Oregon Health & Science University

OHSU

Oregon Speech and Hearing Association
Annual Convention
2016

COMMUNICATION SUPPORTS FOR INDIVIDUALS WITH LANGUAGE IMPAIRMENTS

Melanie Fried-Oken, Ph.D
Aimee R. Mooney, M.A. CCC-SLP
Betts Peters, M.S. CCC-SLP

ASHA: Roles of Speech and Language Pathologists Working with Individuals with Dementia- based Communication Disorders

- **Identification**: Screen (i.d. sensory impairment, hearing, vision); consider mood, medications
- **Assessment**: select and administer clinically, culturally and linguistically appropriate protocols to diagnosis and assessment of cognitive-communication disorders *across the course of the underlying disease complex*
- **Intervention:** identify appropriate evidence-based practice techniques for **direct intervention** with persons with dementia and **indirect intervention** through their caregivers and environmental modifications.
- **Counseling**: to individuals and their significant others about nature of their dementia and its course

- **Collaboration**:develop intervention plans for maintaining cognitive-communication abilities at highest level throughout the disease course
- **Case Management:** serve as coordinator or team leader to ensure appropriate and timely delivery of comprehensive management plan

- **Education**

- **Advocacy**

- **Research**

OREGON
HEALTH
&SCIENCE
UNIVERSITY

2

What is PPA?

- slowly progressive aphasia caused by neurodegenerative disease

- no focal lesion (e.g., stroke)

- most prominent clinical feature is difficulty with speech/language

- these deficits are the principal cause of impaired activities of daily living; (eventually affects cognitive, behavioral and functional domains)

- often affects individuals <65 years

Clinical diagnostic criteria for PPA

Mesulam, M. 2003; Gorno-Tempini et al, 2011

Inclusion Criteria

1. Language deficits emerge slowly and progress
2. Language deficits **most prominent feature** of exam
3. Aphasia is the identifiable and principal cause of impairment in ADL, otherwise WNL
4. Aphasia is sole deficit (or most prominent) at onset and for initial stages of disease

Exclusion Criteria

1. Diseases other than neurodegenerative can account for the symptoms: stroke, tumor
2. Psychiatric diagnosis accounts for symptoms
3. Predominant initial episodic memory, visuospatial and or executive function deficits occur early in the course
4. Prominent initial behavioral disturbance

Sapolsky et al(2014) ; Bettcher et al(2014)	Logopenic Variant (PPA-L)	Nonfluent/Agrammatic Variant (PPA-G)	Semantic Variant (PPA-S)
Speech & Language Characteristics	*palpable word finding difficulties, word finding pauses, circumlocutions in conversational speech, *grammatically simple sentences *impaired repetition of sentences and phrases; phonologic errors in speech.	* motor speech impairment, slow and effortful speech; sound errors including distortions, substitutions, deletions, insertions of speech sounds *(consistent with apraxia of speech)* *altered prosody *difficulty understanding of complex sentence structure	*gradual decline in semantic/object knowledge: anomia, deterioration of single-word comprehension; *hyperverbal and fluent speech with word-finding difficulties and semantic paraphasias *dyslexia/dysgraphia
Cognitive Characteristics	*poor verbal memory, working memory and cognitive switching; impairments in executive functions, *impairments in processing of numbers and complex calculations; *mild deficits on visuospatial tasks.	*disproportionate difficulty with executive functions– specifically verbal fluency, set-shifting and abstract thinking.	*difficulties with episodic memory and executive function
Pathology (Predicted)	Alzheimer's Disease	Tau (Fronto-Temporal)	TDP-34 (Fronto-Temporal)

PPA ASSESSMENT

Speech/language pathology exam for PPA

1. Assess language *competence*: articulation, fluency, syntax, grammar, word retrieval, repetition, comprehension, reading & writing

2. Assess language *performance:* demands of environment to & functional communication skills needed for different settings and situations

3. Assess cognitive function: attention, memory, visual-spatial skills, executive function

Speech/language pathology exam for PPA Sapolsky, et al., 2011

Domain	Test instruments
Articulation	Apraxia Battery for Adults, motor speech exam
Fluency	BDAE seven point scale for phrase length, WAB fluency, Grammatical Competence & Paraphasias scale, clinician impression of fluency from spontaneous speech/picture descriptions
Syntax/grammar	BDAE seven point scale for phrase length, WAB fluency, Grammatical Competence and Paraphasias scale, Northwestern Anagram Test, analysis of language samples
Word retrieval	BNT, phonemic/category fluency tasks
Repetition	WAB and BDAE repetition tasks (words, phrases, sentences)

Speech/language pathology exam for PPA

Sapolsky, D., Domoto-Reilly, K., Negreira, A., Brickhouse, M.,McGinnis, S., Dickerson, B 2011

