- g. Pear (Yes/No)
- h. Chair (Yes/No)

((E11_3i)) Total number of words remembered, immediate, List A, Attempt 3

Answer:

0..8

((BEST_A)) Best score immediate verbal recall-List A

Answer:

0..8

((LEARNING_A)) Immediate verbal recall-List A

Answer:

0. < 6 words remembered

1. > 6 words remembered

((E11_4)) I am going to read the same list one more time. Again, when I stop, tell me all the words that you can remember, including those that you said before.

Answer:

- a. Dog (Yes/No)
- b. Hand (Yes/No)
- c. Bed (Yes/No)
- d. Strawberry (Yes/No)
- e. Boot (Yes/No)
- f. Lemon (Yes/No)

g. Table (Yes/No)

h. Cow (Yes/No)

((E11_4i)) Total number of words remembered, immediate, List B, Attempt 1

Answer:

0..8

((E11_5)) I am going to read the same list one more time. Again, when I stop, tell me all the words that you can remember, including those that you said before.

Answer:

a. Bed (Yes/No)

b. Cow (Yes/No)

c. Boot (Yes/No)

d. Dog (Yes/No)

e. Table (Yes/No)

f. Hand (Yes/No)

g. Lemon (Yes/No)

h. Strawberry (Yes/No)

((E11_5i)) Total number of words remembered, immediate, List B, Attempt 2

Answer:

0..8

((E11_6)) I am going to read the same list one more time. Again, when I stop, tell me all the words that you can remember, including those that you said before.

Answer:

a. Table (Yes/No)

b. Strawberry (Yes/No)

c. Hand (Yes/No)

d. Lemon (Yes/No)

e. Dog (Yes/No)

f. Cow (Yes/No)

- g. Bed (Yes/No)
- h. Boot (Yes/No)

((E11_6i)) Total number of words remembered, immediate, List B, Attempt 3

Answer:

0..8

((BEST_B)) Best score immediate verbal recall-List B

Answer:

0..8

((LEARNING_B)) Immediate verbal recall-List B $\hat{\alpha}\% \neq 6$

Answer:

0. < 6 words remembered

1. > 6 words remembered

((E14_1)) Recall the long list of words that I read before? Please tell me all of the words of the list that you can remember, in whatever order you wish.

Answer:

- a. Cat (Yes/No)
- b. Arm (Yes/No)
- c. Pear (Yes/No)
- d. Lime (Yes/No)
- e. Chair (Yes/No)
- f. House (Yes/No)
- g. Mouse (Yes/No)
- h. Skirt (Yes/No)

((E14_1i)) Total number of words remembered, delayed, List A

Answer:

0..8

((RECALL_A)) Delayed verbal recall-List A 4

Answer:

0. < 4 words remembered

1. > 4 words remembered

((E14_2)) Recall the long list of words that I read before? Please tell me all of the words of the list that you can remember, in whatever order you wish.

Answer:

a. Dog (Yes/No)

b. Hand (Yes/No)

c. Bed (Yes/No)

d. Strawberry (Yes/No)

e. Boot (Yes/No)

f. Lemon (Yes/No)

g. Table (Yes/No)

h. Cow (Yes/No)

((E14_2i)) Total number of words remembered, delayed, List B

Answer:

0..8

((RECALL_B)) Delayed verbal recall-List B 4

Answer:

0. < 4 words remembered

1. > 4 words remembered

4.1.11 SAGE

We are now going to test your memory. I know these questions may be difficult to answer, but please try to provide an answer. I am going to read you a list of words. Listen to them carefully and try to remember as many of them as you can, not necessarily in order. I will ask you to repeat them again after some time. Arm Bed Plane Dog Clock Bike Ear Hammer Chair Cat

Interviewer to write down a list of words from the list recalled and also a list of substituted words.

((Q2525)) Number of words recalled correctly Trial 1

Answer:

Integer

((Q2526)) Number of words that respondent failed to recall Trial 1

Answer:

Integer

((Q2527)) Number of words substituted Trial 1.

Answer:

Integer

I will read the list to you again, and then again when I am done, repeat them after me.

((Q2528)) Number of words recalled correctly Trial 2

Answer:

Integer

((Q2529)) Number of words that respondent failed to recall Trial 2

Answer:

Integer

((Q2530)) Number of words substituted Trial 2. One final time - I will read the list and when I am done, you repeat as many as you can remember.

Answer:

Integer

((Q2531)) Number of words recalled correctly Trial 3

Answer:

Integer

((Q2532)) Number of words that respondent failed to recall Trial 3

Answer:

Integer

((Q2533)) Number of words substituted Trial 3

Answer:

Integer

((Q2544)) Number of words recalled correctly

Answer:

Integer

((Q2545)) Number of words that respondent failed to recall

Answer:

Integer

((Q2546)) Number of words substituted

Answer:

Integer

4.2 Orientation

4.2.1 HRS

((D150)) We're interested in how memory actually works. We find that even people with very good memories seem to forget some things from time to time. The next questions are a little different, but are often asked on studies about memory. » Do not probe dk/rf in section D (cognition)

Answer:

1 Continue

((D151)) [F1]--help Please tell me today's date. » PROBE month, day, year, day of week The date is: ____/____/____ The day is: ____ Name Month: Day: Year: Day of week:

Answer:

1 Month ok

5 Month not ok

((D152)) (Please tell me today's date.) » PROBE month, day, year, day of week The date is:

____/____/____ The day is: ____ Name Month: ____ Day: ____ Year: ____ Day of week:

Answer:

1 Day of month ok

5 Day of month not ok

((D153)) (Please tell me today's date.) » PROBE month, day, year, day of week The date is:

____/____/____ The day is: ____ Name Month: ____ Day: ____ Year: ____ Day of week:

Answer:

