

# Cognition at age 70

## Life course predictors and associations with brain pathologies

Kirsty Lu, PhD, Jennifer M. Nicholas, PhD, Jessica D. Collins, MSc, et al.

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### Study objective and summary result

This study of older adults aimed to identify predictors of cognitive performance. Key findings were that childhood cognitive ability, educational attainment, socioeconomic position (SEP), sex, amyloid status, and white matter disease burden predict cognitive performance in older adults.

### What is known and what this paper adds

Evidence indicates that subtle cognitive decline precedes the development of Alzheimer disease, but the life course and biomarker determinants of such preclinical cognitive decline are unclear. This investigation elucidates such determinants.

### Participants and setting

The investigators analyzed data from 502 individuals (49% female; mean age at assessment,  $70.7 \pm 0.68$  years) all born in the UK during the same week in March 1946. These individuals were participants in Insight 46, a substudy of the National Survey of Health and Development (NSHD), and were recruited and assessed at University College London between May 2015 and January 2018.

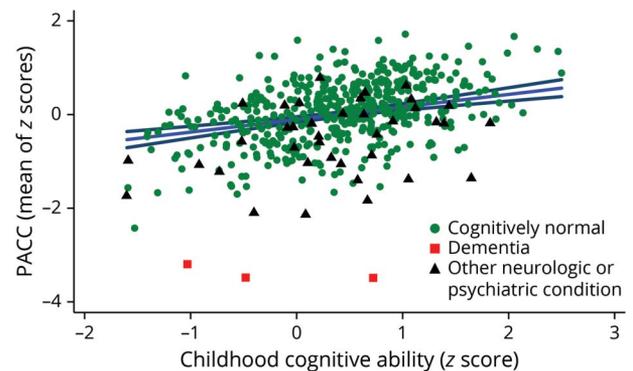
### Design, size, and duration

Cognition was assessed with the Preclinical Alzheimer Cognitive Composite (PACC). Childhood cognitive ability was assessed based on tests that the participants completed as 8-year-olds through the NSHD. Biomarker measures included amyloid status (determined from  $\beta$ -amyloid PET) and white matter disease burden. Multivariable linear regression was used to assess relationships between life course and biomarker variables and PACC outcomes.

### Main results and the role of chance

Female sex was associated with better scores on most PACC components. Greater childhood cognitive abilities, higher educational attainment, and higher SEP were associated with better PACC scores. Amyloid positivity and white matter disease were independently associated with lower PACC scores.

**Figure** Relationship between childhood cognitive ability and PACC scores



Green circles, red squares, and black triangles represent participants with normal cognition, dementia, and other neurologic or psychiatric conditions, respectively.

### Bias, confounding, and other reasons for caution

The requirement for Insight 46 participants to be willing and able to travel to London for assessments might have introduced selection bias.

### Generalizability to other populations

The Insight 46 participants were all white. This may limit the interracial generalizability of the results.

### Study funding/potential competing interests

This study was funded by Alzheimer's Research UK, the UK Medical Research Council, the Wolfson Foundation, and the Brain Research Trust. Some authors report receiving research support from the Wellcome Trust and the UCL/UCLH National Institute of Health Research Biomedical Research Centre. Go to [Neurology.org/N](http://Neurology.org/N) for full disclosures.

*A draft of the short-form article was written by M. Dalefield, a writer with Editage, a division of Cactus Communications. The authors of the full-length article and the journal editors edited and approved the final version.*

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