

The Communication Impairment in Alzheimer Disease

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www.clas.ufl.edu/users/laltmann/Events.html



Today's Talk

- Overview of Alzheimer Disease (AD)
- Language impairment in AD
- Interventions for AD

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Part 1. Overview of Alzheimer Disease

- About 4.5 million Americans have AD today, by 2050, 14 million will.
- Some perspective: Today 10% of people over 65 and 50% of those over 85 have AD.
- AD is a progressive neurodegenerative disease.
- There is no cure. Current treatments only slow disease progression.

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Medical Treatment

- Anti-cholinesterase drugs
 - Tacrin/Cognex, Donepezil/Aricept, Rivastigmine/Exelon, Galantamine/Reminyl
 - Effective at slowing or partially reducing cognitive & behavior problems in about 50% of cases
- Vitamin E (400-600 IU twice daily)
 - Anti-oxidant
 - Seems to slow deterioration from the moderate to severe stage

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Warning Signs

- Memory loss
- Difficulty performing familiar tasks
- Language problems
- Disorientation to time and place
- Problems with abstract thought (money)
- Misplacing things in unusual places
- Personality changes
- Loss of initiative

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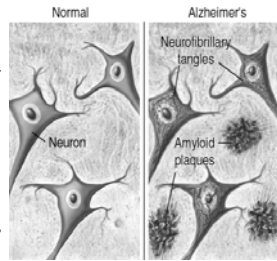
Risk Factors

- Increasing age
- Family history
- ApoE4 gene
- Cardiovascular disease
- Being female
- Vitamin deficiencies (vitamins A, C & E)
- Previous head injuries
- Lower education, lower verbal ability

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Biology

- Disease attacks at the neural level
- Neurofibrillary tangles--cellular support fibers gone wild.
- Amyloid plaques--beta-amyloid protein core plus cell debris including cell processes, cell bodies. Insoluble!



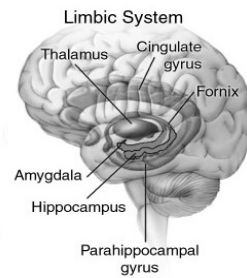
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Biology

Hippocampus--in medial temporal lobe

- Encodes and indexes new memories
- Episodic memories often disrupted early in the disease
- "Random patchy" damage elsewhere



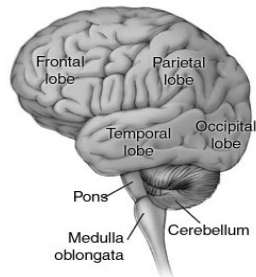
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Biology

Order of impairment

- Temporal lobe
 - Language functions, word meanings
- Then parietal lobe
 - Spatial cognition
- Then frontal lobe (later)
 - Memory, social behavior
- Connections between!



<http://www.ahaf.org/>

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Differences between Alzheimer Disease and Stroke

Alzheimer Disease

- Diffuse damage
 - Loss of neurons
- Decreased brain volume
- Enlarged ventricles

Stroke

- Focal lesion
- Vascular origin
- Impaired cerebral blood flow

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Diagnosis

- **Physician provides diagnosis, not the SLP**
- Decline in memory ability & at least one other cognitive domain
 - Language
 - Orientation in time and space
 - Executive functions
- Affecting daily occupational & social activities
- Gradual onset of decline
- Continue over time

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Diagnostic Criteria

Rule Out:

- Depression
- Drug interactions
- Endocrine disorders
- Nutritional deficiencies
- Head trauma
- Brain tumor
- Stroke

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Assessment of AD: Mini-Mental State Exam (MMSE)¹

- Quick & easy screen for cognitive impairments in adults
- **Orientation** (10 points)
 - Year, season, date, day, month (5 points)
 - State, county, town or city, hospital, floor (5 points)
- **Registration** (3 points)
- **Attention and calculation** (5 points)
 - Serial 7's; or spell "world" backwards
- **Recall** (3 points)
- **Language** (9 points)
 - Name pencil & watch (2), repeat sentence (1), follow 3-stage command (3), read and follow command (1), write a sentence (1), copy a design (1)

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Progression of the Disease

Normal range of MMSE is 26 - 30

Mild stage of the disease (MMSE of 20-24)