1 Year ok

5 Year not ok

((D154)) (Please tell me today's date.) » PROBE month, day, year, day of week The date is:

____/____/____ The day is: ____ Name Month: ____ Day: ____ Year: ____ Day of week:

Answer:

1 Day ok

5 Day not ok

((D157)) [F1]--help Who is the President of the United States right now? » Answer is Bush

PROBE for last name

Answer:

1 Last name correct

5 Not correct

((D158)) [F1]--help Who is the Vice President? » Answer is Cheney PROBE for last name

Answer:

- 1 Last name correct
- 5 Not correct

4.2.2 ELSA

((CfDatD)) Please tell me today's date. CODE WHETHER DAY OF MONTH (_____'s date)

GIVEN CORRECTLY

Answer:

1. Day of month given correctly
2. Day of month given incorrectly/doesn't know day

((CfDatM)) Please tell me today's date. CODE WHETHER MONTH (_____'s date) GIVEN

CORRECTLY

Answer:

1. Month given correctly
2. Month given incorrectly/doesn't know month

((CfDatY)) Please tell me today's date. CODE WHETHER YEAR (_____'s date) GIVEN

CORRECTLY

Answer:

1. Year given correctly
2. Year given incorrectly/doesn't know day

((CfDay)) And please tell me what _____ of the week it is to _____? CORRECT ANSWER:

_____ of the week

Answer:

1. Day of week given correctly
2. Day of week given incorrectly/doesn't know day

((CfDscr)) Computed score from date questions

Answer:

0..4

4.2.3 TILDA

((PH118)) Part of this study is concerned with people's memory and ability to think about things. Please tell me what year it is?

Answer:

1 Year given correctly

2 Year given incorrectly

((PH119)) What month it is?

Answer:

1 Month given correctly

2 Month given incorrectly

((PH120)) Can you tell me what day of the week it is?

Answer:

1 Day of week given correctly

2 Day of week given incorrectly

((PH121)) Can you tell me what today's date is?

Answer:

1 Date given correctly

2 Date given incorrectly

4.2.4 SHARE

((CF003_DATEDAY)) Part of this study is concerned with people's memory and ability to think about things. First, I am going to ask about today's date. Which day of the month is it?

IWER: CODE WHETHER DAY OF MONTH (fill information CF003_DATEDAY) IS GIVEN CORRECTLY

Answer:

1. Day of month given correctly

2. Day of month given incorrectly/doesn't know day

((CF004_DATEMONTH)) Which month is it? IWER: CODE WHETHER MONTH (fill information HC002_STTOMDOCTOR) IS GIVEN CORRECTLY

Answer:

1. Month given correctly
2. Month given incorrectly/doesn't know month

((CF005_DATEYEAR)) Which year is it? IWER: CODE WHETHER YEAR (fill information CF005_DATEYEAR) IS GIVEN CORRECTLY

Answer:

1. Year given correctly
2. Year given incorrectly/doesn't know year

((CF006_DAYWEEK)) Can you tell me what day of the week it is? IWER: CORRECT ANSWER: (fill information CF006_DAYWEEK)

Answer:

1. Day of week given correctly
2. Day of week given incorrectly/doesn't know day

4.2.5 KLoSA

((Cd01)) Now I'm going to ask several simple questions. Some may be easy and some may be hard to answer. Please try to answer as honestly as you can. Are you ready? Please tell me today's date.

Answer:

- 1) One of the month / day / year combination is correct
- 2) Two of the month / day / year combination are correct
- 3) All of the month / day / year combination are correct
- 5) All of the month / day / year combination are incorrect

((Cd02)) [Cd. Cognition capability] Which day is it today? (Which day among Monday, Tuesday,,,,Sunday?)

Answer:

- 1) Day of week OK
- 2) Day of week not OK

((Cd03)) What is the current season (among Spring, Summer, Fall, or Winter)?

Answer:

- 1) Season OK
- 2) Season not OK

((Cd04)) What is this place used for? [IWER: PLAUSIBLE ANSWERS ARE SPECIFIC ANSWERS SUCH AS HOSPITAL, MARKET, LIVING ROOM, HOUSE, APARTMENT, NURSING HOME, ETC.]

Answer:

- 1) Correct
- 2) Not correct

((Cd05)) What is your address? Please tell me the city, Gun, Dong, APT #/Street Number.

Answer:

- 1) One of the city / gun / dong / street address combination is correct
- 2) Two of the city / gun / dong / street address combination are correct
- 3) Three of the city / gun / dong / street address combination are correct
- 4) All of the city / gun / dong / street address combination is correct
- 5) All of the city / gun / dong / street address combination is incorrect

4.2.6 JSTAR

((B-003-1)) First, I would like to ask about today's date. What year is it? Either the Japanese or Western year is acceptable.

Answer:

1. Answered correctly
2. Incorrect/did not know
3. Refused to answer

((B-003-2)) What month is it?

Answer:

1. Answered correctly
2. Incorrect/did not know
3. Refused to answer

((B-003-3)) What is the date today?

Answer:

1. Answered correctly
2. Incorrect/did not know
3. Refused to answer

((B-003-4)) What day of the week is it today?

Answer:

1. Answered correctly
2. Incorrect/did not know
3. Refused to answer

((B-003-5)) What prefecture are we in?

Answer:

1. Answered correctly
2. Incorrect/did not know
3. Refused to answer

((B-003-6)) What town or city are we in?

Answer:

1. Answered correctly
2. Incorrect/did not know
3. Refused to answer

4.2.7 CHARLS

((CC001)) Now I'm going to ask several simple questions. Some may be easy and some may be hard to answer. Please try to answer as honestly as you can. Are you ready? Please tell me today's date. [IWER: R doesn't have to answer in this order. If R is an elderly person and marked the date by lunar calendar, that date is correct if it matches with the solar calendar. You can check the accuracy, using the converter. R

current date: _____] (Check all the apply.)