Domain	Test instruments
Auditory comprehension	WAB and BDAE following commands tasks, BDAE Complex Ideational Material, PAL Sentence Comprehension, CYCLE Sentence-Picture Matching
Single word comprehension	BDAE Word Comprehension, WAB Auditory Word Recognition,, PALPA Spoken Word-Picture Matching, Peabody Picture Vocabulary Test
Reading & writing	WAB and BDAE written language tasks

PRINCIPLES OF PPA TREATMENT

Staging PPA treatment: Fried-Oken, Rowland & Gibbons, 2010

Stage	Treatment	Partner Involvement
I: RESTORATIVE Detectable language lapses with hesitations, dysfluencies and word-finding difficulties	Education; behavioral strategies to support conversation. Introduction of low tech AAC.	Behavioral training: -how to ask questions -provide choices
II: COMPENSATORY/AIDED Reduction in language use (circumlocutions, paraphasias, simplification, agrammatism)	Stage I + additional low tech AAC. Transition to other techniques for multi-modal communication system, (mobile devices/SGD).	Device training: Partners learn message selection techniques and operations of each AAC tool.
III: ENVIRONMENTAL Little to no functional language	Environmental Support	Co-construction training: Partners lead successful interaction; support participation with multi-modal techniques. Modify verbal and physical environment to support communication

Treatment themes in PPA

- Unlike chronic stroke, speech-language abilities gradually decline in PPA

- Start early & be proactive so person with PPA can learn to use communication strategies and tools as soon as possible

- Consider all modalities (stimulation and compensation)

- Environmental/partner training from the beginning and throughout

- Adjust treatment as concomitant cognitive and motor difficulties develop

STAGED TREATMENT: RESTORATIVE **COMPENSATORY** ENVIRONMENTAL

Current SLP treatment in PPA are promising
Rising et al., 2014

- Treatment effects can be substantial and lasting

- Can result in changes in speech-language behaviors and observable changes in neural processing (fMRI)

Restorative treatment in Stage I PPA:

- Semantic feature cuing (category, function, location, associations, etc)

- Phonetic cuing

- Substitution (synonym or antonym)

- Circumlocution; description

- Picture sorting

- Encourage self-cuing (Henry, ML, Rising, K., DeMarco, AT, Miller, BL, Gorno-Tempini, & Beeson, PM. 2013)

OREGON
HEALTH
&SCIENCE
UNIVERSITY

Restitutive PPA treatment by variant

- Vast majority of studies address lexical retrieval, but sentence production and written language also treated (

- Most research to-date with semantic variant
    - Modest, item-specific gains
    - Continued practice required for maintenance
- Few nonfluent/agrammatic cases in the literature
    - Several have shown significant improvement in naming trained lexical items (e.g., Jokel et al., 2009)
    - One study addressing agrammatism (Schneider et al, 1996)
    - One study addressing motor speech (Henry et al., 2013)
- Few logopenic (lv) cases in the treatment literature (Beeson et al., 2011; Henry et al., 2008b; Henry et al., 2013; Newhart et al., 2009)
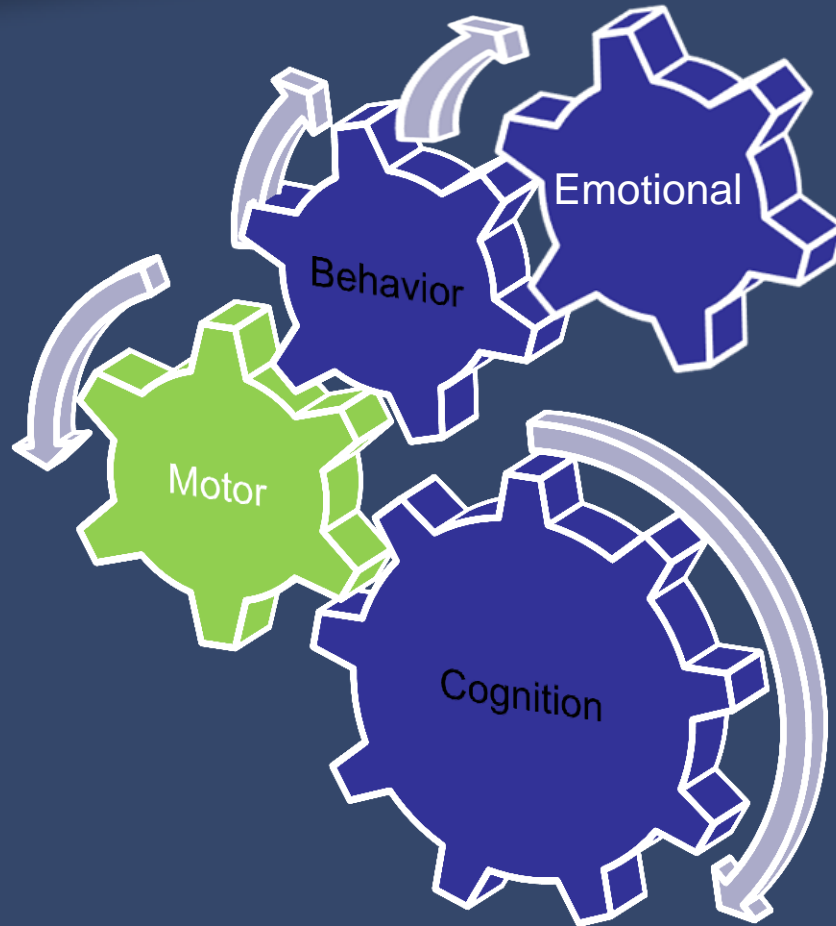
Treatment for naming in logopenic (PPA-L) and semantic(PPA-S) variants (Henry et al., 2013, *Brain and*

