



The relationship of current depressive symptoms and past depression with cognitive impairment and instrumental activities of daily living in an elderly population: The Sydney Memory and Ageing Study

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ABSTRACT

Depressive symptoms are common in the elderly and they have been associated with cognitive and functional impairment. However, relatively less is known about the relationship of a lifetime history of depression to cognitive impairment and functional status. The aim of this cross-sectional study was to assess whether current depressive symptoms and past depression are associated with cognitive or functional impairment in a community-based sample representative of east Sydney, Australia. We also examined whether there was an interaction between current and past depression in their effects on cognitive performance. Eight hundred non-demented aged participants received a neuropsychological assessment, a past psychiatric history interview and the 15-item Geriatric Depression Scale. The Bayer-Activities of Daily Living scale was completed by an informant to determine functional ability. Clinically relevant depressive symptoms were present in 6.1% of the sample and 16.6% reported a history of depression. Participants with current depression had significantly higher levels of psychological distress and anxiety, and lower life satisfaction and performed worse on memory and executive function compared to participants without current depression. After controlling for anxiety the effect on executive function was no longer significant while the effect on memory remained significant. A history of depression was associated with worse executive function, higher levels of psychological distress and anxiety, and lower life satisfaction. After controlling for psychological distress the effect of past depression on executive function was no longer significant. There were no significant interactions between current and past depression in their effects on cognitive performance. There were no differences between participants with or without current depression and with or without past depression on functional abilities. These results support the view that current and past depressive episodes are associated with poorer cognitive performance but not with functional abilities.

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1. Introduction

Cognitive function is often impaired during depressive episodes (Austin et al., 2001; Porter et al., 2007) with the most commonly reported deficits in the domain of executive function (Herrmann et al., 2007; Lockwood et al., 2002; Stordal et al., 2004) although memory, attention/processing speed, language and visuo-spatial

abilities may also be affected (Jaeger et al., 2006; Landro et al., 2001; Porter et al., 2003; Ravnkilde et al., 2002). Depressive symptoms that do not fulfil diagnostic criteria for major depression are common in the elderly (Dozeman et al., 2010) and the consequences are similar to those of major depression (Beekman et al., 1997; Millan-Calenti et al., 2010). Three population-based studies with older adults have reported an inverse association between depressed mood and cognitive performance in the domains of attention/processing speed, motor functioning, executive functions, learning and memory (Baune et al., 2006; Biringer et al., 2005; Vinkers et al., 2004).

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In clinical samples with major depression it has been shown that cognitive impairment may persist even after remission of psychopathological symptoms (Neu et al., 2005; Reischies and Neu, 2000; Reppermund et al., 2009). In non-clinical samples results have been controversial whether or not a self-reported history of depression is associated with cognitive impairment. Godin et al. (2007) found that community-dwelling participants with a self-reported history of depression did not have lower cognitive performance compared to participants without a history of depression. On the other hand, Saczynski et al. (2010) reported an association between depressive symptoms and incident dementia over a 17-year follow-up period.

Symptoms of anxiety are often comorbid to depression and it has been shown that clinical presentation and treatment outcome of late-life depression is worse in the presence of comorbid symptoms of anxiety (DeLuca et al., 2005). Major depression decreases quality of life and is associated with dissatisfaction in the elderly (Beekman et al., 1997). Therefore it is important to consider anxiety, psychological distress and satisfaction with life as control variables when analysing the relationship between depression and cognitive performance.

Depressive symptoms have also been associated with functional impairment in the elderly (Scuteri et al., 2011). Difficulties in performing everyday activities are common in late life. A literature review on risk factors for functional decline in the elderly showed that depression was significantly associated with functional status and was a predictor of functional decline (Stuck et al., 1999). However, relatively less is known about the relationship between depressive symptoms, a history of depression and functional status in the elderly population.

The aim of the present study was to assess whether current depressive symptoms and past depression are associated with cognitive impairment in a large sample of older community-dwelling individuals. A further aim was to assess whether current depressive symptoms or past depressive episodes are associated with difficulties in instrumental activities of daily living.

Based on previous research we hypothesised that older individuals with depressive symptoms have cognitive impairments in particular in the domain of executive function and that a history of depression is associated with lower cognitive performance. We further hypothesised that individuals with current depressive symptoms and individuals with a history of depression would have more difficulties in instrumental activities of daily living compared to participants with no current or past depression.