Answer:

1 Year is correct

2 Month is correct

3 Day is correct

((CC002)) Please tell me which day of week is today. Is it Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, or Sunday? [IWER: the right one are : _____]

Answer:

1 Day of week OK

2 Day of week not OK

((CC003)) What is the current season (among Spring, Summer, Fall, or Winter)?

Answer:

1 Season OK

2 Season not OK

4.2.8 LASI

((HT501_intro)) Now I'm going to ask several simple questions to test your memory. Some may be easy and some may be hard to answer. Please try to answer as honestly as you can.

Please tell me today's date. [IWER: RESPONDENT DOESN'T HAVE TO ANSWER IN THIS ORDER. IF RESPONDENT IS AN ELDERLY PERSON AND MENTIONED/MARKED THE DATE BY VERNACULAR, RELIGIOUS OR OTHER CALENDAR, THAT DATE IS CORRECT IF IT MATCHES WITH THE SOLAR CALENDAR. YOU CAN CHECK THE ACCURACY, USING THE CONVERTER.]

Answer:

Integer

((HT501_date)) HT501_date

Answer:

Integer

((HT501_day)) Day (_____) is correct.

Answer:

1. Yes
2. No

((HT501_month)) Month (_____) is correct.

Answer:

1. Yes
2. No

((HT501_year)) Year (_____) is correct.

Answer:

1. Yes
2. No

((HT502)) Please tell me which day of week is today. Is it Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, or Sunday? [IWER: (_____) : PLEASE MARK CORRECT OR INCORRECT.]

Answer:

1. Correct
2. Incorrect

((HT503)) What is the name of Indian prime minister? [IWER: (Manmohan Singh): PLEASE MARK CORRECT OR INCORRECT.]

Answer:

1. Correct
2. Incorrect

4.2.9 IFLS

((CO01)) Please tell me today's date

Answer:

1. Gregorian calendar: / /

Day / Month / Year

2. Islamic calendar: / /

Day / Month / Year

3. Local calendar: / /

Day / Month / Year

8. DON'T KNOW

((CO02)) Interviewer chooses one of the following answer choices based on the answer given by the respondent to C001.

Answer:

1. ALL THREE OF DAY/MONTH/YEAR WERE ANSWERED CORRECTLY

2. TWO OF DAY/MONTH/YEAR WERE ANSWERED CORRECTLY

3. ONE OF DAY/MONTH/YEAR WAS ANSWERED CORRECTLY

4. NONE OF DAY/MONTH/YEAR WERE ANSWERED CORRECTLY

5. CO01=8

((CO03)) Please tell me what the day of the week is today

Answer:

1. Sunday

2. Monday

3. Tuesday

4. Wednesday

5. Thursday

6. Friday

7. Saturday

8. DON'T KNOW

((CO04)) INTERVIEWER CHECK TODAY'S DAY: _____

Answer:

1. DAY MENTIONED IN CO03 IS CORRECT
3. DAY MENTIONED IN CO03 IS INCORRECT
6. CO03=8

4.3 Verbal Fluency

4.3.1 ELSA

((CfAni)) Now I would like you to name as many different animals as you can think of. You have one minute to do this. The computer voice will tell you when to stop. Ready, go. WRITE ANIMALS MENTIONED IN BOOKLET PROVIDED. ENTER NUMBER OF DIFFERENT ANIMALS MENTIONED

Answer:

0...100

4.3.2 TILDA

((PH122)) Now I would like you to name as many different animals as you can think of. You have one minute to do this. Ready, go. [IWER: ALLOW ONE MINUTE PRECISELY. IF THE SUBJECT STOPS BEFORE THE END OF THE TIME, ENCOURAGE THEM TO TRY TO FIND MORE WORDS. IF RESPONDENT IS SILENT FOR 15 SECONDS REPEAT THE BASIC INSTRUCTION ("I WANT YOU TO TELL ME ALL THE ANIMALS YOU CAN THINK OF"). NO EXTENSION ON THE TIME LIMIT IS MADE IN THE EVENT THAT THE INSTRUCTION HAS TO BE REPEATED]

[IWER: ONLY IF THE PARTICIPANT ASKS FOR CLARIFICATION, EXPLAIN THAT ANIMALS INCLUDE BIRDS, INSECTS, FISH ETC.]

[IWER: THE SCORE IS THE SUM OF ACCEPTABLE ANIMALS. ANY MEMBER OF THE ANIMAL KINGDOM, REAL OR MYTHICAL IS SCORED CORRECT, EXCEPT REPETITIONS AND PROPER NOUNS. SPECIFICALLY, EACH OF THE FOLLOWING GETS CREDIT. A SPECIES NAME AND ANY ACCOMPANYING BREEDS WITHIN THE SPECIES; MALE, FEMALE AND INFANT NAMES WITHIN THE SPECIES.]

