COGNITIVE FUNCTION TESTS SCORES

General Recommendation for Rey Auditory-Verbal Learning Test (RAVLT), Digit Symbol Substitution Test (DSST) and Stroop Test

1. Imputations: We do not recommend imputing unavailable data for those with impairments (physical, uncooperative, vision, can’t read, note that no one had a hearing deficit checked) identified during the Stroop test from the existing data because these 37 participants perform significantly worse than other participants in both DSST and RAVLT, as well as in Stroop (variable HSTROOPPROB=1);
2. About 20 people missing the RAVLT long delay score could be imputed, but the correlation of the long delay score with the learning (immediate delay) and short delay memory tests is only about 0.9 in those who had immediate, short and long delay scores, so this is left as an option for individual users;
3. We recommend excluding those with impairments identified during the Stroop test from all the analysis for Year 25 cognitive analyses (so setting DSST, Rey and Stroop all to missing);
4. Recommendation for the use of scores:
   a) DSST as is.
   b) RAVLT average of whatever is in the 5 immediate recall scores, RAVLT short delay is not used much, RAVLT long delay is the preferred measure of memory, the composite score is a more global measure of learning and memory. We don't think that combining z scores of RAVLT elements is helpful; rather combining words recalled in immediate, short, and long delay is preferred. We did not implement any Z such scores; this could be an individual option.
   c) Stroop scores are test 1, 2, and 3 seconds plus errors. The stroop interference score is test 3 - test 2 (including the errors in the computation). An alternate stroop interference score is included derived from the test 3 - test 2 differences in seconds per correct answer (but we didn't implement seconds per correct answer for the separate tests). We also included a variable for the detection of any impairment during the Stroop testing. We excluded any Stroop test with recorded seconds to complete <= 5.

Computed Variable

Mean Rey Auditory-Verbal Learning Test (RAVLT) – Immediate Recall Score:

HRAVLT_IMMED=MEAN(OF H87SCORE1-H87SCORE5);

Stroop Test Scores corrected for number of errors:

HSTROOP1=HTOTSEC1+H89NERR1;
HSTROOP2=HTOTSEC2+H89NERR2;
HSTROOP3=HTOTSEC3+H89NERR3;
Stroop Test Interference Scores corrected for number of errors:

\[ \text{HSTROOPINT} = \text{HSTROOP3} - \text{HSTROOP2}; \]

Alternative Stroop Test Interference Scores corrected for number of errors:

\[ \text{IF } \text{H89NERR3} = 40 \text{ OR } \text{H89NERR2} = 40 \text{ OR } \text{HTOTSEC3} = . \text{ OR } \text{HTOTSEC2} = . \text{ THEN } \text{HSTROOPINTALT} = . \text{ ELSE } \text{HSTROOPINTALT} = (\text{HTOTSEC3}/(40-\text{H89NERR3}))-(\text{HTOTSEC2}/(40-\text{H89NERR2})); \]

Set DSST and RAVLT to missing if any physical, cooperation, vision, literacy problem (no hearing problems occurred). It affects the whole sequence of tests (n = 37 with HSTROOPPROB=1):

\[ \text{IF } \text{SUM}(\text{H89TST1PHYS}, \text{H89TS1NCOP}, \text{H89TS1VIS}, \text{H89TS1HEAR}, \text{H89TS1CNREAD}, \text{H89TST2PHYS}, \text{H89TS2NCOP}, \text{H89TS2VIS}, \text{H89TS2HEAR}, \text{H89TS2CNREAD}, \text{H89TST3PHYS}, \text{H89TS3NCOP}, \text{H89TS3VIS}, \text{H89TS3HEAR}, \text{H89TS3CNREAD})^\leq. \text{ THEN } \]
\[ \text{DO; } \]
\[ \text{HSTROOPPROB} = 1; \]
\[ \text{H89TOTSEC1} = .; \text{ H89TOTSEC2} = .; \text{ H89TOTSEC3} = .; \]
\[ \text{H89COMPSEC} = .; \text{ H89COMPSEC2} = .; \text{ H89COMPSEC3} = .; \]
\[ \text{END; } \]
\[ \text{IF } \text{HSTROOPPROB} = 1 \text{ THEN } \]
\[ \text{DO; } \]
\[ \text{HRAVLT_IMMED} = .; \]
\[ \text{HRAVLT_SHORT} = .; \]
\[ \text{HRAVLT_LONG} = .; \]
\[ \text{HRAVLT_COMPMEM} = .; \]
\[ \text{HDSST} = .; \]
\[ \text{END;} \]