Fried-Oken, Rowland, Gibbons, Daniels, Mooney & Noethe. *A Comparison of Communication Board Use for Conversations in PPA and AD*

ISAAC 2012
Pittsburgh, PA

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A Comparison of Communication Board Use for Conversations in Primary Progressive Aphasia and Alzheimer's Disease

M. Fried-Oken, C. Rowland, C. Gibbons, D. Daniels, A. Mooney, & G. Noethe
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A series of studies: 2004-2012

Do AAC tools improve the quality of conversation by individuals with degenerative language impairment associated with Alzheimer's disease or Primary Progressive Aphasia?

What is AD?

- AD is clinically diagnosed as impairments in memory, abstract thinking, judgment, or language that affect social and occupational functioning over time.

- The first symptoms typically are word-finding problems, comprehension deficits for abstract and complex conversation, short-term memory problems that often interfere with conversational interactions.

What do we know so far about AAC for adults with moderate AD (Alzheimer's disease)

Premise of pairing AAC and AD

- Pairing an external aid with familiar and spared skills should maximize a person's opportunity for successful communication.
- These skills are based on intact procedural and autobiographical memory.
- The stimuli are relevant to a person's ADLs.

Bourgeois, M., Fried-Oken, M., & Charity Rowland, C. (March 2010). AAC Strategies and tools for persons with dementia. *ASHA Leader.*

Series of AD pilot experiments: Methods

1. Identified participant and randomly assign to conditions for symbol type & voice output;
2. Determined participant's preferred topic and vocabulary;
3. Developed communication board for condition;
4. Conducted videotaped conversations with participant under various conditions in their homes.

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The participants with AD

Gender	31 Females	10 Males
Age	Mean = 74 yr.	Range = 50-94
MMSE (0-30)	Mean = 14	Range = 5-18
CDR (0-2)	Mean = 1.47	Range = 1-2
FLCI (0-88)	Mean = 67	Range = 27-85

Communication board for Francis

A participant with moderate AD in conversations with and without AAC

The symbol type does not make a difference for adults with AD

- When we examined word usage in conversations using personalized 16-symbol AAC boards with:
  - Print alone
  - Print + 2D symbols
  - Print + 3D object symbols

Fried-Oken, M., Rowland, C., Daniels, D., Dixon, M., Fuller, B., Mills, C., Noethe, G., Oken, B., Small, J., & Still, K. (accepted for publication). AAC to support conversation in persons with moderate Alzheimer's disease. *Augmentative and Alternative Communication*.

Voice output is not beneficial for adults with AD

When we examined word use during conversations with personalized 16-symbol AAC boards *and*
  - Digitized speech output
  - No speech output

Fried-Oken, M., Rowland, C., Baker, G., Dixon, M., Mills, C., Schultz, D., & Oken, B. (2009). The effect of voice output on AAC-supported conversations of persons with Alzheimer's disease. ACM Transactions of Accessible Computing (TACCESS). 1(3), Article No. 15. Retrieved Feb. 1, 2009 from the Journal of the ACM at http://www.is.umbc.edu/taccess/index/html.

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Adults with AD do not benefit from personalized communication boards for conversation if they are not provided with board training

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WITH Spaced Retrieval training, AAC boards *do* facilitate conversation for adults with moderate AD

- "SR is a memory intervention that gives individuals practice at successfully recalling information over progressively longer intervals of time." (Jennifer Brush & Cameron Camp, 1998)

- Relies on classical conditioning and repetitive priming.

- Used with elders with dementia to help remember compensatory strategies such as using a schedule, swallowing safely, using a daily calendar, and using adaptive equipment.

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What do we know so far about AAC for adults with Primary Progressive Aphasia (PPA)?

PPA: a Diagnosis Commonly Mistaken for Alzheimer's Disease

- PPA is a relatively new diagnosis for adults who are slowly losing their language skills while other cognitive abilities remain intact;
- Their nonverbal memory is WNL;
- They struggle with conversation participation;
- Age of onset 55-65 years;
- Preponderance of males;
- *Nonfluent progressive aphasia* is most prevalent type to appear in AAC clinics.