[IWER: CODE NUMBER OF ANIMALS]

Answer:

RANGE 0..50

4.3.3 SHARE

((CF009_VERBFLUINTRO)) Now I would like you to name as many different animals as you can think of. You have one minute to do this. Ready, go. IWER: ALLOW ONE MINUTE PRECISELY. IF THE SUBJECT STOPS BEFORE THE END OF THE TIME, ENCOURAGE THEM TO TRY TO FIND MORE WORDS. IF THEY ARE SILENT FOR 15 SECONDS REPEAT THE BASIC INSTRUCTION ('I WANT YOU TO TELL ME ALL THE ANIMALS YOU CAN THINK OF'). NO EXTENSION ON THE TIME LIMIT IS MADE IN THE EVENT THAT THE INSTRUCTION HAS TO BE REPEATED

Answer:

1. Continue

((CF010_ANIMALS)) verbal fluency score

Answer:

0..100

4.3.4 LASI

((HT509_intro)) Now we are going to ask you to think of animals and name as many as you can. If you wish, you may also include birds along with animals. Count categories of animals (e.g., dogs), as well as specific types (e.g., collie, terrier) as correct. Any members of the animal kingdom, real or mythical is scored correct, except repetitions and proper nouns (e.g., Mickey Mouse). I am going to give you one minute and I want to see how many animals you can name. [IWER: IF R STOPS BEFORE THE END OF THE MINUTE, ENCOURAGE THEM TO TRY TO NAME MORE ANIMALS. IF THERE IS A SILENCE OF ABOUT 15 SECONDS, PROMPT THEM TO CONTINUE BY ASKING "ANYTHING ELSE?" OR REPEAT THE BASIC INSTRUCTIONS.] Ready? Start. [IWER: PRESS START/STOP ON STOPWATCH AND TIME FOR ONE MINUTE. WRITE DOWN ALL ANIMAL NAMES. SAY "GOOD" WHEN ONE MINUTE IS COMPLETED.]

((HT509)) [IWER: TOTAL NUMBER OF ANIMALS AND/OR BIRDS NAMED]

Answer:

Integer

((HT510)) Total number of errors, including anything that is not an animal or bird:

Answer:

_____ total number of errors

4.3.5 SAGE

((Q2536)) Total score (number of animals named correctly)

Answer:

Integer

((Q2537)) Number of errors INTERVIEWER: errors include anything that is not an animal

Answer:

Integer

4.4 Prospective Memory

4.4.1 ELSA

((CfMem)) ATTACH BOOKLET (OPEN TO THE LETTER CANCELLATION PAGE) TO THE CLIPBOARD AND HAND TO THE RESPONDENT ALONG WITH A PENCIL AND SAY: These are for you. PAUSE FOR EXACTLY 5 SECONDS. IF NO , PROMPT: You were going to do something when I gave you the clipboard and pencil. Can you remember what it was? IF RESPONDENT SAYS 'AM I SUPPOSED TO....?' THEN SAY: 'Do whatever you think you are supposed to.' CODE WHETHER OR NOT YOU PROMPTED RESPONDENT

Answer:

1. No prompt given
2. Prompt given

((CfMemS)) CODE WHAT RESPONDENT DID WHEN YOU HANDED THEM THE CLIPBOARD AND PENCIL

Answer:

1. Wrote their initials in top left hand corner
2. Wrote their initials somewhere else
3. Wrote something else in top left hand corner

4. Did something else

5. _____ nothing/ _____ not remember what to do

((CfPAScr)) Score from first prospective memory test

Answer:

Integer

((CfSums)) Computed score of numeracy questions

Answer:

Integer

((CfEnd)) That is the end of the memory and concentration tasks. PAUSE FOR EXACTLY FIVE SECONDS. IF NO , PROMPT: You were going to do something when I said that. Can you remember what it was? IF RESPONDENT SAYS 'Am I supposed to?' THEN SAY: 'Do whatever you think you are supposed to.' CODE WHETHER OR NOT YOU PROMPTED RESPONDENT.

Answer:

1. No prompt given

2. Prompt given

((CfPMB)) CODE WHAT RESPONDENT DID (in response to CfEnd question)

Answer:

1. Reminded you to record the time

2. Did something else

3. _____ nothing/ _____ not remember what to do

((CFpbscr)) Score on prospective memory 2

Answer:

Integer

((CFptsr)) Total prospective memory score (cfpascr+cfpbscr)

Answer:

Integer

4.4.2 TILDA

((PH116_intro)) In the next section of the interview, we will do some memory and concentration tasks. Some of them may seem rather easy but others are more difficult so please listen carefully. Please just do the best you can on all of them. Now I would like you to remember two things in order to assess everyday memory. At some point during the interview I will hand you this card and a pencil. [IWER: SHOW RESPONDENT THE GRAY APPOINTMENT CARD] When I do I would like you to write your initials on the top left hand corner of the card. Is that clear? [IWER: IF RESPONDENT IS NOT CLEAR REPEAT INSTRUCTIONS.] The second task is for you to remind me to do something. When we finish the memory and concentration tasks I will say "that is the end of the memory and concentration tasks". When I do I would like you to remind me to record what time we finish the tasks. is that clear? [IWER: IF RESPONDENT IS NOT CLEAR REPEAT INSTRUCTIONS.]

((PH713_1)) That is the end of the memory and concentration tasks.

[IWER: PAUSE FOR EXACTLY FIVE SECONDS] [IWER: IF NO RESPONSE, PROMPT YOU WERE GOING TO DO SOMETHING WHEN I SAID THAT. CAN YOU REMEMBER WHAT IT WAS?] [IWER: IF RESPONDENT SAYS 'AM I SUPPOSED TO ..?' THEN SAY 'DO WHATEVER YOU THINK YOU ARE SUPPOSED TO.'][IWER: CODE WHETHER OR NOT YOU PROMPTED RESPONDENT.]

Answer:

- 1 Prompt not given
- 2 Prompt given

((PH714_1)) [IWER: CODE WHAT RESPONDENT DID]

Answer:

- 1 REMINDED YOU TO RECORD THE TIME
- 2 DID SOMETHING ELSE
- 3 DID NOTHING/DID NOT REMEMBER WHAT TO DO

4.5 Attention

4.5.1 ELSA

((CfLet)) LETTER CANCELLATION PAGE The next task is a measure of how rapidly you can do something. In a moment I will ask you to work through this list as quickly as you can crossing out all the P's and W's. Start at the top left hand corner where the arrow is and work along the line. Then go to the beginning of the next line and work along the line again as if you were reading a page. Carry on this way crossing out all the P's and W's with one mark of pencil as in the example at the top of the page. Please work as quickly and as accurately as you can. The computer voice will tell you when to stop. You may begin now PRESS 1 AND ENTER AS YOU SAY 'NOW'. AFTER THE COMPUTER SAYS 'STOP NOW', SAY: Please underline the letter on which you finished. NOW TAKE BACK THE BOOKLET AND CLIPBOARD

Answer:

Integer

KLoSA

((Cd17)) I'll show you a sentence. Please read the sentence aloud and act it out.