- Behavioral
 - Irritability, anxiety, depression
- Memory & attention problems
- Language
 - Repeats stories and questions that have just been answered
 - Word finding difficulties
 - Problems using specific words in sentences, overuse of general words with little meaning
 - Problems understanding complex grammar

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Progression of the Disease

Moderate stage (MMSE of 10-19)

- Behavioral
 - Restlessness, pacing, constant movement
 - Sleep disturbances
 - Personality changes; delusions and hallucinations
- Language
 - Understanding of single words becomes impaired
 - Few nouns, little information, in conversation
 - General emotional distress & agitation

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Progression of the Disease

Severe (MMSE <10)

- **Incontinence**
- **Communication ability declines:**
 - May not initiate conversation
 - Eventually, no longer interacts with people
- **Item recognition is severely impaired**
 - May not recognize food or grooming items
 - Might result in malnutrition
- **Agitated response to change or disruption of routine**
- **Eventual loss of:**
 - Ability to speak
 - Ability to feed & groom self
 - Personality
 - Movement

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Part 2. Language Impairments

- Affects all language modalities
- Affects all levels of language use
 - Single word to discourse processing
- Due to progressive degradation of the semantic system in association cortex

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Word finding difficulties

Picture naming-Very difficult even early in the disease.

Error types

- Within-category error
- Category + definition
- Category name
- Definition only
- Evaluative comments



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Word finding difficulties

• Naming to definition

- “It’s an animal with claws and sharp teeth that has orange and black stripes. It is very dangerous and lives in the jungle. What is it?”

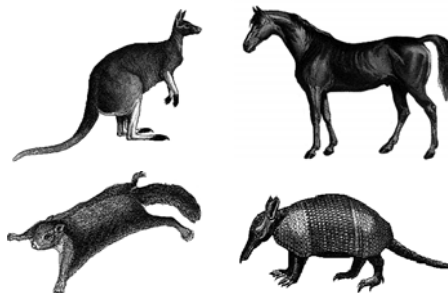
• Feature verification

- (yes/no) Does a tiger have a mane? Do automobiles run on tracks? [easier]
- (choice) Which has stripes, a lion or a tiger? Which has rubber tires, a car or a train? [hard]

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Word finding difficulties

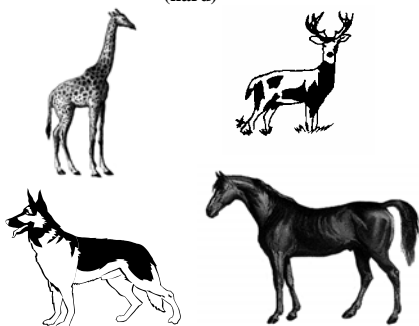
(easy)



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Word finding difficulties

(hard)



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Word finding difficulties

- Both nouns and verbs are impaired
 - Can affect sentence production
- Constrained sentence production is more difficult than spontaneous speech
 - E.g., explored Sam cave, bored Sarah movie
 - Sentences include: many dysfluencies, grammatical errors, omitted words
 - Sam cave, explored Sam, umm, umm, I don't know, cave explored by Sam. Sam explored the cave!

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Summary-word finding

More impaired at:

- Recall (naming) than recognition tasks.
- Distinguishing between highly-related items than distantly-related ones.
- Identifying less familiar, less frequent items than more familiar ones.
- Sentence production when forced to include specific words than in spontaneous speech.

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Conversational difficulties

- Word substitutions in spontaneous speech.
- Severe “Tip-of-the-Tongue” (TOT) word finding problems.
 - TOT’s on everyday, common words.
 - Example: “Didn’t you used to work for NASA?”
“Yeah, at that time there was a lot of work being done in uh in uhhh transmission of the uh visual uh...the transmit, transmitting the UH...” “The visual signals?” “Yeah.”

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Conversational difficulties

- Use of overly general words-- Leads to low information content in conversation
 - Many high-frequency, low-content nouns & verbs: (thing, stuff; make, do, get, take) & pronouns
 - E.g., "Do you have any grandchildren?" "Yeah, grandchildren. Uh...yeah, uh. Now these are the things that I just take for granted, you know, I see them, I know them and they're here. But then when someone asks me if I have them, you'd think I didn't have any. I just, I just can't seem to come up with those answers for some reason. I don't know."