- Anomia is a common feature
  - Different underlying cause
- Training hierarchy designed to capitalize on spared cognitive-linguistic processes and encourage self-cueing
- Treatment
  - One hour session per week until 80% criterion met per et
  - Daily homework
    - Copy and Recall Treatment (Beeson & Egnor, 2006)
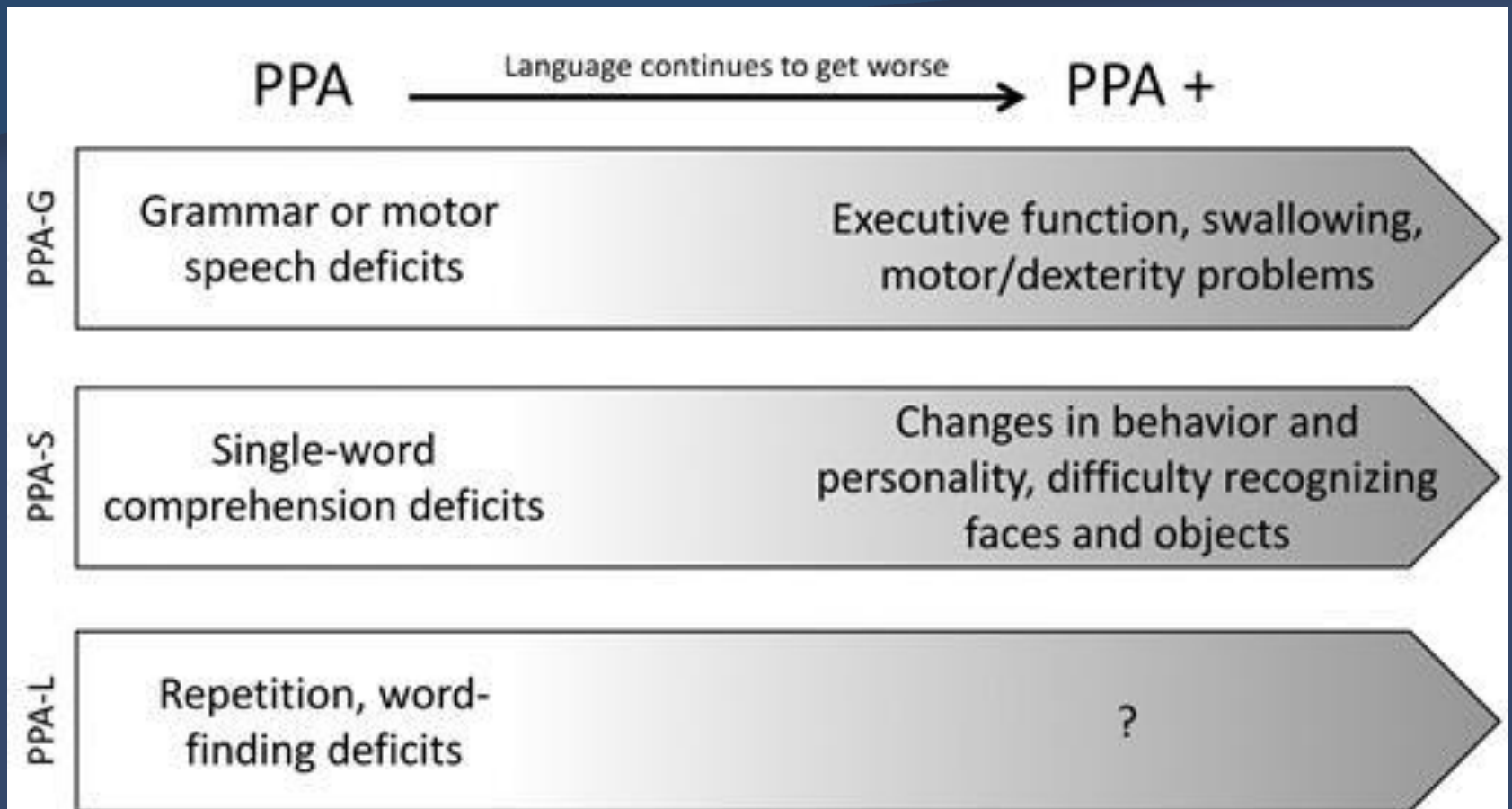
OREGON
HEALTH
&SCIENCE
UNIVERSITY