Answer:

- 1) R completed only one task (either reading or action of closing eyes)
- 2) 3) R did both tasks
- 3) 5) R did not complete any task

((Cd18)) Please write one sentence about how you're feeling today or today's weather.

Answer:

- 1) Wrote a sentence
- 5) Couldn't write a sentence

4.5.2 MHAS

((E12)) On the following page, please look for those figures that appear exactly the same as this one I am now showing you. Find as many figures as you can, and put a circle around each figure like I am doing. (WITH A PENCIL, CIRCLE AN EXAMPLE IN THE MIDDLE OF THE PAGE). Circle only the figures that are exactly like this one. Work as quickly as you can, until I tell you to

stop. [BEGIN TO COUNT THE TIME WHEN THE RESPONDENT CIRCLES THE FIRST OBJECT, AND FINISH 60 SECONDS FROM THAT POINT. [Grade of visual scanning: Number of objects that the respondent circled correctly (there are a total of objects). Objects that were circled but do not correspond to the object of reference were not counted. The respondent passes the visual scanning with a grade greater than 24.]

Answer:

00. Zero points

80. RF

88. Couldn't do it for sight problems

4.5.3 SAGE

INTERVIEWER: For the following tests, digits forward and backward, say the digits at the rate of one per second, not grouped. Let the pitch of your voice drop with the last digit of each series. In any series if the subject fails Trial 1 - give Trial 2 of the same series, then proceed to the next series if the respondent responds correctly. Trial 2 is only given if Trial 1 is failed. I am going to say some numbers to you. Listen carefully, and when I am through, say them right after me. I want you to repeat each set of numbers exactly as I say them to you. For example, if I said "1-2", you would say...? INTERVIEWER: Wait for correct response "1-2". If correct, start with Series 3. If response is incorrect, provide the correct response and attempt once more with another example. Okay, let's try another example, repeat after me, "5-3". If correct, continue. If not correct - mark "0" in Q2534 and skip to Verbal Fluency (Q2536). Okay, good. Let us start with the numbers. INTERVIEWER: Stop when respondent fails both trials.

Series Trial 1 Trial 1 Correct? Trial 2 Trial 2 Correct?

3 5-8-2 YES SERIES 4 NO TRIAL 2

6-9-4 YES SERIES 4 NO END

4 6-4-3-9 YES SERIES 5 NO TRIAL 2

7-2-8-6 YES SERIES 5 NO END

5 4-2-7-3-1 YES SERIES 6 NO TRIAL 2

7-5-8-3-6 YES SERIES 6 NO END

6 6-1-9-4-7-3 YES SERIES 7 NO TRIAL 2

3-9-2-4-8-7 YES SERIES 7 NO END

7 5-9-1-7-4-2-8 YES SERIES 8 NO TRIAL 2

4-1-7-9-3-8-6 YES SERIES 8 NO END
8 5-8-1-9-2-6-4-7 YES SERIES 9 NO TRIAL 2
3-8-2-9-5-1-7-4 YES SERIES 9 NO END
9 2-7-5-8-6-2-5-8-4 YES END NO TRIAL 2
7-1-3-9-4-2-5-6-8 YES END NO END
Okay good. INTERVIEWER: mark the score in Q2534

((Q2534)) Total score (enter the series number in the longest series repeated without error in Trial 1 or 2) (Maximum = 9 points)

Answer:
Integer

DIGIT SPAN - DIGITS BACKWARD

Now, I am going to say more numbers, but this time when I stop, I want you to say them to me backwards. For example, if I said 1-7, what would you say? INTERVIEWER: Wait for subject to say 7-1. If response is correct, start with Series 2. If respondent does not reply correctly or fails to understand, give the correct answer and another example, saying Remember, you are to say them backwards. Try this, "3-8". If response is correct, continue. If fails second example, mark "0" in Q2535 and skip to Verbal Fluency (Q2536). Okay, lets start. Series Trial 1 Trial 1 Correct? Trial 2 Trial 2 Correct?

2-4 YES SERIES 3 NO TRIAL 2
5-8 YES SERIES 3 NO END
3 6-2-9 YES SERIES 4 NO TRIAL 2
4-1-5 YES SERIES 4 NO END
4 3-2-7-9 YES SERIES 5 NO TRIAL 2
4-9-6-8 YES SERIES 5 NO END
5 1-5-2-8-6 YES SERIES 6 NO TRIAL 2
6-1-8-4-3 YES SERIES 6 NO END
6 5-3-9-4-1-8 YES SERIES 7 NO TRIAL 2
7-2-4-8-5-6 YES SERIES 7 NO END
7 8-1-2-9-3-6-5 YES SERIES 8 NO TRIAL 2
4-7-3-9-1-2-8 YES SERIES 8 NO END

8 9-4-3-7-6-2-5-8 YES END NO TRIAL 2

7-2-8-1-9-6-5-3 YES END NO END

Okay, good. INTERVIEWER: mark score in Q2535.

((Q2535)) Total score (enter the series number in the longest series repeated without error in Trial 1 or 2) (Maximum = 8 points)

Answer:

Integer

4.6 Visuoconstruction

4.6.1 KLoSA

((cd19)) Do you see this picture? Please draw that picture on this paper.