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Conversational difficulties

- Pronoun problems: add to the difficulty of understanding their speech
 - Use too many
 - Use the wrong pronoun
 - Begin paragraphs with pronouns
- They also have trouble understanding & tracking pronoun meaning in others' speech

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Conversational difficulties

- Have problems understanding complex sentences
 - Example: "The boy that carried the girl had red hair." "Who had red hair?" "The girl."
 - Example: "The boy was carried by the girl." "Who carried someone?" "The boy."
- Seem to just attend to content words
 - Boy carried girl red hair
 - Boy carried girl

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Summary-Conversational difficulties

As a speaker, AD speech contains

- Word substitutions and TOT's
- Low information content
 - overuse of generic words and pronouns
- Pronoun substitutions & lack of referents

As a listener, people with AD may not

- Understand pronouns
- Understand complex sentences

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Part 3. Interventions

- Historical perspective and rationale
- 2 types of interventions
- Strategies for maximizing communication

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Intervention: Historical Perspective

- Learning is a key to rehabilitation²
- Learning requires relating new knowledge to old
- AD results in difficulty with new learning
 - Semantic deficits from AD impede efficient encoding
- Popular view: Not much can be done to improve functioning in people with AD³
- Several investigators avoided memory rehabilitation in non-drug treatment programs⁴

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Paradigm Shift & Rationale for AD Intervention

- Drugs slow disease progression.
- Processes of learning and memory are now better understood.³
- Very recently, increases in exploring ways to improve functioning of patients with AD.³
- Although semantic memory gradually deteriorates, given strong support, recall can show gains.⁵

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Behavioral Strategies for Facilitation of Functioning in AD³

- Cues at retrieval should overlap with information used during learning
 - Involve individual actively in learning process
- Elaborate the information to be remembered
 - Present material in a way that requires thinking about the meaning of the word
 - Link to-be-remembered information to larger category
- Use material that is logically related
- Use concrete, real-life stimuli
- Use printed material to present information

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Direct vs. Indirect Interventions

Direct interventions focus on:

- Activities (social, sensory, basic cognition)⁶
- Goals:
 - Maintenance of residual cognitive and communicative function⁶
 - Prevention of learned helplessness and excessive responses to disability⁶
 - Participation in the activities, responding to cues or using external aids⁷

Indirect interventions focus on:

- Improving communication
- Training the caregivers
- Thus, reducing frustration for everyone⁷

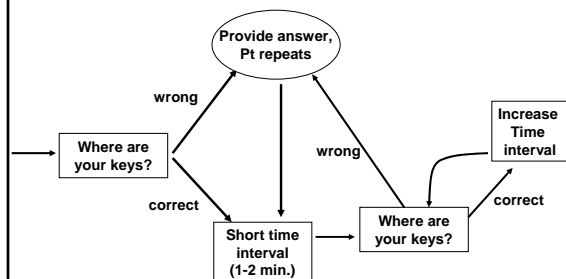
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Spaced Retrieval Training

- Used to improve performance, remember information or actions over time (effects ranging from immediate effects to months)³
- Examples of SRT
 - Object-naming⁹
 - Relearning of biographical information¹⁰
 - Face-name associations¹¹
 - Object-location associations¹¹

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Spaced Retrieval Training^{3,8}



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Example of Direct Intervention: Errorless Learning

- Memories are strengthened through
 - activation of correct responses during learning¹²
 - repetition³
- Method:
 - Prior to each trial, therapist provides correct response and then patient produces it^{3, 8, 12, 13}
- Goal: patient produces only correct responses
- Prevents guessing and trial-and-error/incorrect responses^{3, 8, 12}
 - Avoid building incorrect connections

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Examples of Errorless Learning

- Picture naming task using immediate & delayed repetition
 - Results: Significant improvement, although no generalization.¹³
- Face-name associations
 - Results: Patient learned 11 names of his social club members¹⁴

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Indirect Intervention: FOCUSED Program^{7,15}