Treatment for speech production in Nonfluent/Agrammatic Variant (PPA-G)

- Working to improve speech production and grammar via script training

- Video-Implemented Script Training in Aphasia (VISTA)
  - Adapted from speech entrainment technique (Fridriksson et al., 2012)- *unison speech production*
  - At-home script training practice (30 minutes per day) with an audio-visual model may support:
    - Articulation
    - Syntax
    - Word retrieval
  - Sessions with clinician twice per week (45 min. each) to promote memorization and conversational usage

- Possibility of personalizing the recording
  - Voice banking

OREGON
HEALTH
&SCIENCE
UNIVERSITY

Contributing factors to consider for treatment and compensation choice:

Progression of PPA to PPA+

PPA → Language continues to get worse → PPA +

	PPA	PPA +
PPA-G	Grammar or motor speech deficits	Executive function, swallowing, motor/dexterity problems
PPA-S	Single-word comprehension deficits	Changes in behavior and personality, difficulty recognizing faces and objects
PPA-L	Repetition, word-finding deficits	?

Khayum, Becky, et al. "Thinking outside the stroke: Treating primary progressive aphasia (PPA)." *SIG 15 Perspectives on Gerontology* 17.2 (2012): 37-49.

OREGON HEALTH &SCIENCE UNIVERSITY

STAGE II: COMPENSATORY/AIDED

Stage II: A shift toward aided approaches

- Expressive language less efficient
- Verbal participation in activities decreases
- Telephone use decreases or is avoided
- Conversations become imbalanced

OREGON
HEALTH
&SCIENCE
UNIVERSITY

Communication Supports

Unaided Approaches (Natural modes)

- Speech
- Vocalization
- Gestures
- Eye gaze
- Body language
- Sign language
- Partner co-construction

Aided Approaches (Low tech and high tech tools)

- Paper and pencil
- Communication books boards and cards
- Speech generating devices
- Mobile technologies and apps

OREGON HEALTH &SCIENCE UNIVERSITY

Consider communication demands

– Settings
- Employment
- Home
- Groups
- Community events

– Partners

– Topics
- Familiar vs. unfamiliar

– Modes of communication
- Telephone
- Face to face, spontaneous
- Written
- Electronic

OREGON HEALTH & SCIENCE UNIVERSITY

User features to consider

- Previous experience with technology
- Support for training
- Partner's experience with technology
- Working memory abilities
- Vision and hearing abilities; fine motor
- Cognitive strategies and skills
- Motivation
  - "I bought this for mom to use."
  - "She can't seem to find the correct page."

OREGON
HEALTH
&SCIENCE
UNIVERSITY

Considerations:

Partners

- Primary partner?
- Most skilled?
- Spends most time with ?
- Willing to learn new communication skills?
- Person most willing to teach others how to communicate with individual?

Modes

- Choice of modes is influenced by the situation, intent, content and individuals involved
- Performance is multi-modal
- Modes uniquely constrain types of information conveyed

Phase II: A shift toward aided approaches

- Expressive language is less efficient
- Verbal participation in all activities decreases
- Telephone use decreases or is avoided
- Conversations become imbalanced

(Fried-Oken, Beukelman & Hux , 2012)

Communication Supports

Unaided Approaches
(Natural modes and strategies)

- Speech
- Vocalization
- Gestures
- Eye gaze
- Body language
- Sign language
- Partner co-construction

Aided Approaches
(Low tech and high tech tools)

- Paper and pencil
- Communication cards/boards and books
- Speech generating devices
- Mobile technologies
- Communication partner support
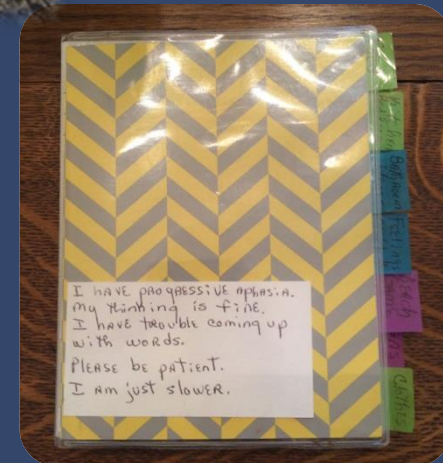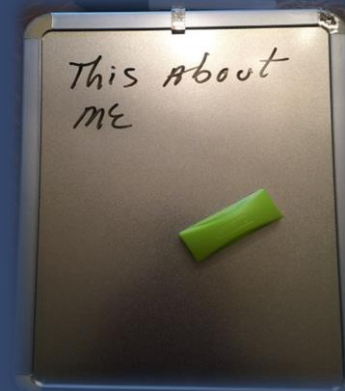- Environmental modification