Fried-Oken, M. (2011). From research to practice: AAC for persons with primary progressive aphasia. www.aac-rerc.com webcast.

Nonfluent Progressive Aphasia symptoms

- *Anomia* or "trouble thinking of or remembering specific words when talking or writing";
- Slow, hesitant speech frequently punctuated by long pauses and filler words.
- Marked increase in speech errors (substitutions or distortions;
- Struggle for speech sounds, initial apraxia;
- Difficulties understanding spoken words;
- Yes/No confusion for responses;
- Can lead to mutism

Our latest research addresses these questions:

1. When we provide AAC boards to adults with PPA, is word retrieval during conversation enhanced?

2. How does this group compare with individuals with AD?

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Participant demographics

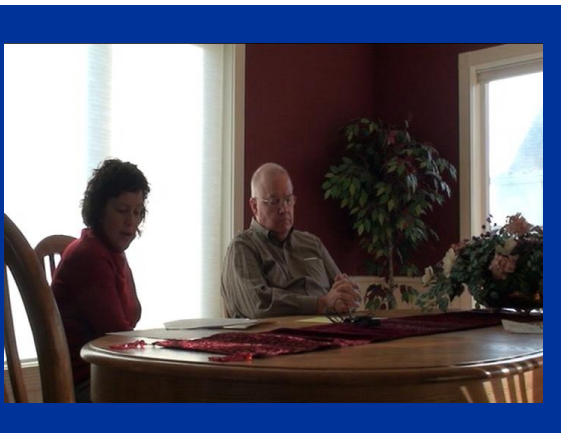|	AD (n = 20)	PPA (n = 23)
Gender	F = 12 M = 8	F = 10 M = 13
Mean Age	77 years	69 years
Mean years of education	15 years	15 years

Study 1: Highly controlled conversations with RAs

1. Determine topic of conversation with participant and partners based on autobiographical memory.
2. Make 16-item personalized boards with photo + label in open file folder.
3. Train individuals how to use boards during conversation in their residences.
4. Conduct 6 VERY controlled conversations with 10 scripted questions, with and without boards.

A conversation board for one man with NFPA

Control and experimental conditions for an adult with PPA

Study 1 Results

- Number of *correct verbal responses to questions* is higher in the experimental condition (with AAC) than in the control condition (without AAC) for both AD and PPA participants.
  - Mean Control: 6.16
  - Mean Experimental: 7.78
  - Difference is significant at p = 0.000 level

- There is no effect of group: the two groups performed similarly.

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Study 2: Unscripted Conversations with Natural Partners

– Choose 4 functional daily activities with participant and partners.
– Make new communication boards with 4 pictures for each daily activity.
– Train partners how to converse using communication boards.
– Videotaped and transcribed 3 conversations with the board (AAC-supported) and 3 conversations without the boards.
– Randomly choose 8 words (2 per activity) to target during each conversation.

AAC-supported conversation between participant and his daughter

Study 2 Results

• Number of *correct verbal responses by participants* is higher in the experimental condition (with AAC) than in the control condition (without AAC) for target words.
  – Mean Control: 5.2
  – Mean Experimental: 6.5
  – Difference is significant at p = .012 level

• There is no effect of group: the two groups performed similarly.

• Number of *partner prompts for target words* is higher in the control condition (without AAC) than in the experimental condition (with AAC).
  – Mean Control: 16
  – Mean Experimental: 12
  – Difference is significant at p = 0.013 level

• There is no effect of group: the two groups performed similarly.

Interpretation of results

• Low tech AAC provides meaningful lexical support during structured conversations for people with AD and PPA.
• Low tech AAC significantly reduces lexical scaffolding provided by the conversation partner.
• This approach should be part of a treatment protocol for AD and PPA

Next Steps

• Using mobile technology
• Compare 3 vocabulary layouts during conversation (3 popular apps)
• Sharing new information with spouse
• Using personally relevant, contextualized photos
• With both PPA and AD participants

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Webcast references

AAC-RERC
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www.aac-rerc.com

Rehabilitation Engineering Research Center in Communication Enhancement

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http://www.reknewprojects.org