

# Papers

## Lifetime intellectual function and satisfaction with life in old age: longitudinal cohort study

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What is successful ageing? Current opinion is that “cognitive vitality is essential to quality of life . . . in old age.”<sup>1</sup> This depends substantially on people’s cognitive ability from early life,<sup>2</sup> and on how much they decline from their cognitive peak in young adulthood. Early cognitive ability also affects physical health and even survival to old age.<sup>2</sup> But surely happiness and satisfaction with life are also key indices of successful ageing. Happiness was described as “the highest good and ultimate motivation for human action”<sup>3</sup>; this does not seem to be related to current cognitive ability.<sup>3</sup> Cognitive level in youth and the amount of cognitive change across the lifespan are important indicators of cognitive vitality in old age. We examined a unique data set to investigate whether these factors are associated with people being happier.

### Participants, methods, and results

The Lothian Birth Cohort 1921 is a relatively healthy group of 550 older people (mean Mini Mental State Examination 28.2 (standard deviation 1.7), range 18-30). They were given the same test of mental ability (a version of the Moray House Test number 12) at mean ages 10.9 (0.3) and 79.1 (0.6) years old,<sup>2</sup> giving three cognitive measures: early life ability, late life ability, and lifetime cognitive change. Moray House Test scores were converted to IQs (standardised to a mean of 100 (15)) and adjusted for age at testing. To compute lifetime cognitive change we used the following process. IQ at age 11 was the independent variable in a linear regression with IQ at age 79 as the dependent variable; the standardised residual produced from this equation was used as the measure of lifetime cognitive change.

Participants were mailed<sup>4</sup> the widely validated Satisfaction With Life Scale.<sup>5</sup> This scale has five statements requiring a response from strongly disagree (score 1) to strongly agree (score 7), which we summed to give a total from 5 to 35 (mean 25.3 (6.1)). Only participants with full cognitive and life satisfaction data were included (n=416; 42.5% men); a further seven people were excluded who had Mini Mental State Examination scores less than 24. Correlations between the Satisfaction With Life Scale and IQ at age 11 (r=0.00) and age 79 (r=0.04) were not statistically significant. The relationship between the Satisfaction With Life Scale and cognitive change between ages 11 and 79 was also small and non-significant (r=0.05, P=0.30). The associations did not differ significantly between men and women.

### Comment

In non-demented people aged about 80, satisfaction with life in late adulthood was unrelated to IQ in either childhood or late

### What is already known on this topic

Cognitive vitality has an impact on many aspects of functioning in old age

Satisfaction with life is not related to current cognitive ability, but changes in a lifetime may be associated with satisfaction with life

### What this study adds

Cognitive ability at age 11, cognitive ability at age 79, and changes in cognition in a lifetime are not associated with satisfaction with life in old age

adulthood and to cognitive change in their lifetime. An association might have been expected as intelligence is a “highly valued resource in this society,”<sup>3</sup> and cognition is viewed as a key outcome in ageing. The lack of a cognition-life satisfaction relationship could be due to the fact that higher ability is equally likely to lead to positive (increasing one’s resources through entry to better employment, for example), as well as negative outcomes (an awareness of alternative lifestyles or a striving for greater achievement), which may be used when judging subjective wellbeing.<sup>3</sup> Shorter term changes in cognitive function may influence ratings of life satisfaction; continued assessment of the cohort will allow an investigation of this possibility. Or it might be that, if people have sufficient cognitive ability for important aspects of their lives, individual differences do not matter much, as suggested by Thomas Hobbes in *Leviathan*: “For such is the nature of men, that howsoever they may acknowledge many others to be more witty, or more eloquent, or more learned; Yet they will hardly believe there be many so wise as themselves: For they see their own wit at hand, and other mens at a distance. But this proveth rather that men are in that point equal, than unequal. For there is not ordinarily a greater sign of the equal distribution of any thing, than that every man is contented with his share.”

The determinants of cognitive function and satisfaction with life are quite different: both are important for overall wellbeing. In promoting successful ageing it is necessary to know not only what protects cognition but also what predicts happiness.

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