Consider communication demands

- Settings
  - Employment
  - Home
  - 1:1; Group
  - Community event
- Partners
- Topics
  - Familiar vs. unfamiliar
- Modes
  - Telephone
  - Face to face, spontaneous
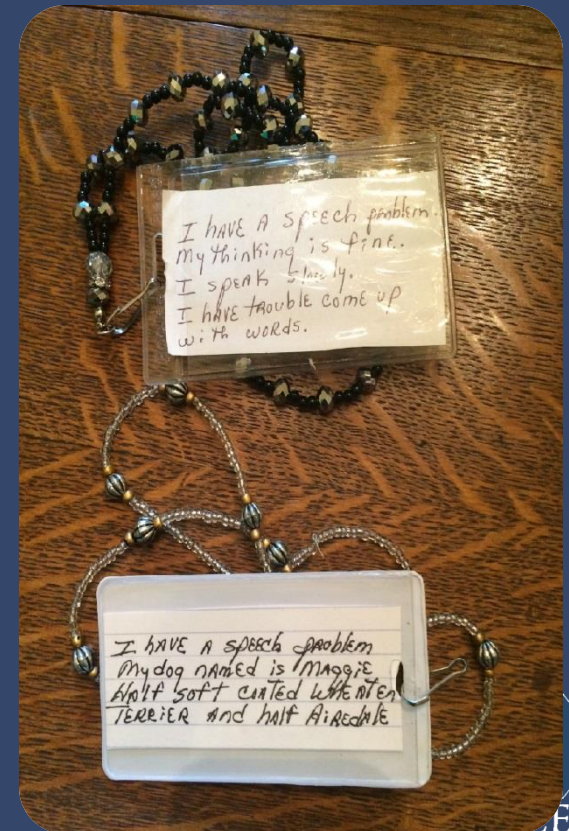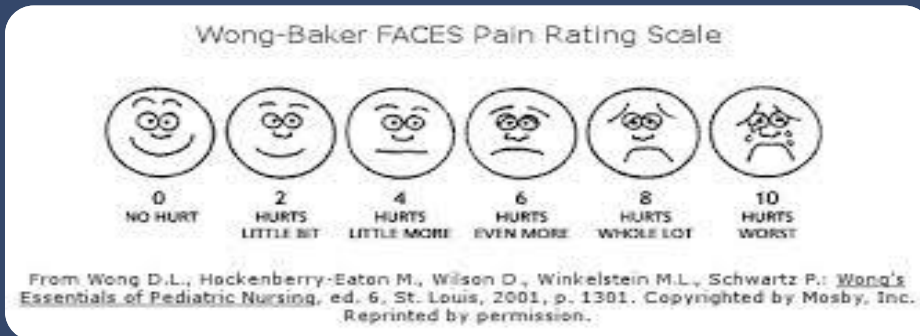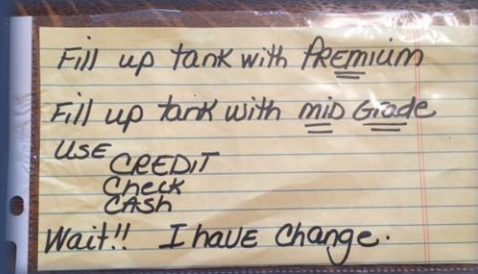 - Written
  - Electronic (text; email)

Low tech options

– Paper/pencil

– Communication books

– Photo albums

– Pictures

– Newspapers

– Communication boards

– White board

Low tech options

– Cards

– Remnants

– Written choice and continuum lines

– Paper and pencil

– Lanyards

Cinema 3
Hunger Game
12:00 PM
Friday May 04, 2012
Adult-Ma#8.00
PG13
Box 2 Visa

Fill up tank with Premium
Fill up tank with mid Grade
USE CREDIT
Check
CASH
Wait!! I have Change.

I HAVE A speech problem.
my thinking is fine.
I speak slowly.
I HAVE trouble come up
with words.

