# ELSA-HCAP2 Quality Checks – Mainstage

## Overall procedure[1]

**Real-time QC conducted by NatCen (objectives and methods):**
- Conduct early checks on CAPI (tool):
  - by determining the problems with question routing
- Examine fieldwork progress:
  - by reporting the number of completed/partial interviews, refusals, etc. during weekly meetings with the UCL team
- Examine variations across sites and across interviewers to identify any systematic biases from underlined specific sites or interviewers:
  - by comparing mean test scores across sites and between interviewers using weekly collected data
- Signal potential problems in fieldwork implementation:
  - by reviewing the feedback from the project champion on a weekly basis
  - by reviewing free text/ subjective comments entered by the interviewer and, if necessary, checking the CAPI data of flagged cases
  - by listening to the audio recording of a random sample of interviewers (based on region) to assess:
    - Interviewer's administration of tests as per the script on the CAPI screen
    - Feedback provided by the interviewer to the participant (after each cognitive test administered)
- Provide an automated report about the collected data on a weekly basis highlighting:
  - Number of completed interviews, incomplete/partial interviews or audio recordings, refusals, etc (a summary table with percentages)
  - Distribution of each test and summary statistics (means and standard deviations)
  - Unusual response patterns (e.g., extreme values) by test
  - Missingness due to "don't know" and "refusal" by site/ interviewer
  - Interview time (e.g., unusually short or lengthy interview) by site/ interviewer

**Repeated QC conducted by UCL team:**
Repeat the below procedure (steps 1 to 4) over the data collection period (2-3 times):

1. Examine the distribution of each test and its missingness due to "don't know" and "refusal" by site, interviewer, age group, and education group using the full (up to date) dataset (as a validation to the distribution checks done by NatCen)
2. Select the records with zero, missing, and low scores (N= TBD) and a random number of records within the normal ranges (N=10?) from the dataset
3. For the selected records in (2), conduct the test-specific QCs presented in Table 1 to determine the inter-rater rates (researcher (blinded) vs interviewer data comparison)
4. For items with inter-rater rate below 90%, review extreme data points and suggested data corrections to NatCen team

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[1] Inspired by the QC protocol in Banerjee, J., et al. (2020). "Methodological considerations in designing and implementing the harmonized diagnostic assessment of dementia for longitudinal aging study in India (LASI-DAD)." Biodemography Soc Biol 65(3): 189-213.

To enable the test-specific QCs, NatCen to provide the UCL team with the following for the selected records:

1.  The entire Respondent pack (from Interviewer)
2.  Access to the audio-recordings
3.  Access to the up-to-date dataset from CAPI
4.  Linked IDs for interviewers and participants across the CAPI dataset, worksheets, and audio recordings

**Post-hoc processing:**

- MMSE serial 7, PW letter cancellation, and number series scores derivation: Check random sample of scores computed by the NatCen team at the office with the scores computed by the UCL team
- Check consistency of test scores for a given respondent with his/her performance in HCAP1 (and/or latest ELSA main wave)
- Check consistency of test scores for a given respondent with scores from the informant reports (family and friends interviews)

Table 1: QC protocol by test

| Test | QC procedure | QC criteria |
|---|---|---|
| MMSE item: WORLD | Listen to audio recording for all cases since this item is asked when Serial 7 is refused (~N<5% of total sample) | Compare the data entry/scoring to what the participant has said - make notes of errors/corrections |
| MMSE item: Serial 7 | Listen to audio recording for a random sample of N = 10 | Check the data was entered correctly for the CAPI to do the computation of scores |
| MMSE item: Repetition | Listen to audio recording for a random sample of N = 10, particularly the cases coded as incorrect or no answer or missing in the CAPI (refused, don't know) | Check the data was entered correctly for the CAPI |
| MMSE item: Comprehension | Check the data for the cases with 4, 5, or 6 (did not attempt, unable to take part, refused) against the comment box | Look for explanation why the task was not done |
| MMSE item: Writing | Check random sample of sentences on the worksheet against the coding of the CAPI (as correct (1) and incorrect (5) and did not write (97) | Identify if the coding (1/5/97) on CAPI matches the information on the worksheet |
| MMSE item: Drawing - pentagons | Check random sample of drawings on the worksheet against the coding of the CAPI | Identify if the coding (1/5/98 - refusal) on CAPI matches the information on the worksheet |

