Pattern of Word Generation Differs in Frontotemporal Dementia and Alzheimer’s Disease

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BACKGROUND
- Memory loss is considered to be the cardinal feature of Alzheimer’s disease (AD), whereas prominent executive dysfunction is believed to characterize frontotemporal dementia (FTD). However, considerable overlap in these symptoms between disorders complicates differential diagnosis.
- Research suggests that differences in generative verbal fluency may be a useful tool to help differentiate FTD from AD, with semantic fluency being more depressed in AD and phonemic deficits more prominent in FTD.

OBJECTIVE
- To examine whether AD and FTD patients differ in their performance on age and education corrected measures of phonemic and semantic fluency.

METHODS
- Participants: Subjects consisted of six patients diagnosed with AD and four patients diagnosed with FTD. The diagnosis of FTD was corroborated by evidence of focal frontal hypometabolism on 3-D Stereotactic Surface Projections (SSP) analysis of FDG-PET: bilateral cerebellum was cutoff for one patient, creating a cerebellar artifact on data aggregation. Age (M = 73 ± 3.7 SD, range 66-78), Education (M = 13.3 ± 1.6 SD, range 12-16) and Global Severity (MMSE; M = 20.5 ± 5.1 SD, range 14-29) were not significantly different between groups.
- Measures: Semantic Fluency consisted of the total across three one-minute trials for animals, fruits, and vegetables, whereas Phonemic Fluency consisted of three one-minute trials for the letters C-F-L. Raw scores were converted to age and education-corrected scaled scores using the Mayo Older Adults Normative Data (MOANS).
- Data Analysis: Fluency data were analyzed with a 2x2 Diagnosis (AD vs. FTD) by Fluency (semantic vs. phonemic) repeated measures ANOVA.

RESULTS
- There was a significant main effect for Fluency, F (1,8) = 8.0, p < .05, with patients obtaining higher Phonemic (M = 7.5) versus Semantic scaled scores (M = 3.5). The main effect for Diagnosis was not significant.
- The interaction between Diagnosis and Fluency was significant, F (1,8) = 24.9, p < .01. The means for this interaction are depicted in Figure 1:
  - Between group comparisons demonstrated that FTD produced more semantic word exemplars than AD (p < .05), and AD produced more phonemic words as compared with FTD (p < .05).
  - Within group comparisons revealed that FTD generated more semantic than phonemic words (p < .05) and AD generated more phonemic than semantic words (p < .001).

FIGURE 1: FLUENCY RESULTS

CONCLUSIONS
- Our results suggest that AD and FTD patients differ in their patterns of performance on measures of semantic and phonemic fluency.
- The dissociation between patterns of generative fluency may be helpful in differentiating between AD and FTD patients.
- The corroboration of FTD diagnosis with frontal hypometabolism on FDG-PET suggests that a useful future direction would be the correlation between behavioral differences on generative fluency and differing patterns of glucose metabolism between AD and FTD.

REFERENCES

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