I HAVE A speech problem
my dog named is MAGGIE
Half soft coated WHEATEN
TERRIER and half AiREDALE

Wong-Baker FACES Pain Rating Scale

| 0 | 2 | 4 | 6 | 8 | 10 |
| NO HURT | HURTS LITTLE BIT | HURTS LITTLE MORE | HURTS EVEN MORE | HURTS WHOLE LOT | HURTS WORST |

From Wong D.L., Hockenberry-Eaton M., Wilson D., Winkelstein M.L., Schwartz P.: Wong's Essentials of Pediatric Nursing, ed. 6, St. Louis, 2001, p. 1301. Copyrighted by Mosby, Inc. Reprinted by permission.

UNIVERSITY

Low tech options: scripts

- Can be prepared with conversation partner

- Used over telephone

- Order food, set up appt, ask directions

- Explain PPA, ask for support

- Personal information
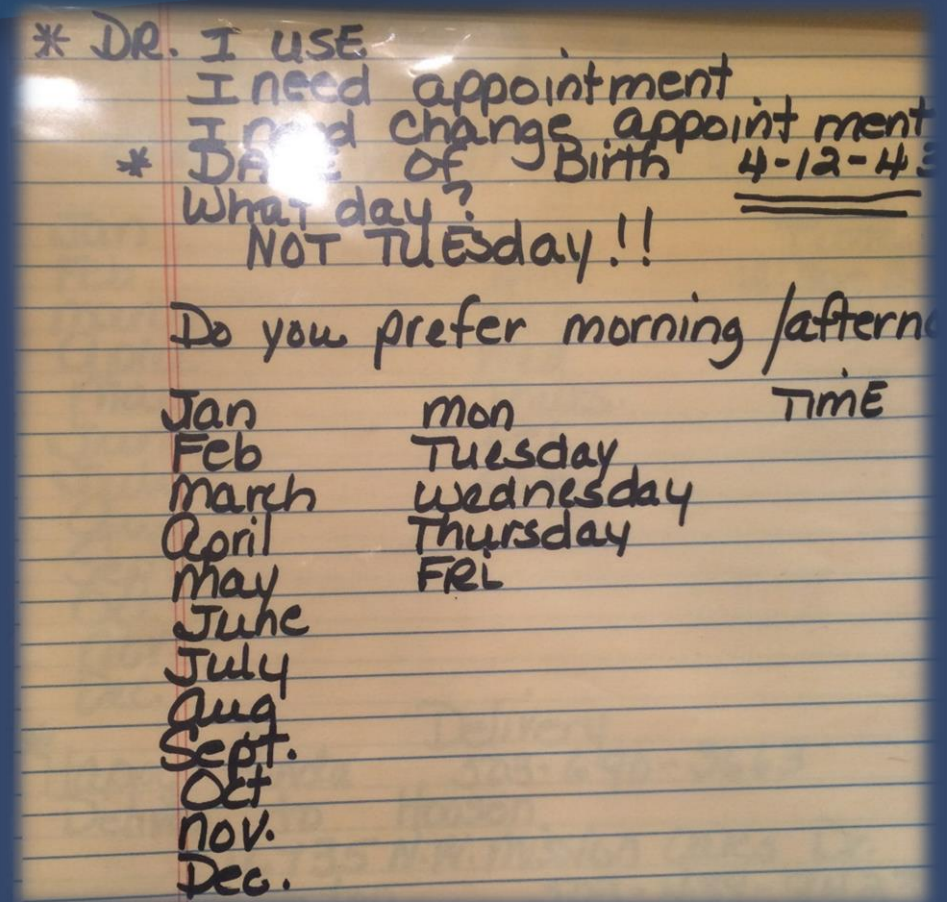
High tech options

- Dedicated speech generating devices
- Mobile technology devices

High tech options

Speech-Generating Devices

- Simple to complex
- Digitized or synthesized speech
- Individual can still use own speech with this supplementation
- As severity increases may be main mode (or not as cognition and fine motor decline)
- Many options: Lingraphica, Dynavox = $8K; Go talk 20 = $200

Mobile Technology

- Social acceptance
- Consumer empowerment in accessing assist
- Connections to social network
- Native applications
- Multiple applications
  - ProLoquo2Go
  - Lingraphica SmallTalk
  - Pictello
  - Scene and Heard

