Communication Supports for Persons with Dementia

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REKNEW-AD team:
(Reclaiming Expressive Knowledge in Elders with Alzheimer's Disease)

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Goals for today's presentation

- Gain familiarity with AAC (augmentative and alternative communication);
- Understand the issues around AAC and dementia;
- Learn about current research being conducted on AAC and adults with moderate Alzheimer's disease.

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What is AAC?

Augmentative and Alternative Communication refers to any strategy, technique or tool that enhances, replaces, augments or supplements an individual's communication capabilities.

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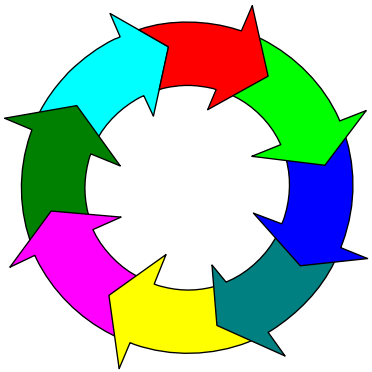
Augmentative Communication Approaches

- Speech
- Vocalization
- Gestures
- Eye gaze
- Body language
- Sign language



- Paper and pencil
- Communication books
- Communication boards and cards
- Talking toys
- Speaking computers
- Talking typewriters
- Voice output communication aids

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Who is an AAC User?

Anyone whose communication is adversely affected by an impairment in speech, language, cognition, and/or physical abilities.

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Communication impairments leading to AAC use

- Physical impairments
  - ALS (Lou Gehrig's Disease)
  - Cerebral Palsy
  - Spinal Cord Injury
  - Parkinson's Disease
  - Multiple Sclerosis
- Cognitive impairments
  - Traumatic brain injury
  - Mental retardation

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- Language Impairment
  - Aphasia from a stroke
  - Autism
- Sensory Impairment
  - Blindness
  - Deafness

AAC User Profiles

- The father with ALS who chooses to use a ventilator and be part of his family as his girls grow up.
- The person with ALS who chooses to work from home.
- The woman with Parkinson's Disease in a nursing home near her grandkids.

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- The man with aphasia at home with his elderly wife.
- The young man with a closed head injury at a SNF.
- The daughter with a fast growing glioblastoma.
- The preacher with olivo-ponto-cerebellar degeneration (OPCD).

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Individuals with dementia, traditionally, have not been listed as a clinical group that has benefited from AAC.

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Premise of pairing AAC and dementia

- Pairing the external aid with familiar and spared skills (such as page turning, reading aloud) should maximize a person's opportunity for success.
- These skills are based on intact procedural memory.
- The stimuli are relevant to a person's ADLs.

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So, what AAC strategies and aids should we consider for adults with dementia?

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Electronic Devices

- Speech generating devices
  - Synthesized speech output
  - Digitized speech output
- Computers (Handheld, wearable, or desktop)
  - Dedicated versus integrated devices
  - Software purposes:
    - Schedules
    - Reminders
    - Augmented input or output

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AbleLink WebTrak

AbleLink Handheld Visual Compass

ERI Picture Planner

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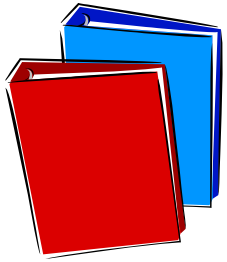
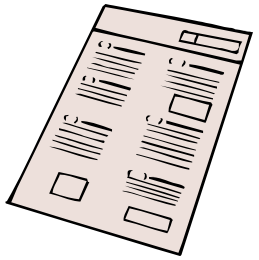
External memory aids:

- Notebooks,
- cards,
- communication boards,
- calendars,
- signs,
- timers,
- labels,
- color codes,
- tangible visual symbols)





