Reviewer’s report

Title: Cognitive performance and leukocyte telomere length in two narrow age-range cohorts: a population study

Version: 1 Date: 24 May 2010

Reviewer: Joanna Collerton

Reviewer’s report:

The association between telomere length and various health measures is an active area in gerontological research. Existing studies exploring the link between telomere length and cognitive performance have shown conflicting results. This manuscript explores the relationship between telomere length and cognitive performance in two narrow age band cohorts. It has the strengths of narrow age band cohort study design, the wide range of cognitive tests employed, and the availability of both cross-sectional and longitudinal cognitive data (although longitudinal telomere data is not available). However I have the following areas of concern: the coefficients of variation of the telomere length estimates; the data on the relationship between telomere length and change in cognitive function should be presented; and, as the authors state, the study was somewhat under-powered.

Major compulsory revisions

1. Methods, telomere length measurement: The authors report mean inter-assay coefficients of variation (CV) of 3.4 and 8.8% for telomere length estimates for their 60+ and 40+ cohorts respectively. While the lower number might be acceptable, the higher one might seriously interfere with results. Typically, differences between groups in telomere length biomarker studies are in the order of 150 – 400 bp, equivalent to 4 – 8%. Also the authors did not give the variation of their mean CV, one might assume that at least one third of their estimates (at least in the younger group) actually showed a CV>10%. The authors do not state on how many samples these estimates are based; the difference in CVs between the younger and older groups is significant and might suggest the estimates are based on only a small number of samples. These are major weaknesses of the study and needs to be clearly indicated and discussed as such.

2. Results, Table 2: The values given for the correlation coefficients in the table differ from those quoted in the text which raises some concerns about the accuracy of the figures in general.

3. Results: the data on change in cognitive performance between waves 1 and 2 should be shown.

4. Methods, Participants: A flow chart showing how the telomere 40 and 60 cohorts relate to the overall PATH cohort should be included.

Minor essential revisions
1. Abstract, methods section: This should include the setting for the study (Australia- specifying region) and a list of cognitive measures used.

2. Background, paragraph 2, line 8: ‘M’ should be explained.

3. Methods, Participants: The timeframe for waves 1 and 2 should be stated.

4. Methods, Participants: …….self-report data was collected using hand held computers…was this collected by the same trained interviewers who administered the physical and cognitive tests?

5. Methods, Participants: a comment on whether the PATH cohort was representative of the local source population could be included.

6. Methods, Measures: This section should be separated into cognitive measures and then other measures.

7. Methods, Measures- it is usual to have a time period assigned to the FEV e.g. FEV1- forced expiratory volume in 1 second.

8. Methods, Statistical analysis, line 3: Should ‘complex’ read ‘choice’?

9. Results, Table 1: Having a mix of n (%), median (IQR) and mean (SD) within the table can confuse; suggest either separate columns for each or footnotes to identify which is which. Also some means have SD written next to them whilst others don’t; approach needs to be consistent.

10. Results, Table 1: The IQR should give the lower quartile value and the upper quartile value rather than the actual range.

11. Results, Table 1: Is hypertension defined as EITHER current use of antihypertensive drugs OR measured BP levels above a cut point? This is not clear.

12. Discussion, Paragraph 1: The gender differences in the findings in the older cohort should also be mentioned.

13. Discussion, Paragraph 2: DSST should be spelt out.

Discretionary revisions

General point: the manuscript is rather wordy and could be tightened up e.g. Methods, Participants: The last sentence repeats the end of the background section; Discussion, Paragraphs 2/3: this section is somewhat repetitive of the background section.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests