Computerized visually presented story recall tasks: Effects on performance in dementia

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Computerized Visually-Presented Story Recall Tasks: Effects on performance in dementia

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This research is part of a larger study, funded by a grant to the first author from the Alzheimer’s Association Aging and Cognition Research Clinic (ACRC)
Prepared at the 2008 ASHA Convention, Chicago

Background
• Episodic memory is affected earliest and most severely in persons with Alzheimer’s disease (AD).
• Story recall tasks are widely used to assess episodic memory and are highly sensitive in distinguishing healthy aging from AD.
• Story recall tasks are usually presented in an auditory-verbal presentation, which is suboptimal for older adults who frequently have hearing loss.
• Little empirical research has been done to examine effects of presentation modality on recall performance.
• Mahendra, Bayles, & Harris (2005): Large-print text presentation improved story recall performance for PWD, compared to verbal-only or combined verbal-visual presentation. The present study builds on this earlier work.

Motivation for this Research
• To investigate immediate and delayed story recall performance of PWD across auditory verbal versus a computerized visual presentation modality.
• To build on an earlier study by Mahendra, Bayles & Harris (2005), results of which revealed that PWD recalled more information from visually presented stories than auditorily presented ones.

Research Questions
Does immediate and delayed story recall performance vary based on the modality in which the story is presented?
Do participants encode information from both text and photos when recalling events of a story?

Study Design
• PWD were told a short story (Story A) and asked to recall it immediately following presentation and fifteen minutes later. The total number of correctly recalled information units were tallied.
• In a separate session, PWD were administered a computerized visual version of a different short story (Story B), matched for length and number of information units. Story B was presented as four color photographs, each accompanied by a single line of text in 24-point bold type.

Stories
• Story A: Presented as part of the Rivermead Behavioral Memory Test (RBMT-2).
• Story B: A computerized, visual adaptation of a short story from the Arizona Battery for Communication Disorders of Dementia (ABCD).

Who Were Our Participants?
• Thirteen individuals (8 female, 5 male) diagnosed with dementia, residing at a continuum-of-care facility in the San Francisco Bay area
• Informed consent obtained from PWD or by proxy
• Nine PWD had mild dementia; 4 had moderate dementia
• PWD were administered the Mini Mental State Exam (MMSE), Mattis Dementia Rating Scales (DRS-2), and the RBMT-2
• All participants:
  • Spoke English fluently (2 bilingual, 1 English/Portuguese, 1 English/Spanish)
  • Could read 24-pt font from a computer screen
  • Passed audiometric hearing screening or wore hearing aids/assistive listening devices
Who Were Our Participants?

- Age range = 81 – 91
- Years of education range = 8 – 19
- Ethnicity: 11 Caucasian, 1 Hispanic, 1 biracial Caucasian/Hispanic

Results

- PWD recalled a mean of 2.7 IUs (range: 0 to 6) immediately after auditory verbal story presentation, compared to a mean of 9.3 IUs (range: 1 to 15) immediately following computerized visual presentation.
- PWD recalled a mean of 1.4 IUs (range: 0 to 6) 15 minutes after an auditory verbal story presentation and a mean of 9 IUs (range: 0 to 15) after a computerized visual story presentation.

<table>
<thead>
<tr>
<th></th>
<th>Immediate (17)</th>
<th>Delayed (17)</th>
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</thead>
<tbody>
<tr>
<td>Auditory</td>
<td>2.7 IUs</td>
<td>1.4 IUs</td>
</tr>
<tr>
<td>Visual</td>
<td>9.3 IUs</td>
<td>9.0 IUs</td>
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</tbody>
</table>

“The Money Statement” (Plante, 2008)

Preliminary evidence suggests that PWD better recalled visually presented stories immediately and after a delay, compared to auditory verbal presented stories.

Food for Thought

- Which visual component led to better recall of the visually presented story – text or photos?
- Were people taking different amounts of time, going through the visual presentation?
- Might our results have been influenced by an order effect?

Directions for Further Research

- Increase sample size by testing additional PWD
- Test healthy older adults matched for age and years of education, to our PWD cohort
- Compare effects of varied visual presentation formats (photos alone versus text alone versus photos plus text) on episodic recall performance

Acknowledgments

- Dr. Kathryn Bayles & Cheryl Tomoeda, authors of the ABCD, for their input
- Staff of the Aging and Cognition Research Clinic at CSUEB
- Laura Favela, Graduate Student at CSUEB
- Staff and study participants from the Masonic Home for Adults in Union City, CA