OREGON HEALTH &SCIENCE UNIVERSITY

AH: an arsenal of options
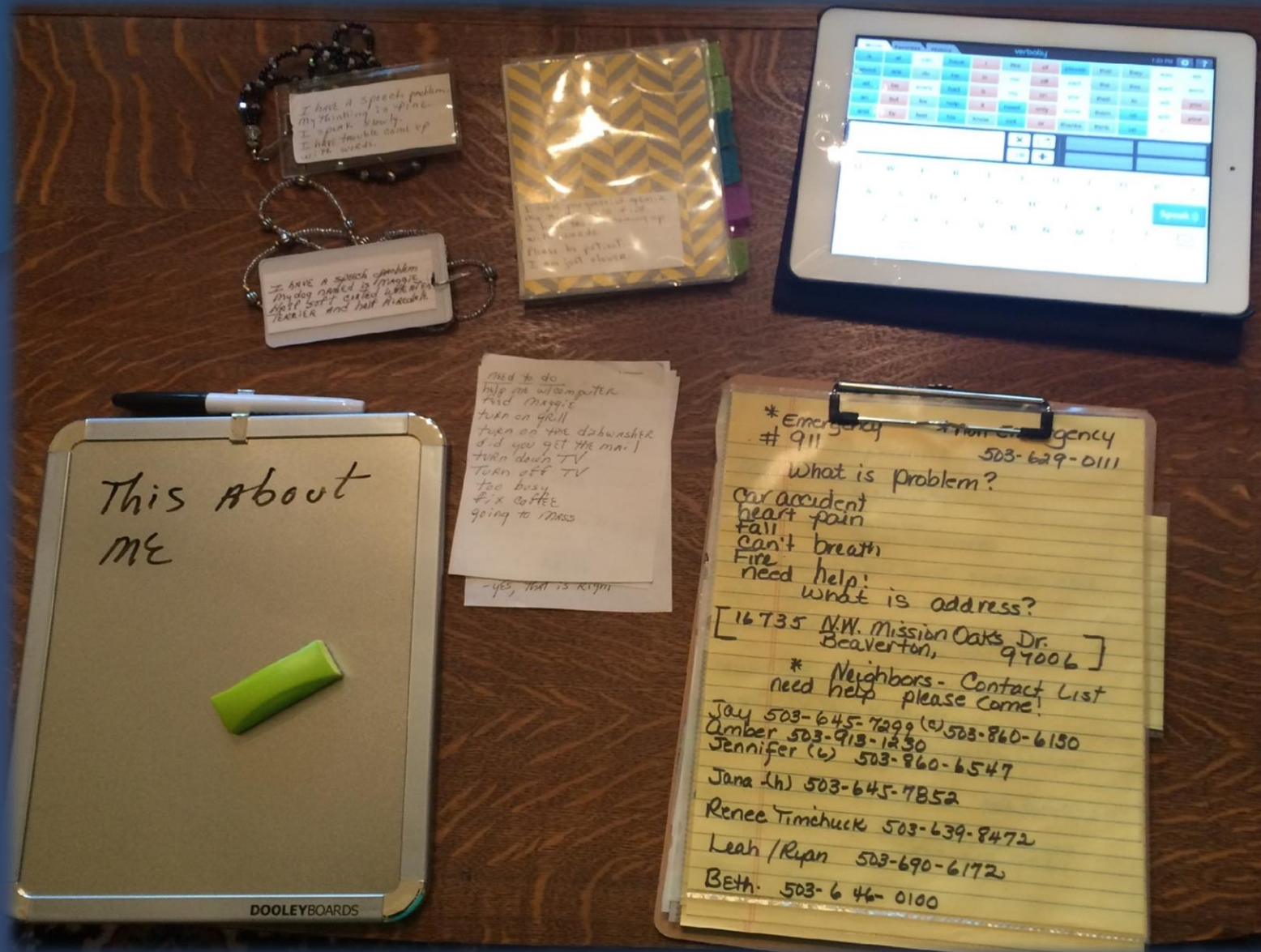
Other User features to consider

- Previous experience with technology

- Support for training

- Partner's experience with technology

- Working memory abilities

- Vision and hearing abilities; fine motor skills

- Cognitive strategies and skills
  - "She can't seem to find the correct page."

- Motivation
  - "I bought this for mom to use."

