



# 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.

# 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

Oil Painting



Tomio



Watercolor



Pottery



Hand Painted Pottery



Wedding Cranes



Origami



Kuni



Rock Painting



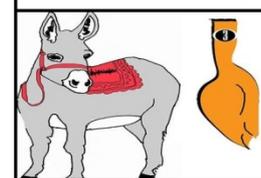
Arts & Crafts



Hand Pottery



Pin the Tail on the Donkey



Birthday Cake



Shell Art



Malheur County Fair



Ceramics





# 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>.

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



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*.

# 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.

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*.

# 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.



# 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?**

# Participant demographics



	<b>AD (n = 20)</b>	<b>PPA (n = 23)</b>
<b>Gender</b>	F = 12 M = 8	F = 10 M = 13
<b>Mean Age</b>	77 years	69 years
<b>Mean years of education</b>	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

Foursome



TaylorMade



Salem Golf Course



Golf bag



Putter



Grips



Golf Cap



Eagle Crest



Dave



Driver



Knee Replacement



Golf



Creekside Golf Course



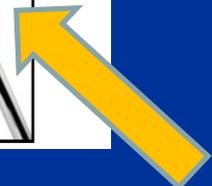
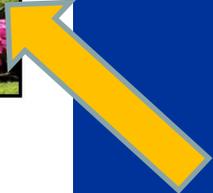
Rob



Sandy



Wedges



# 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.

# 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.

# 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

# Webcast references



[www.aac-rerc.com](http://www.aac-rerc.com)

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