Innovative methods

OP41 TESTING LIFE COURSE MODELS TO INVESTIGATE THE EFFECT OF SOCIOECONOMIC POSITION ON CRYSTALLISED COGNITIVE FUNCTION IN OLDER AGE, ACCOUNTING FOR MISSING DATA

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Background Few studies have investigated the relationship between life course socioeconomic position (SEP) and cognitive function in middle aged and older people, with only one study identified which did not rely on retrospective data.
Objective To investigate life course models of how lifetime SEP is associated with later-life crystallised cognitive function, accounting for different missing data mechanisms.
Design Two prospective cohort studies.
Setting England, Scotland, Wales.
Participants A nationally representative population sample born in 1946 (Medical Research Council (MRC)National Survey of Health and Development (NSHD)) (N=5,362), and a sample of British civil servants (Whitehall II (WHII)) (N=10,308).
Methods A novel structured statistical approach to distinguish between life course models of accumulation and sensitive period using information of SEP from childhood, early adulthood and midlife. Results of a complete case (CC) analysis (assuming missing completely at random), multiple imputation (MI) (missing at random) and Heckman selection model (missing not at random) were compared.
Main outcome measure The main outcome is crystallised cognitive function in adulthood: the National Adult Reading

Test (NART) at age 53 in the NSHD, and the Mill Hill Test taken at Phase 9 in Whitehall II, where the participants range in age from 55 to 79.

Results After adjusting for childhood cognitive function in the NSHD, the best fitting model was an accumulation model allowing SEP at each time point to have its own estimate. The significance of childhood SEP in NSHD varied by missing data method (women: childhood SEP: CC: coefficient = 1.11 (95% CI: 0.15 to 2.06), MI: coefficient = 1.82 (95% CI: 0.87 to 2.76), Heckman: coefficient = 0.70 (95% CI: −0.38 to 1.78)). In WHII the best fitting model after adjusting for confounders (but not childhood cognition, which was not available) represented accumulation of early- and mid-adulthood, with childhood SEP not significant (women: CC: coefficient = -0.23 (95% CI: −0.71 to 0.25), MI: coefficient = −0.16 (95% CI: −0.69 to 0.37), Heckman: coefficient = −0.36 (95% CI: −1.10 to 0.39)).

Conclusion Despite the inclusion of a childhood cognitive score in the NSHD, childhood SEP remains important in NSHD, whereas in Whitehall II childhood SEP was not associated with cognitive function. These differences may be due to recall bias of early SEP in Whitehall, or the non-manual make up of the Whitehall II sample. Our findings demonstrate the utility of the approach to distinguish models of how SEP across the life course influences cognition and the importance of dealing with missing data.