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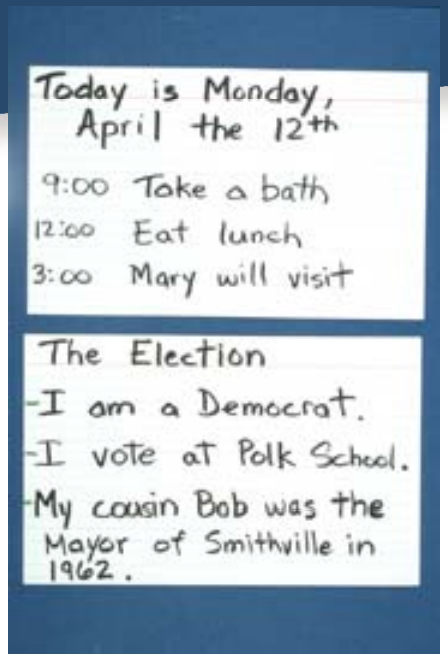

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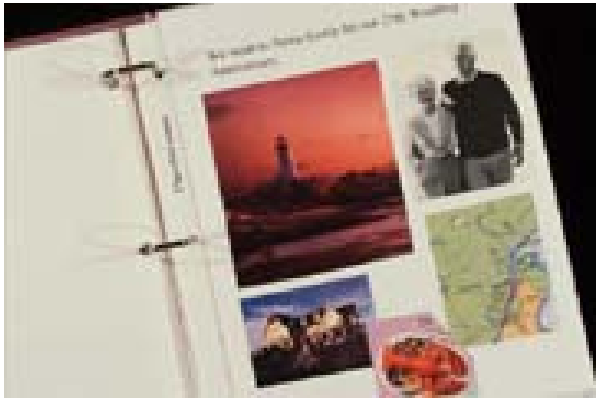

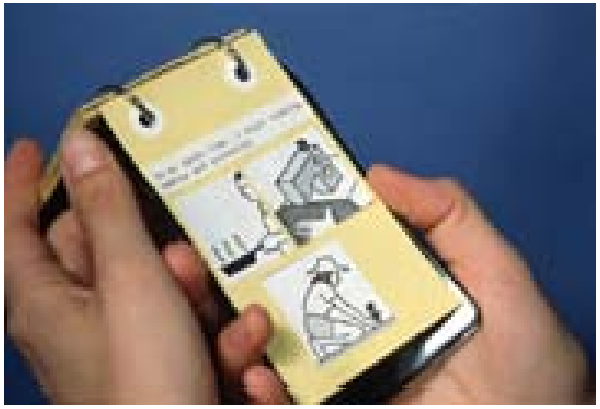

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Bourgeois research (1991-1994)

- Made individualized memory wallets or cards
- Persons with mild AD
- Measured outcomes of conversations between trained caregivers (spouse, adult child, day staff)
- Wallets: Pictures and words for 3 topics:
  - Family names
  - Biographical information
  - Daily schedules.

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Results

- Increased the frequency of factual information;
- Decreased the rate of ambiguous, perseverative, erroneous, or unintelligible utterances;
- Increased the conversational responsibility (turn taking) of person with dementia;
- Increased the number of on-topic statements during a conversation.

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Now we know that non-electronic AAC options work. How can we examine these approaches further?

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3 things to consider for each aid:

1. The messages or language in the aid;
2. How those messages are presented;
3. The output, or result, of selecting a message from the aid.

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What messages should be chosen?

- Autobiographical memories might be accessible.
- Messages that affect the environment might be more meaningful.
- Message topics have been documented within the language of elders.

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Some elder speak topics

Svoboda, E. (2001). Autobiographical interview: Age-related differences in episodic retrieval. Department of Psychology. Toronto, University of Toronto: 107.

Emotional

- Losing something important
- Being embarrassed
- An argument
- Pet dying
- Being discipline at school
- Being lost
- Meeting a special friend
- Being chosen
- Wearing a special piece of clothing
- Holiday

Family Events

- Birth of sibling
- Someone's death
- Child's first day of school
- First house
- Moving to new home
- Moving to new school
- First love
- Wedding
- Engage
- First dance
- First child

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Levels of representation

Concept of "apple"

Auditory-verbal WORD: say "APPLE"

The tatile symbol (The tactile Object of APPLE) APPLE

Visual-verbal Symbol: write APPLE

The visual symbol: Black & white picture Colored drawing photograph photo

Symbol:
visual or auditory representation for a referent

- Color 
- Size
- Level of representation
  - Iconicity: Ease of symbol recognition
    - Transparent symbols- visually resemble their referents.
    - Opaque symbols- visual relationship to referent is not obvious. ***DUCK*** 

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What will be the result of symbol selection?

