Language and Cognition in Mild Alzheimer's Disease
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INTRODUCTION

Alzheimer's disease (AD) is one of the most common neurodegenerative diseases resulting in cognitive-communication disorders, a disruption of cognition causing difficulty with any aspect of communication (e.g., listening, speaking) and language (ASHA, 2005). In mild AD, common cognitive deficits include reduced memory and executive functioning while common language deficits include reduced content, syntax, and coherence (Boschi et al., 2017; Mueller et al., 2018). However, there are gaps in the literature concerning cognitive-linguistic impairment for persons with mild AD. For example, most linguistic studies of mild AD do not analyze cognitive function together with language output. A recent systematic review suggests that current screening tests may not be sensitive enough to detect early stages of AD (De Roes et al., 2019). Since early detection of AD is thought to be an effective strategy to improve the quality of life of persons with AD, ultimately assessment materials must be effective and sensitive to mild AD (Alzheimer's Association, 2021; Liang et al., 2015). Thus, this study aims to inform assessment materials through analysis of speech samples and language outcome measures that may be sensitive to mild AD.

RESEARCH QUESTIONS & HYPOTHESES

1. Do microlinguistic measures of syntactic complexity and lexical diversity and macrolinguistic measures differ between a group of participants with mild AD and age-, sex-, and education-matched controls for a picture description task?

**Hypothesis 1:** Participants with mild AD will exhibit less syntactic complexity, lexical diversity, less coherence and more irrelevant comments compared to healthy controls.

**Hypothesis 2a:** Global cognition was moderately correlated with syntactic complexity and lexical diversity and macrolinguistic measures differ within each group for picture description.

**Hypothesis 2b:** Between-group differences in language outcome measures that were not statistically significant included MLU, subordination index, setting, and irrelevant comments.

METHODS: Participants

76 participants were selected for study from the TalkBank DementiaBank Pitt Corpus (Becker et al., 1994).

METHODS: Data Analysis

- **Language Task**
  - **Cookie Theft Picture Description** (Goodglass & Kaplan, 1983): This simple line picture was presented to each participant and the participant was asked to "Tell me everything you seeing going on in this picture."

- **Cognitive Task**
  - **Mini Mental State Examination (MMSE):** This is a 10-minute measure frequently used to screen for cognitive problems. A perfect score is 30 and scores under 21 suggest increased risk of dementia (Cockrell & Folstein, 2002).

METHODS: Measures & Procedures

**Language Measures**
Conventions of the Systematic Analysis of Language Transcripts (SALT; Miller & Iglesias, 2010) were used to code and analyze the data except for macrolinguistic measures. All coding was completed by two coders who were blinded to group assignment.

**RESULTS: Question 1**

Figures A-D report means (standard deviations) for significant between-group findings for microlinguistic (Fig. A, Fig. B) and macrolinguistic (Fig. C, Fig. D) outcome measures obtained from the picture description task.

**RESULTS: Question 2**

Figures E-H report significant correlations between MMSE scores and microlinguistic (Fig. E) and macrolinguistic (Fig. F - H) outcome measures during the picture description task for the mild AD group.

DISCUSSION

- Participants with mild AD had reduced syntactic complexity (noun determiners) but slightly higher lexical diversity (more unique words) compared to controls. Story coherence (4/5 subcategories) also was reduced for participants with mild AD compared to controls.

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This research is dedicated to the late Elinor Cohen.

REFERENCES


