

Social support networks, loneliness and cognitive ageing



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Aspects of social networks and support have been shown to predict healthy cognitive ageing. However, many studies are unable to control for prior mental ability, a major predictor of cognitive function in later life. Using data from the longitudinal follow-up of an ageing cohort (the Lothian Birth Cohort 1921), the associations of social support and network characteristics with ability in old age were investigated. Loneliness accounted for 3% of the variance in later cognition (once prior ability and sex were controlled for), such that those experiencing increased levels of loneliness displayed poorer cognitive performance in later life.

Introduction

With an increasingly aged population, it is important to identify the determinants of 'successful' ageing; maintaining cognitive vitality is one aspect of this. Social support and network characteristics may protect against cognitive decline, but most studies are not able to control for a measure of early ability. The current study examines the relationships between social network/support factors and cognition in an elderly cohort. This group are surviving members of the 1932 Scottish Mental Survey in whom both childhood and later-life mental ability have been assessed.

Method

Cohort More than 87,000 Scottish children sat a test of mental ability when aged 11, as part of the 1932 Scottish Mental Survey (SMS1932). In 1999-2001, 550 survivors of the SMS1932 were recruited into the Lothian Birth Cohort 1921 (LBC1921) Study, when aged 77 to 80. The LBC1921 participants took a battery of cognitive tests that included the same test they took when aged 11 (Deary et al., 2004). Their raw test scores were converted to age-11 and age-80 IQ scores.

Social networks and support were assessed by self-report questionnaires. Information was gathered on:

- the availability of, and perceived satisfaction with, the level of support from up to 5 other people (Significant Others Scale: Power, Champion & Aris, 1988);
- the number of other people sharing the participant's house at age 80;
- the number of other people sharing the participant's house when he/she was aged 11;
- perceived loneliness at age 80.

Results

Correlations The associations between the social network/support factors and cognition are shown in the table. Living with fewer people in childhood was associated with better cognitive function at ages 11 and 80. Living with more people in later life and decreased loneliness were associated with higher age-80 IQ. In addition, those with a spouse alive at age 80 had significantly higher ability, 102.5 versus 99.6 ($t(464) = -2.15, p = .032$). Living alone at age 80 was associated with poorer age-80 IQ (99.4 versus 102.4: $t(465) = -2.27, p = .023$).

Regression analysis A linear regression was carried out, with age-80 IQ as the dependent variable. Age-11 IQ and sex were entered as independent variables and accounted for 44% of the variance in age-80 IQ (age-11 IQ $\beta = .66, p = .000$; sex $\beta = -.10, p = .003$).

The standardised residuals from this regression were saved, and entered as the dependent variable in a further regression. Predictor variables were entered in a stepwise fashion: these were spouse (yes/no), number of people sharing the house at ages 11 and 80, being alone at age 80 and feeling lonely. Loneliness was the only significant predictor of age-80 IQ, accounting for 3% of the variance ($\beta = .18, p = .000$).

Table: Associations between cognition and social networks/support

	Age-11 IQ	Age-80 IQ
Number of significant others	-.05	.00
Overall social support	-.04	.03
Overall social support discrepancy	.04	.01
Number sharing house age-11	-.19**	-.17**
Number sharing house age-80	.02	.10*
Loneliness	.00	.18**

* $p < .05$, ** $p < .01$

Discussion

Mental ability After the variance attributable to age-11 IQ and sex is accounted for, an individual's level of loneliness is the only social support or network characteristic contributing incrementally to the variance in age-80 IQ. In later life, individuals reporting increased loneliness had poorer cognitive function. This is possibly the result of:

- decreased social engagement (indexed by higher loneliness) leading to greater cognitive decline;
- a loss of mental acuity leading to social withdrawal or abandonment by relatives/friends (resulting in increased feelings of loneliness).

Extension The LBC1921 are currently undergoing repeat cognitive testing, now aged 83. It will therefore be possible to determine the effect of age-80 social network/support factors on later life cognitive change (age 80-83). In addition, lifetime social support has been retrospectively assessed to investigate whether there exists a cumulative effect of increased social support from across the lifespan on cognitive change in old age.

References

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Find out more about the LBC1921 Study at:
<http://www.psy.ed.ac.uk/research/lbc>

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