- Communication partner validates message.
- Electronic voice output that labels the symbol.

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Neither input mode (symbols) nor output mode (+/- presence of voice output) has been experimentally controlled in research on AAC devices to enhance communication for adults with AD.

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Current funded research question:

- Do AAC tools improve the quantity or quality of conversation by individuals with moderate Alzheimer's disease?

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Specific Aims

- 1. To compare the effects of different input modes in an AAC device on conversational skills of persons with moderate AD.
  - Print alone
  - Print + photographs
  - Print + 3-dimensional miniature objects
  - Photographs alone
  - 3-dimensional miniature objects alone
  - Control condition (no board).

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- 2. To compare the effects of output mode in an AAC device on the conversational skills of persons with moderate AD.
  - Digitized speech output
  - No speech output

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3. To determine whether the effectiveness of input modes on the AAC device varies with severity of language impairment of persons with moderate AD.

- Top half scorers on the Functional Linguistic Communication Inventory (FLCI)
- Bottom-half scorers on the Functional Linguistic Communication Inventory (FLCI)

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4. To determine whether the effectiveness of output modes on the AAC device varies with severity of language impairment of persons with moderate AD.
   - Top half scorers on the Functional Communication Inventory (FLCI)
   - Bottom-half scorers on the Functional Linguistic Communication Inventory (FLCI)

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Social Validation Aim:

5. To determine whether the effects of using an AAC device is viewed as successful by conversational partners.

6. To determine if the language symbols for each aid is translucent and represents the user's concepts.

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Design for participants/board conditions

Input/ Output	No Board	Print only	Print + 2-D symbols	Print + 3-D symbols	2-D symbols only	3-D symbols only
Voice output		6	6	6	6	6
No Voice Output		6	6	6	6	6
Totals	60	12	12	12	12	12

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Questions you should be asking by now:

- What do these AAC devices look like?
- What do they sound like?
- What are the different input modes (symbols?)
- How does a participant use the device?

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Flexiboard with 2-D symbols

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Flexiboard with 3-D symbols

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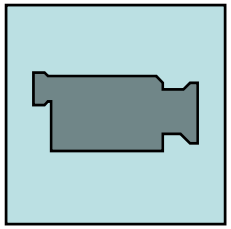
Subject’s conversation



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Subject Criteria

- Diagnosis of probable or possible AD by a board certified neurologist;
- Clinical Dementia Rating (CDR) = 1 or 2;
- Mini Mental Status Examination (MMSE) = 5-18 within 6 months of enrollment in study (or we administer);
- Vision and hearing within functional limits;
- English as primary language.

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Exclusion criteria

History of other neurologic or psychiatric illness (no CVA, reported alcohol abuse, traumatic brain damage, reported recent significant psychological or speech/language disorder).

Subjects to date (4/2006)

Subject	N=20	(4 withdrew)			
Gender	6 Males	14 Females			
Age	Mean – 75.7 yrs	Range – 50 – 91 yrs.			
MMSE	Mean- 10.65	Range- 5 – 17			
CDR	Mean- 1.7	Range- 1 - 2			
FLCI	Mean- 50.35	Range- 27 –80	11- Hi L function	9- Lo L function	

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Method

1. Identify participant and randomly assign to condition;
2. Determine participant's preferred topic and vocabulary;
3. Develop communication device with randomly assigned symbols (+/-voice output);
4. Conduct 10 videotaped conversations:
   a) 5 conversations with assigned board;
   b) 5 conversations with no board (control);
5. Collect caregiver surveys on translucency of symbols.
6. Collect caregiver surveys on success of each conversation.