2. Methods

2.1. Participants and procedure

Participants were recruited from the electoral roll of the eastern suburbs of Sydney, Australia between 2005 and 2007 as part of an ongoing longitudinal study of mild cognitive impairment (MCI) in an aged, non-demented community population (Sydney Memory and Ageing Study, MAS). Registration on the electoral roll is compulsory in Australia. Individuals in the age range 70–90 years were sent an invitation letter to participate in the study. Those who responded in the affirmative were contacted by telephone to assess their eligibility. Of 8914 individuals invited to participate, 7142 either did not respond to the letter or declined to participate; the remaining 1772 were contacted by telephone to confirm eligibility. From among these individuals, 735 were either ineligible or declined after further information about the study. The final sample of 1037 individuals was assessed using a detailed neuropsychological and medical assessment as well as a phone interview of an informant.

To examine the representativeness of the sample, we compared those who were invited but did not participate with those who did. The two groups did not differ as regards age and sex. Further, we compared the participants' sociodemographic characteristics with census data for the same geographical area obtained from the Australian Bureau of Statistics (ABS, 2003). There was no difference in the sex ratio, and while the age distributions were comparable, the Sydney MAS sample had a relatively lower proportion of individuals in the 70–74 age group (26.0% v. 32.3%, $p < .05$) and higher proportion in the 75–80 age group (34.8% v. 29.9%, $p < .05$). The differences in proportions in the 80–84 (26.9% v. 24.2%) and 85–89 (12.3% v. 13.6%) age groups were not significant. More Sydney MAS participants lived in private homes (97.5% v. 92.1% in the ABS data, $p < .05$) and were more educated than the comparable group in the census data (30.4% with tertiary and 56.4% with secondary education cf. 10.1% and 42.2% respectively for the ABS data).

Detailed methods and recruitment process are published elsewhere (Sachdev et al., 2010). Exclusion criteria were dementia (according to DSM-IV criteria), developmental disabilities, psychotic symptoms, schizophrenia or bipolar disorder, multiple sclerosis, motor neuron disease, progressive malignancy and English inadequate to complete a psychometric assessment. To ensure the validity of neuropsychological scores, all participants from non-English speaking background (i.e. not able to speak English at a basic conversational level by age of nine, $N = 164$) were additionally excluded from present analysis. Participants were assessed either at a study centre or in their own homes. All assessments were conducted by trained psychology graduates.

Informants were relatives or close friends of the participants, preferably cohabiting, that is, the informant had to know the person well enough to answer questions about his or her memory, thinking and daily functions, and had at least 1 h contact per week with the participant. Of the 762 informants, 505 (66.3%) were female, 368 (48.4%) were the same sex as the participant, 222 (29.1%) were spouses, 266 (34.9%) were children, 30 (3.9%) were siblings, 41 (5.4%) were other relatives and 203 (26.6%) were friends or other persons with a close relationship to the participant.

The study protocol was approved by the ethics committees of the University of New South Wales and the South Eastern Sydney and Illawarra Area Health Service and written informed consent was obtained from each participant and informant.

2.2. Psychiatric measures

Participants were asked for their history and treatment of depressive episodes. A history of depression was defined as one or more depressive episodes that had required attention of a general practitioner, psychologist, or psychiatrist. Current depressive symptoms were assessed with the 15-item short form of the Geriatric Depression Scale (GDS) (Sheik and Yesavage, 1986; Yesavage et al., 1982), a self-rating questionnaire shown to be reliable and valid for the assessment of depressive symptoms in the elderly. A higher score indicates more symptoms of depression and a cut-off of six has been established to measure clinically relevant symptoms of depression (Herrmann et al., 1996). The GDS does not include somatic and sexual items, and has been validated for use in individuals with mild impairments of cognition (Yesavage et al., 1982). Each participant brought a list of all current medications, including antidepressants, to the assessment.

Anxiety symptoms were assessed with the Goldberg Anxiety Scale (GAS) (Goldberg et al., 1988) which consists of nine items with higher scores reflecting more anxiety symptoms. Psychological distress was evaluated with the K-10 questionnaire (Kessler and Mroczek, 1994) and satisfaction with life was assessed with the Satisfaction with Life Scale (SWLS) (Diener et al., 1985).

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