Answer:

1 Drew the picture

5 Failed to draw the picture

4.6.2 CHARLS

((CC025)) [IWER: Show the picture of two pentagons overlapped] Do you see this picture?

Please draw that picture on this paper.

Answer:

1 Drew the picture

2 Failed to draw the picture

4.6.3 MHAS

((E8_E9)) Draw this figure in the space provided. Try to draw your figure so that it appears exactly like mine. [Each drawn figure is graded as intact (1) or impede (0), and grades for both figures are added up. A total grade of 2 means the figure is passed. Flags: The design contains five elements: (1) upper triangle, (2) upper vertical line, (3) $\hat{A}'\hat{V}\hat{A}'$ shape towards the right, (4) lower vertical line, and (5) lower square. A figure was graded as impede if there were major distortions in the shape or orientation of more than one element. Errors in the individual elements' shape or the whole design were not considered when grading. The complete rotation

of the design was considered acceptable if all five elements were present in correct relation among them. Triangle: The design contains three elements: (1) outer triangle, (2) open rectangle vertically oriented, and (3) closed rectangle horizontally oriented. The figure was graded as intact only if the three elements were present. The rotation of the whole design was considered acceptable if all three elements were present in the correct relationship among them.]

Answer:

- 00. Zero intact figures
- 01. One intact figure
- 02. Two intact figures
- 80. RF
- 88. Couldn't do it for vision problems

4.7 Numeracy and Numerical Ability

4.7.1 HRS

((D122)) » PRESS [Enter] to continue as soon as R has counted 10 numbers, or stops, or asks to start over » Correct responses include counting down from 19 to 10 or from 20 to 11.

Answer:

1 (CONTINUE)

((D124)) You may stop now. Thank you. » CODE correct if R counted backwards from 19 to 10 or from 20 to 11 without error » USE [Ctrl-R] if R refused to try the task

Answer:

- 1 Correct
- 5 Incorrect
- 6 Wants to start over

((D125)) Let's try again. » PRESS [Enter] as soon as you read the number The number to count backward from is: 20

Answer:

1 (CONTINUE)

((D127)) » PRESS [Enter] as soon as R has counted 10 numbers or stops

Answer:

1 (CONTINUE)

((D129)) You may stop now. Thank you. » CODE correct if R counted backwards from 19 to 10 or from 20 to 11 without error » USE [Ctrl-R] if R refused to try the task

Answer:

1 Correct

5 Incorrect

((D142)) [F1]--help Now let's try some subtraction of numbers. One hundred minus 7 equals what? » If R adds 7 instead, you may repeat question

Answer:

0...996

((D143)) [F1]--help And 7 from that

Answer:

0...996

((D144)) [F1]--help And 7 from that

Answer:

0...996

((D145)) [F1]--help And 7 from that

Answer:

0...996

((D146)) [F1]--help And 7 from that

Answer:

0...996

((D178)) Next I would like to ask you some questions which assess how people use numbers in everyday life. If the chance of getting a disease is 10 percent, how many people out of 1,000 would be expected to get the disease?

Answer:

-999999999..999999999

((D179)) If 5 people all have the winning numbers in the lottery and the prize is two million dollars, how much will each of them get?

Answer:

-999999999..999999999

((D180)) Let's say you have \$200 in a savings account. The account earns 10 percent interest per year. How much would you have in the account at the end of two years?

Answer:

-999999999..999999999

4.7.2 ELSA

((CfSumB)) In a sale, a shop is selling all items half price. Before the sale a sofa costs £300. How much will it cost in the sale?

((CfSumC)) If the chance of getting a disease is 10 percent, how many people out of 1,000 (one thousand) would be expected to get the disease?

Answer:

1. 100

2. 10

3. 90

4. 900

95. Other answer

96. Doesn't know answer

((CfSumD)) A second hand car dealer is selling a car for £6000. This is two-thirds of what it cost new. How much did the car cost new?

Answer:

1. 9000
2. 4000
3. 8000
4. 12000
5. 18000

((CfSumA)) If you buy a drink for 85 pence and pay with a one pound coin, how much change should you get back?

Answer:

1. 15 pence
2. 25 pence
95. Other answer
96. Doesn't know answer

((CfSumE)) If 5 people all have the winning numbers in the lottery and the prize is £2million, how much will each get?

((CfSumF)) Let's say you have £200 in a savings account. The account earns 10% interest each year. How much would you have in the account at the end of two years

4.7.3 *SHARE*

((CF011_INTRONUM)) Next I would like to ask you some questions which assess how people use numbers in everyday life. IWER: IF NECESSARY, ENCOURAGE THE RESPONDENT TO TRY TO ANSWER EACH OF THE NUMERACY QUESTIONS

Answer:

1. Continue

((CF012_NUMDIS)) If the chance of getting a disease is 10 per cent, how many people out of 1,000 (one thousand) would be expected to get the disease? IWER: DO NOT READ OUT THE ANSWERS

Answer:

1. 100
2. 10
3. 90
4. 900
97. Other answer

((CF013_NUMHALFPRICE)) In a sale, a shop is selling all items at half price. Before the sale, a sofa costs 300 [local currency] How much will it cost in the sale? IWER: DO NOT READ OUT THE ANSWERS

Answer:

1. 150
2. 600

((CF014_NUMCAR)) A second hand car dealer is selling a car for 6,000 [local currency] This is two-thirds of what it costs new. How much did the car cost new? IWER: DO NOT READ OUT THE ANSWERS

Answer:

1. 9,000
2. 4,000
3. 8,000
4. 12,000
5. 18,000
97. Other answer

((CF015_SAVINGS)) Let's say you have 2000 [local currency] in a savings account. The account earns ten per cent interest each year. How much would you have in the account at the end of two years? IWER: DO NOT READ OUT THE ANSWERS

Answers:

1. 2420
2. 2020
3. 2040

- 4. 2100
- 5. 2200
- 6. 2400
- 97. Other answer

4.7.4 *KLoSA*

((Cd07a)) Try to remember the words I just read to you. I'll ask you to recall them later.