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11 Conversation Conditions
(5 conversations each for an experimental & control conditions)

Control (No board)

2-D symbol

+ digitized speech output

- voice output

2-D symbol + print

+ digitized voice output

- voice output

3-D symbol

+ digitized voice output

– voice output

3-D + print

+ digitized voice output

– digitized voice output

Print

+ digitized voice output

– voice output

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Outcome Measures

- The utterance is the unit of measurement

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Outcome Measures

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Outcome Measures

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Results from first subject

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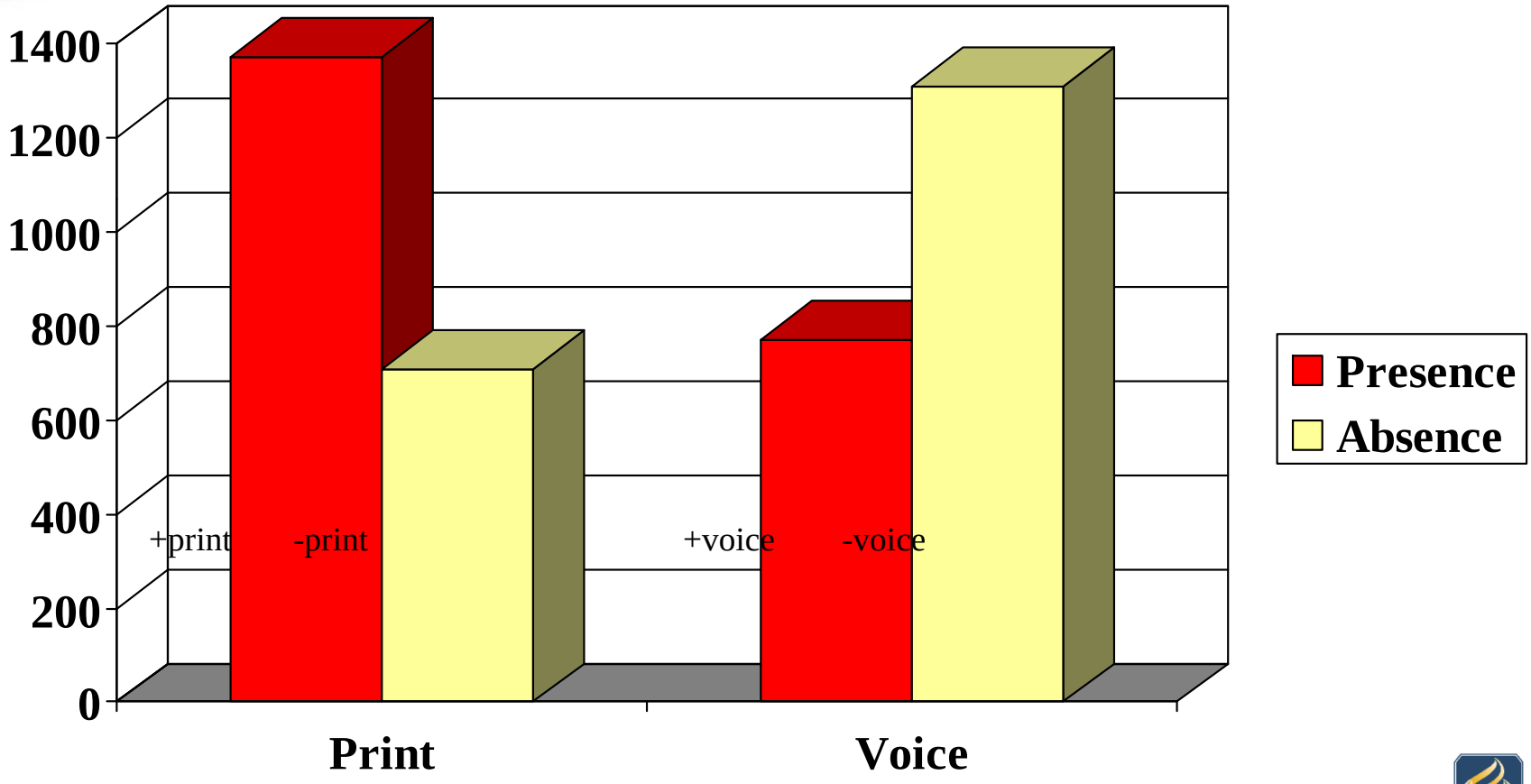
Number of utterances/condition



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Number of utterances/condition

		Percent nonproductive utterances	Percent productive utterances
Print conditions		26%	74%
No print conditions		22%	78%
Voice output conditions		6%	94%
No voice output conditions		26%	74%

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Acknowledgements

- Layton Center for Aging and Alzheimer's Disease Research, Portland, Oregon, USA

- NIH/NICHD/NCMRR award #1 R21 HD47754-01A1

- DOE/NIDRR award #H133G040176

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