- **Goal:** Maximize communication through training caregivers in specific communicative strategies
- **Procedures:**
 - 6 two-hour modules
 - Guidebooks; videotapes vignettes
 - Pre-Post assessments of the communicative effectiveness of the caregivers
- **Positive effects** → greater in African American caregivers compared to Caucasian caregivers
- **Positive effects** → maintained at least 12 months following treatment⁷

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Indirect Intervention: The FOCUSED Program^{7,15}

- F** = Face to face (get attention, maintain eye contact)
- O** = Orientation (paraphrase or repeat sentences; allow processing time)
- C** = Continuity (continue topic, minimize asides, warn if switching topics)
- U** = Unsticking (TOTs- give them the word)
- S** = Structure (structure questions-only 2 options)
- E** = Exchange (take turns, keep patient involved)
- D** = Direct (use short, simple sentences)

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Communication Goals of the FOCUSED Program¹⁵

- **Mild stage:**
 - Maintain communication in as nearly normal ways as possible
- **Moderate stage:**
 - Maintain turn-taking exchanges and the form of conversations, even if communication content is confused
- **Severe stage:**
 - Maintain communication through residual channels (e.g., nonverbal gestures, key written words, pictures).

Ripich, 1994, pp. 99 & 105

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Caregiver's Perspective¹⁶

- The most frequently used and effective communication strategies reported by caregivers were
 1. Elimination of distractions
 2. Use of simple sentences
 3. Use of yes/no questions

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The Role of the SLP¹⁷

- Act as ambassador between patient and caregivers to enhance the communicative environment.
 - Determine the most effective approach for communicating during ADLs.
 - Example of a goal for a resident in a long-term care facility: Mr. Y will answer simple yes/no questions to indicate meal preferences 90% of the time given written menu list and verbal prompting from caregivers.

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The Role of the SLP¹⁷

- Provide ongoing staff training to improve communication with residents.
 - Help staff to understand the benefit of social interactions between resident and staff.
- Increase awareness of resident's preserved abilities.¹⁷
- Train staff to limit elderspeak to those aspects that influence understanding without harming self-esteem.
 - **Don't** use "We" when you mean "You"
 - **Don't** use exaggerated intonation patterns
 - **Don't** use inappropriate endearments or diminutives.

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Strategies to Maximize Communication

- Keep the environment informal & comfortable
- Approach them from the front and slowly¹⁶
- Establish & maintain attention and eye contact
- Avoid power struggles
- Be aware of how they are reacting and reduce frustration
- Stop a task/end an interaction on a positive note

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Strategies to Maximize Communication

- **Don't** put the person with AD on the spot to try to remember some specific event or person.
 - **Don't** "test" their memories, share your memories!
 - **Don't** say, "Remember when we went to Miami last year?"
 - **DO** say, "I was thinking about when we were in Miami last year..."

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More Strategies to Maximize Communication

- **Be patient**; don't hurry the conversation, avoid interrupting
- Use your normal speech rate
 - slowing down may actually increase demands on short-term memory-making it more difficult to understand
- Avoid pronouns
- Comprehension is preserved well beyond production
 - you never know how much of what you say might be comprehended on a given day

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Summary

- AD is a progressive neurodegenerative disease, resulting cognitive-linguistic decline, communication deficits & personality changes.
- Language impairments are pervasive and impair both comprehension and production.
- Some direct and indirect interventions are beneficial.
- Understanding AD and using strategies to maximize communication can improve quality of life, not just for people with AD, but also for their caregivers.

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Alzheimer's Resources

- www.clas.ufl.edu/users/laltnann/Events.html
 - pdf of this presentation
- www.alz.org
 - Alzheimer's Association. Great site! Information on a range of topics from current research and clinical trials to caregiver tips
- www.aoa.gov/alzheimers/
 - Administration on Aging. Includes information for families, caregivers & professionals
 - Information on National Caregiver Support Program
- <http://www.alzonline.net/>
 - Alzheimer Caregiver Support on-line at University of Florida. Caregivers' information, on-line support group.
- www.ahaf.org
 - American Health Assistance Foundation. Graphics!
- <http://www.alzheimers.org/>
 - Alzheimer's Disease Education Referral Center: A service of the National Institute on Aging

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