

# CLEANED/DERIVED VARIABLE METADATA TOP SHEET

## For Submission to the NSHD Scientific Support Team

<b>Date of submitting documentation</b>	24/07/2019
<b>Categories of variables*:</b> (may be more than one)	Criteria for Mild cognitive impairment (MCI)
<b>Summary of work undertaken</b>	<ul style="list-style-type: none"> <li>• Classification of MCI carried out according to methods and criteria detailed below</li> <li>• Clinical diagnoses agreed by consensus – see further details below</li> <li>• Any missing data coded as -99.</li> </ul>
<b>Source data file(s)</b>	<ul style="list-style-type: none"> <li>• XNAT</li> <li>• Logical Memory and Digit-Symbol paper sheets, later entered into XNAT</li> </ul>
<b>Date source file(s) created:</b>	On date of each participant's visit
<b>Names of source variables</b>	<p>Source variables are from several datasets. (Variable names in those datasets are noted below in brackets – see the relevant datasheets.)</p> <p>From <i>Insight46_mmse_standardneuropsychology_cleaned_final_20190723</i></p> <ul style="list-style-type: none"> <li>• Logical Memory delayed recall score (Lds)</li> <li>• Digit-Symbol Substitution score (Ws)</li> </ul> <p>From <i>Insight46_scd_mycog_cleaned_final_20190830</i></p> <ul style="list-style-type: none"> <li>• Questions about participants concern about their cognition (peers; doctor)</li> </ul> <p>From <i>Insight46_ad8_cleaned_final_20190830</i></p> <ul style="list-style-type: none"> <li>• Total score (ad8_tot)</li> </ul>
<b>Syntax provided</b>	No
<b>Location of syntax file</b>	N/A
<b>Date syntax file created:</b>	N/A
<b>Format of syntax</b>	Stata
<b>Output variables (please list names of new variables created)</b>	<p>The following are all yes/no variables where 1=yes and 0=no (see descriptions below):</p> <ul style="list-style-type: none"> <li>• id (participant ID number)</li> <li>• low_logical_memory</li> <li>• low_digit_symbol (note that one participant has missing data as they did not complete this test – see neuropsychology dataset for an explanation)</li> <li>• informant_concern</li> <li>• participant_concern</li> <li>• dementia_consensus</li> <li>• mci</li> </ul>
<b>Output data file provided</b>	Yes

<b>Date output file created:</b>	24/07/2019
<b>Location of output file</b>	N:\Test_Data_and_Video_Files\Phase 1\3_Cleaned Data\Insight46_mci_cleaned_final_20190724
<b>Format of output file</b>	Stata .dta file
<b>Documentation provided</b>	N/A
<b>List any papers in which cleaned/derived variables have been used</b>	<ul style="list-style-type: none"> <li>• Keuss et al. (2019) Incidental findings on brain imaging and blood tests: results from the first phase of Insight 46, a prospective observational sub-study of the 1946 British birth cohort, <i>BMJ Open</i>, <i>in press</i></li> <li>• Lu <i>et al.</i> (2019) Cognition at age 70: life course predictors and associations with brain pathologies, <i>Neurology</i>, <i>in press</i></li> </ul>

\* See list of categories on Swift

‡ Please delete as appropriate

### **Mild Cognitive Impairment**

Criteria for Mild Cognitive Impairment (MCI) were agreed based on published criteria (Petersen, R. C. et al. (2013) 'Mild cognitive impairment due to Alzheimer disease in the community.', *Annals of neurology*, 74(2), pp. 199–208. doi: 10.1002/ana.23931). The principle of these criteria is that they require an absence of dementia AND evidence of objective cognitive impairment on one or more neuropsychological tests AND subjective cognitive concerns reported by the participant or an informant. For Insight 46 these criteria were operationalised as detailed below. [The relevant variable names in this dataset are annotated in blue.](#)

- No clinical evidence of dementia ([dementia\\_consensus = no](#)).
- **AND** participant concern regarding their cognition (memory or cognitive difficulties more than other people the same age, or if they felt they would seek medical attention regarding their difficulties) ([participant\\_concern = yes](#)) and/or informant concern regarding the participant's cognition (AD8 score  $\geq 2$ ) ([informant\\_concern = yes](#))
- **AND** objective evidence of either an amnesic (Logical Memory delayed recall  $\geq 1.5 SD$  below the mean) ([low\\_logical\\_memory = yes](#)) and/or non-amnesic deficit (Digit-Symbol Substitution score  $\geq 1.5 SD$  below the mean) ([low\\_digit\\_symbol = yes](#)). These cognitive tests were chosen for defining a cognitive deficit on the basis of their normal distribution across the entire cohort.

The dementia\_consensus variable was agreed by consensus of Insight 46 clinicians (Jonathan Schott, Tom Parker, Chris Lane, Sarah Buchanan, Sarah Keuss, Ashvini Keshavan) based on all available information. This included the participant's self-report of any diagnoses, informant reports, clinical observations, and radiology findings.

It should be noted that some participants meeting these criteria for MCI have other clinical conditions which may or may not explain their cognitive profiles. Further details of the assessments that underpin these criteria are provided below:

Each participant had an informant who completed the AD8 questionnaire (Galvin, J. E. et al. (2005) 'The AD8: A brief informant interview to detect dementia', *Neurology*, 65(4), pp. 559–564. doi: 10.1212/01.wnl.0000172958.95282.2a.) See separate cover-sheet for AD8 data (**Insight46\_ad8\_cleaned\_final\_20190830**) which contains full details of

this questionnaire and its administration.

Each participant completed questions about subjective cognitive decline (SCD) – see separate cover-sheet and dataset for SCD and MyCog data which contains full details of these variables, (**Insight46\_scd\_mycog\_cleaned\_final\_20190830**). As explained above, the [participant\\_concern](#) variable was determined based on answering 'yes' to either or both of the following questions within the SCD questionnaire: "Do you perceive memory or cognitive difficulties more than other people the same age?" and "Would you ask a doctor about these difficulties?"

As part of the cognitive assessment, each participant completed the Wechsler Memory Scale (WMS) Logical Memory test (a test of immediate and delayed recall for details in a story) and the Digit-Symbol Substitution test from the Wechsler Adult Intelligence Scale. Full details of these tests and their administration are provided in the separate data-sheet for the neuropsychology dataset (**Insight46\_mmse\_standardneuropsychology\_cleaned\_final\_20190723**) and in the following two papers:

- Lane *et al.* (2017) Study protocol: Insight 46 – a neuroscience sub-study of the MRC National Survey of Health and Development, *BMC Neurology*, 17:75, doi: 10.1186/s12883-017-0846-x
- Lu *et al.* (2019) Cognition at age 70: life course predictors and associations with brain pathologies, *Neurology*, *in press*

Z-scores for Digit-Symbol and Logical Memory Delayed Recall were calculated based on the mean and SD of the full Insight 46 sample (variables Wz and Ldz in the neuropsychology dataset – see relevant datasheet), and a z-score of  $\leq -1.5$  was classified as a low score indicating evidence of a cognitive deficit.

### **Data cleaning**

One participant did not complete the Digit-Symbol test (see **Insight46\_mmse\_standardneuropsychology\_cleaned\_final\_20190723** and associated data-sheet) so their `low_digit_symbol` score was coded as -99.