[IWER: Read once more if R did not recall any of the words, up to 3 times and go on. If R does not recall, ensure them it is OK so R would feel comfortable] Let's try some subtraction of numbers this time. What are 100 minus 7 equal to? [IWER: For respondents who are unable to solve complex calculations, mark '0(incorrect answer)' for questions Cd07a ~ Cd11a. Ask simple questions such as "What is 100 minus 30?" or "What is 10 minus 3?" for about 3 minutes and no longer.

Answer:

Range -9 to 99

((Cd07)) Was answer to Cd07a correct?

Answer:

- 1) Correct
- 2) Incorrect

((Cd08a)) And 7 from that? _____ [IWER: Try to persuade if R refuses to answer.

Record the exact number R says. Record 0 for 'don't know' or 'refuse to answer']

Answer:

Range -9 to 99

((Cd08)) Was answer to Cd08a correct?

Answer:

- 1) Correct
- 2) Incorrect

((Cd09a)) And 7 from that? _____ [IWER: Try to persuade if R refuses to answer.

Record the exact number R says. Record 0 for 'don't know' or 'refuse to answer']

Answer:

Range -9 to 99

((Cd09)) Was answer to Cd09a correct?

Answer:

1) Correct

2) Incorrect

((Cd10a)) And 7 from that? _____ [IWER: Try to persuade if R refuses to answer.

Record the exact number R says. Record 0 for 'don't know' or 'refuse to answer']

Answer:

Range -9 to 99

((Cd10)) Was answer to Cd10a correct?

Answer:

1) Correct

2) Incorrect

((X7)) Correct answer to Cd10a

Answer:

Range -9 to 99

((Cd11a)) And 7 from that? _____ [IWER: Try to persuade if R refuses to answer.

Record the exact number R says. Record 0 for 'don't know' or 'refuse to answer']

Answer:

Range -9 to 99

((Cd11)) Was answer to Cd11a correct?

Answer:

1) Correct

2) Incorrect

4.7.5 JSTAR

((B-007)) Thank you. Next, I will ask you to perform some simple calculations. May I continue?

Answer:

1. Yes
2. Refused to answer

((B-008-1)) Please subtract 7 from 100. [Interviewer: Do not give examples or hints. Even if respondent gives an incorrect answer, continue without correcting or stopping respondent. Try not to indicate by your facial expression, etc., that answer was right or wrong. After respondent gives five answers, regardless of whether they were right or wrong, say, "Thank you," and conclude the test. If respondent refuses to answer during the test, end at that point. Enter respondent's answer below.]

1. Answer:
2. Don't know
3. Refused to answer

((B-008-2)) Please subtract 7 from that number.

1. Answer:
2. Don't know
3. Refused to answer

((B-008-3)) Please subtract 7 from that number.

1. Answer:
2. Don't know
3. Refused to answer

((B-008-4)) Please subtract 7 from that number.

1. Answer:
2. Don't know

3. Refused to answer

((B-008-5)) Please subtract 7 from that number.

1. Answer:
2. Don't know
3. Refused to answer

((B-009)) Thank you. Next, I will ask you to calculate some percentages. May I begin?

Answer:

1. Yes
2. Refused to answer

((B-010-1)) I will ask you to calculate these in your head, so please listen carefully. Suppose that ten percent of people catch a certain illness. If there are 1000 people, how many will catch the illness? [Interviewer: Do not read the answers. Select respondent's answer from the following choices.]

Answer:

1. 100
2. 10
3. 90
4. 900
5. Other answer
6. Don't know
7. Refused to answer

((B-010-2)) Here is the next question. A store is selling everything at half-price. A product cost 300 yen before the sale. How much will it cost during the half-price sale?

[Interviewer: Do not read the answers. Select respondent's answer from the following choices.]

Answer:

1. 150 yen
2. 600 yen

3. Other answer
4. Don't know
5. Refused to answer

((B-010-3)) Here is the next question. A store sells a used dictionary for 6000 yen. The store says this price is $\frac{2}{3}$ of the price of a new book. How much would a new dictionary cost?

[Interviewer: Do not read the answers. Select respondent's answer from the following choices.]

Answer:

1. 9000 yen
2. 4000 yen
3. 8000 yen
4. 12000 yen
5. 18000 yen
6. Other answer
7. Don't know
8. Refused to answer

((B-010-4)) This is the last calculation problem. Suppose you have 2000 yen in a savings account. If the account earns 10% interest per year, how much would you have after two years?

[Interviewer: Do not read the answers. Select respondent's answer from the following choices. If respondent asks questions such as "What is interest?" or "Is there interest in the first year?" you may give explanations such as "Interest is $\hat{\epsilon}_1$ " or "Interest does accrue in the first year."]

Answer:

1. 2420 yen
2. 2020 yen
3. 2100 yen
4. 2200 yen
5. 2400 yen
6. Other answer
7. Don't know

8. Refused to answer

4.7.6 CHARLS

((CC019)) Let's try some subtraction of numbers this time. What are 100 minus 7 equal to?

[IWER: Try to persuade if R refuses to answer. Record the exact number R says.]

Answer:

Integer

((CC020)) And 7 from that? [IWER: Try to persuade if R refuses to answer. Record the exact number R says. Record 0 for 'don't know' or 'refuse to answer'] Answer type: Integer

((CC021)) And 7 from that? [IWER: Try to persuade if R refuses to answer. Record the exact number R says. Record 0 for 'don't know' or 'refuse to answer']

Answer:

Integer

((CC022)) And 7 from that? [IWER: Try to persuade if R refuses to answer. Record the exact number R says. Record 0 for 'don't know' or 'refuse to answer']

Answer:

Integer

((CC023)) And 7 from that?