| Test | QC procedure | QC criteria |
|------|--------------|-------------|
| CERAD word immediate recall (lists 1 to 3) and delayed recall (list 1) | Listen to audio recording for a random sample of N = 10, particularly the cases with score of zero<br><br>Check the audio recording and CAPI scores for those with WR105 (interviewer administration code) = 1 to 3 | Check the data was entered correctly in the CAPI |
| Retrieval Fluency (animal naming) | Listen to audio recording for a random sample of N = 10, and score it ourselves<br>*Total number of responses<br>*Number of incorrect and repeated responses<br><br>Check the audio recording and CAPI scores for those with RF106 (interviewer administration code) = 1 to 5 | Compare our scores with those recorded in the CAPI (RF_103 and RF_105) |
| Letter Cancellation | Check random sample of the worksheets against the coding in the dataset done by the NatCen team at the office (post-hoc) | Compare our scores with those recorded in the dataset |
| Background Count | Listen to audio recording for a random sample of N = 10, and score it ourselves<br><br>*total number of mistakes<br>*final number reached by R after 30 sec<br>*Compute the BC score = 100 - final number - number of mistakes) | Compare our scores with those recorded in the CAPI (BC101, BC102, BCSCORE) |
| Logical Memory (stories 1 and 2) - immediate and delayed<br><br>*NB: not administered in Pilot* | Listen to audio recording for a random sample of N = 10, and score it ourselves, particularly the cases with LM2_IwerChPt1/2 = yes<br><br>Note: check the distribution of the exact and approximate matches for each item in the dataset and listen to the audio recordings of the responses coded as approximate while they need to be coded as exact or incorrect (e.g., Thompson, South, London) | Compare our scores with those recorded in the CAPI (immediate: BM_1_* and LM1B_*)<br>(delayed: BM_2_* and LM2B_*) |
| Constructional Praxis (immediate and recall) | Check random sample of drawings on the worksheet against the coding of the CAPI | Identify if the coding (1/5/97 - cannot draw) on CAPI matches the information on the worksheet |

| Test | QC procedure | QC criteria |
|---|---|---|
| SDMT - Digit Symbol | Check random sample of scoring sheets against the coding of the CAPI<br><br>*total number attempted<br>*number of incorrect<br>*manually compute total - incorrect = correct | Compare our scores with those recorded in the CAPI (SDMT_ATTEMPTED, SDMT_TOTCORR) |
| Number series | Listen to audio recording for a random sample of N = 10, and score it ourselves<br><br>Note: Alison highlighted on the 7th of June 2023 that the first 500 or so cases were assigned to one set vs the other – run analysis on these cases to check if performance is better compared to those randomly assigned to set A or B in the subsequent interviews. | Compare our scores with those recorded in the CAPI (NSA**_Set*Item* for list A and NSB**_Set*Item* for list B) |
| Raven's test | Listen to the audio recording of the cases with extremely low scores on: RV_TotalScore | Compare the audio recording output to the scores recorded in the CAPI |
| Trail Making test | Record number of errors on the Trails form. Higher number of errors should reflect longer times. Record (from observations of the Trails forms) if an extended time for completion is expected (YES/NO)<br><br>Check random sample of scoring sheets against the coding of the CAPI for those with extreme times on the variables:<br>TMT_A1_TotSecs<br>TMT_B1_TotSecs<br><br>*listen to the audio recording of the cases with extreme times | Those with longer TMT timings s are anticipated to have more errors on the trails forms.<br><br>(NB: Those with longer times may not have greater errors, but have higher accuracy) |