



The Advantage of Familiar Objects in Alzheimer's Dementia

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Abstract

The present research aimed to investigate the putative advantage of personal familiarity for object naming and use in individuals with Alzheimer's Dementia (AD). Eleven (n = 11) patients with probable AD diagnosis participated. Prior to testing, the participant's caregiver was asked to identify and bring to the laboratory 15 portable household objects that the participant had been using regularly. Laboratory analogs for each personal object were created. The experimental tasks were performed with (a) the familiar objects and (b) the laboratory analogs, and included naming, gesture, personal object decision, and semantic script generation tasks. Participants' performance was coded and analyzed for differences between familiar objects and laboratory analogs. Overall, results suggest improved performance for familiar objects relative to laboratory objects. This study is the first to provide evidence for the familiar object advantage in AD patients.

1. Background

- Research on the effects of personal familiarity in object naming and use (Bozeat, Lambon Ralph, Patterson, & Hodges, 2002a, 2002b; Bozeat, Patterson, & Hodges, 2004; Funnell, 1995a, 1995b, 2001; Snowden, Griffiths, & Neary, 1994, 1996) has shown that individuals with semantic dementia are better able to:
 - Name and demonstrate the use of their own objects as opposed to laboratory analogs of those objects.
 - Recognize and use correctly objects in the right context, with their performance deteriorating in novel contexts.
- Snowden et al. (1994, 1996) presented the case of patient KE who was independent in carrying out activities, better identified personal items relative to experimenter items, and exhibited better recognition for objects when they were presented in congruent contexts. The researchers argue that repeated use of the objects improves semantic memory.
- Bozeat et al. (2002a) presented the cases of patients JH and BW who exhibited better recognition for personal objects relative to laboratory objects. In addition, objects similar to the patients' personal items similarly elicited improved performance. Bozeat et al. suggest that repeated use of the familiar objects establishes automated stereotypic responses that account for the personal familiarity effect.
- Funnell (1995a) describes the case of patient EP who was able to use in her everyday activities objects the names of which she had forgotten. In addition, EP was able to relearn the names of common vegetables after repeated exposure. Funnell (2001) proposes that specific objects are embedded within the structure of scripts to accomplish personally-relevant goals.

2. Research Objectives

- Can the personal familiarity effect be observed in other dementia populations?
- Will patients with Alzheimer's Disease (AD) exhibit better performance in naming and using familiar objects relative to laboratory objects?

Method

3. Participants

- Eleven (N = 11) patients (7 females; mean age = 79 years; mean years of education = 11.55) with probable AD diagnosis participated in this study.
- All patients showed either mild or moderate impairment (mean MMSE = 20.91, SD = 4.95, MMSE scores ranging from 11 to 26).

4. Materials

- Prior to testing, the participant's caregiver was asked to identify and bring to the laboratory 12-15 portable household objects that the participant had been using regularly.
- Laboratory analogs for each personal object were created.
- Similarity between each familiar object and its analog was assessed in terms of size, shape, and color.

Figure 1. Examples of Objects and Their Analogs



5. Procedure

- Four experimental tasks were employed. The tasks appear in Table 1.
- The experimental tasks were performed with either (a) the familiar objects, or (b) the laboratory analogs.
- All sessions were videotaped with participants' consent.

Table 1. Experimental Tasks and Their Descriptions

Task	Description of Task
Naming Task	What is this?
Gesture Task	Show me how to use this?
Personal Object Decision Task	Is this yours?
Semantic/Script Generation Task	Where would you use this? What task would you use this for? Describe to me the steps you would take to use this object.

6. Results

Scoring

- Naming Task:** Participants' responses were coded as correct or incorrect from the video recording and a total percent of correct responses was derived for each participant.
- Gesture Task:** Prior to coding, a gesture "dictionary" was developed (see also Bozeat et al., 2002) for all the objects used in the study.
 - Gesture components or features were recorded for each object including (a) the number of hands used to hold the object, (b) the appropriate hand posture (e.g., clench, pinch), and (c) each individual movement.
 - Participants' responses were scored according to the dictionary and one point was assigned for each gesture component that was executed without error. The final scores reflected the percent of components that were performed accurately.
- Personal Object Decision Task:** Participants' responses were coded as correct or incorrect from the video recording and a total percent of correct responses was derived for each participant.
- Semantic/Script Generation Task:** Two coders, blind to the classification of the objects, transcribed participants' responses.
 - A different pair of blind coders counted the total number of words and the total number of content words the patient produced for each object. Content words were defined as all nouns, verbs, adjectives, and adverbs that referred correctly to the target object.
 - For each object the total number of words, the total number of content words, and the percent of content words (content words/total words) were calculated.
- The average inter-rater reliability across tasks was .90, ranging from .81 to 1.00.

Statistical Analyses

- Due to violations of normality of the data for all tasks, the non-parametric Wilcoxon Signed-Rank test was used on the differences of the ranks between participants' scores for the familiar objects versus their scores on the laboratory analogs.
- Overall, the analysis suggests that participants were significantly more likely to produce content words for objects that were familiar to them, relative to laboratory analogs of those objects ($p \leq .05$). The differences in the patients' performance between familiar and laboratory objects for all other tasks did not reach statistical significance (see Figures 2, 3, & 4).

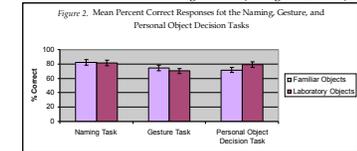


Figure 3. Total Words & Content Words for the Semantic/Script Generation Task

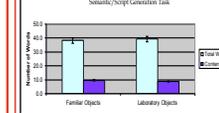
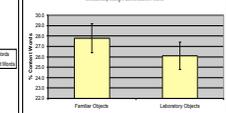


Figure 4. Percent Correct Words for the Semantic/Script Generation Task



7. Discussion - Conclusions

- The present study aimed to examine whether the advantage of familiar objects relative to laboratory objects that has been observed among semantic dementia populations also holds for AD patients.
- The results of the study support the conclusion that AD patients do not exhibit the personal objects advantage to the same extent as semantic dementia patients. Nonetheless, they seem to be able to provide more substantial information regarding use if the objects are familiar to them.

8. References

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Acknowledgments

We wish to thank Kara S. Schmidt, Jennifer L. Gallo, Nicole Sestito, Erica Nicolucci, and Matt Gambino for their invaluable assistance in data collection and analysis. This research was supported by a grant from the University of Medicine and Dentistry in New Jersey Foundation.