

The Influence of Age on Cognitive Test Performance as Measured by the Original and Extended Version of the Alzheimer's Disease Assessment Scale in the SIU Longitudinal Cognitive Aging Study

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Introduction

- ❖ Since the 1980s, Alzheimer's disease Assessment Scale (ADAS) has been used to evaluate cognitive aging in Alzheimer's disease (AD)¹ and considered the gold standard for assessing the efficacy of medications for treatment of AD.²
- ❖ One criticism of the original ADAS (oADAS) is that this measure is not sensitive to pre-dementia syndromes such as mild cognitive impairment (MCI).¹ Previous studies have found that increasing age is associated with poorer neuropsychological functioning.³
- ❖ In the present study, we examined the influence of age on the oADAS
- ❖ Hypothesis: increasing age would be associated with increased error scores on both the oADAS & extended version of this measure (eADAS) after controlling for gender and education.

Methods

Participants: 938 adults who were enrolled in the SIU Longitudinal Cognitive Aging Study (LCAS) as normal controls. The vast majority of the cohort was White/Not-Hispanic (98.9%) and female (72.4%). Mean age and education were 67.3 years and 14.9 years, respectively.

Exclusionary Criteria: Participants who met the diagnostic criteria for MCI, dementia, and/or other neurological or psychiatric conditions at baseline or developed these conditions within three consecutive study visits were excluded.

Test Measures: The oADAS was administered using standardized methods. The eADAS included short-delay recall and recognition trials for the first word-list, a short-delay true-false word recognition trial for the second word-list, a letter-digit timed psychomotor test, supermarket fluency, spontaneous clock drawing, three additional items to the object naming subtest, three additional figures to copy, and a similarities test. See Table 1 for oADAS task descriptions.

Results

- ❖ The mean oADAS and eADAS scores were 3.9 and 8.7, respectively.
- ❖ Linear regression analysis revealed that both gender and education were associated with higher error scores for both the oADAS and eADAS ($p < 0.001$).
- ❖ After controlling for gender and education, increasing age was also found to be associated with higher error scores for both the oADAS and eADAS ($p < 0.001$).

Task	Description
Word Recall	Read a list of 10 words then verbally recall as many as possible. 3 trials.
Naming Objects & Fingers	Name fingers of dominant hand & 12 objects: flower (plastic), bed (doll house furniture), whistle, pencil, rattle, mask, scissors, comb, wallet, harmonica, stethoscope, and tongs.
Commands	Perform 1 to 5- step commands.
Constructional Praxis	Copy geometric forms (circle, two overlapping rectangles, rhombus, cube) on a piece of paper after being shown them.
Ideational Praxis	Pretend to send a letter to themselves.
Orientation	State the date, month, year, day of week, season, time of day, place, and person.
Word Recognition	Read 12 words aloud then after the 12 original words are randomly shuffled with 12 new words, state which words have been previously seen. 3 trials.
Language	10 min open-ended conversation with test administrator after Word Recall task.
Comprehension of Spoken Language	Administrator assesses how well subject understands speech during Language task.
Word Finding Difficulty	Administrator assesses any difficulty subject has to find desired words during Language task.
Remembering Test Instructions	Administrator assesses number of times subject needed a reminder of Word Recognition instructions

Table 1. Components of oADAS.¹
See Methods section for eADAS additions.

Results cont.

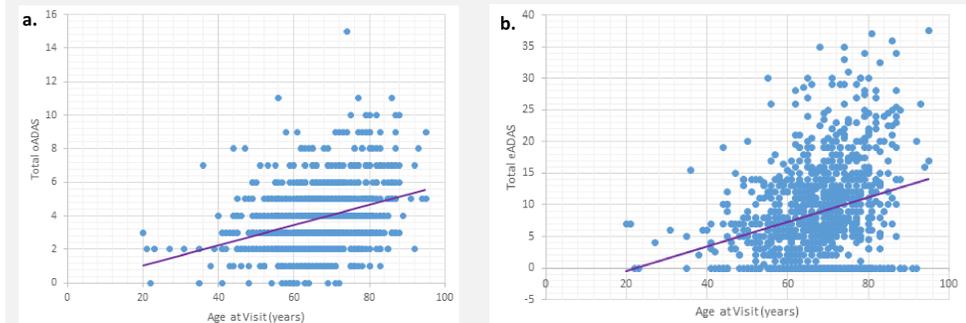


Figure 1. Age effects on a. Total oADAS and b. Total eADAS

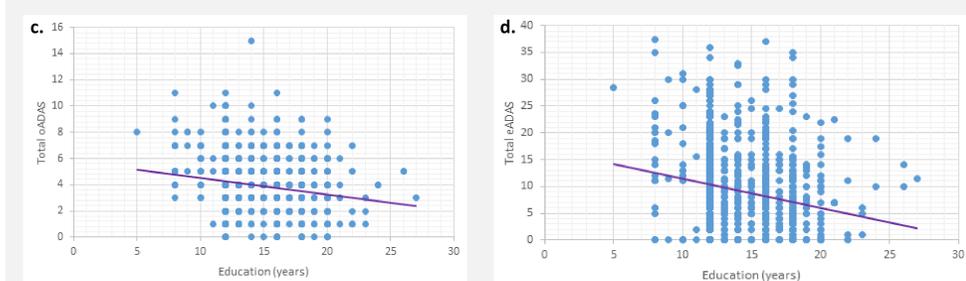


Figure 2. Education effects on c. Total oADAS and d. Total eADAS

Discussion

- ❖ Our results are consistent with previous literature showing age effects on oADAS scores and also extend these findings to the eADAS.
- ❖ Future research determining the sensitivity of the extended ADAS to the transition from normal aging to MCI and dementia are ongoing.

References

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