[IWER: Try to persuade if R refuses to answer. Record the exact number R says. Record 0 for 'don't know' or 'refuse to answer']

Answer:

Integer

4.7.7 LASI

((HT511)) For this next question, please try to count backward as quickly as you can from the number I will give you. I will tell you when to stop. Please start with: 20

You may stop now. Thank you. Please select one of the following

Answer:

1. R correctly counted (e.g., 19 – 10; 20 – 11) without error

2. R made an error(s) ☒ Go to HT513

3. R cannot count ☒ Go to HT513

((HT512)) Now please try counting backward from a different number. Remember to count as quickly as you can from the number I mention. Please start with: 100. I will give you 2 minutes. You may stop now. Thank you. [IWER: PLEASE SELECT ONE OF THE FOLLOWING.]

Answer:

1. R correctly counted (eg. 100-1, 99-0). Please specify to which number R counted:

2. R made an error(s)

3. R cannot count

((HT512_correct_count)) Counting backward correct

Answer:

Integer

((HT513)) Now let's try some subtraction of numbers. One hundred minus 7 equals what?

[IWER: ENTER THE ANSWER R GAVE.]

Answer:

1.

2. R Cannot count

((HT513_value)) Value of the subtraction 100 minus 7

Answer:

Integer

((HT514)) And minus 7 from that equals what? [IWER: ENTER THE ANSWER R GAVE.]

Answer:

Integer

((HT515)) And minus 7 from that equals what? [IWER: ENTER THE ANSWER R GAVE.]

Answer:

Integer

((HT516)) And minus 7 from that equals what? [IWER: ENTER THE ANSWER R GAVE.]

Answer:

Integer

((HT517)) And minus 7 from that equals what? [IWER: ENTER THE ANSWER R GAVE.]

Answer:

Integer

((HT518)) A shop is having a sale and selling all items at half price. Before the sale, a sari costs 300 Rs. How much will it cost in the sale?

Answer:

1. R gave the correct answer of 150 Rs
2. R gave incorrect answer

((HT519)) If 5 people all have the winning numbers in the lottery and the prize is 1,000 Rs, how much will each of them get?

Answer:

1. R gave the correct answer of 200 Rs
2. R gave incorrect answer

4.7.8 IFLS

((EK13)) $49-32=?$

((EK14)) $267+112-189=?$

((EK15)) $(8+9)*3=?$

((EK16)) $56/84=?$

((EK17)) $1/3-1/6=?$

((EK18)) $56/84=?$

((EK19)) $(412+213):(243-118)$

((EK20)) $0,76-0,4-0.23$

((EK21)) Jika 65 persen penduduk bercocok tanam, sedang penduduknya sejumlah 160 juta, maka banyaknya penduduk yang tidak bercocok tanam adalah...

Answer:

- a. 35 juta
- b. 40 juta
- c. 48 juta
- d. 56 juta

((EK22)) Uang tabungan si Ali di bank Rp 75.000,00. Jika setahun kemudian bunganya 5%, maka besar bunga yang diterima Ali adalah.

Answer:

- a. Rp 7.500,00
- b. Rp 3.750,00
- c. Rp 750,00
- d. Rp 375,00

4.8 Vocabulary

4.8.1 HRS

((D159)) Now please tell me the meanings of some words I will read to you. Any way you want to define the word is fine.

Answer:

1 (CONTINUE) Continue

((D161)) [F1]--help What is the meaning of the word: repair/conceal

Answer:

Open ended

((D163)) [F1]--help What is the meaning of) the word: FABRIC/ENORMOUS

Answer:

Open ended

((D165)) [F1]--help What is the meaning of) the word: domestic/perimeter

Answer:

Open ended

((D167)) [F1]--help What is the meaning of) the word: remorse/compassion

Answer:

Open ended

((D169)) [F1]--help What is the meaning of) the word: plagiarize/audacious

Answer:

Open ended

4.9 Visual Memory

4.9.1 MHAS

((E13)) Please recall the figures you drew before. Draw them again on this piece of paper. [SUGGEST TO THE RESPONDENT THAT S/HE CAN GUESS OR GIVE PARTIAL ANSWERS IF S/HE APPEARS TO BE INSECURE. IF THE RESPONDENT PRODUCES A DESIGN OF THE VISUAL SCANNING TEST, TELL THE RESPONDENT: Please draw the other figures that you drew before. PERMIT ONLY THREE MINUTES TO DRAW THE TWO FIGURES.

Answer:

00. Zero points

01. One point

02. Two points

80. RF

88. Couldn't do it for sight problems

4.10 Non verbal Intelligence

4.10.1 IFLS

((EKO – EK12) [This is a visual handout of matrices]

Answer:

- a
- b
- c
- d
- e
- f

4.11 Language

4.11.1 HRS

((D155)) Now I'm going to ask you for the names of some people and things. What do people usually use to cut paper?

Answer:

- 1 Scissors or shears only
- 5 Not correct

((D156)) What do you call the kind of prickly plant that grows in the desert?

Answer:

- 1 Cactus or name of kind of cactus
- 5 Not correct

4.11.2 KLoSA

((Cd13)) Use of belongings-1st What is this?

Answer:

- 1) Correct
- 5) Incorrect

((Cd14)) Use of belongings-2nd What is this?

Answer:

- 1) Correct
- 5) Incorrect

((Cd15)) Now you have to exactly repeat what I say. Are you ready? Please listen carefully.
Sentence 1: To see is to believe Sentence 2: Check the dead fire again Sentence 3: The Great
Mountain is high but under the sky Sentence 4: God watch over our land forever Sentence 5:
Thousand miles of range and river land

Answer:

1) Correct

5) Incorrect