Tool features to consider

Symbol-based or text-based

Size

Content
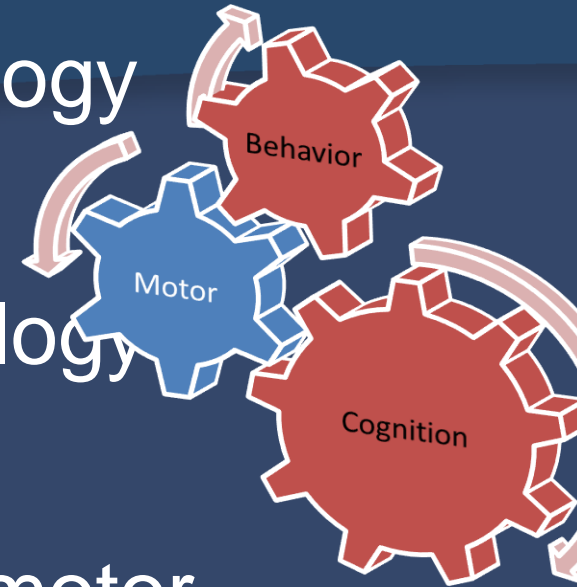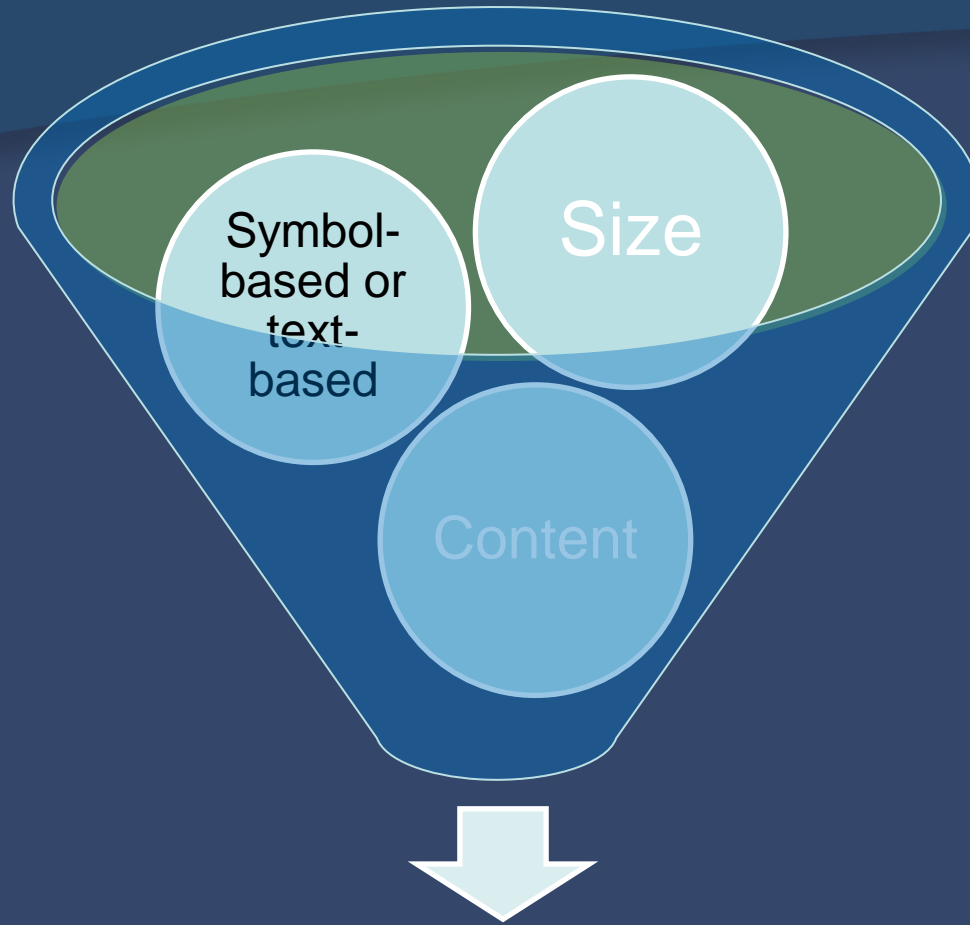
Low Tech or High Tech

What AAC tools do participants report continuing to use?

- Address book
- Ads
- Calendar
- Children's bible stories
- **Comm. Board**
- **Comm. photo booklet**
- **Church bulletin**
- Computer
- Cookbook
- Electronic photo frame
- E-mail
- Flashcards
- Gestures/ sign language/ pantomime
- **Letters**

- Magazine
- Mail
- Maps
- Museum brochures
- Newsletters (school, neighborhood)
- **Newspaper**
- Numbers
- Paper & pen/writing
- **Photos & photo albums**
- Post it notes
- Resident/staff directory
- Scrap book
- Show Me
- Skype

OREGON
HEALTH
&SCIENCE
UNIVERSITY

STAGE III: ENVIRONMENTAL

Emphasis shift to environmental modifications

- "Engineering the environment" means ...
  - Using ALL previous compensations and determining what CURRENTLY fits.

- training use of natural supports
- training partners

Natural environmental supports

- Pointing to weather pictures in newspaper to indicate time of day
- Using mail received from the bank to indicate questions about finances
- Flipping through pictures in photo book during a family visit
- Placing cue cards throughout environment
- Remnant boxes
- Native apps on mobile devices (weather, photos, calendar, maps, etc)

Partner training essential component of AAC for persons with PPA

➤ Role of partners paramount for success:
  ➤ As person with PPA loses language, partner assumes more responsibility for interaction and message co-construction.
  ➤ Evidence shows training is effective in improving communication activities and participation.

➤ identify vocabulary for external lexicon.

➤ support use of tools in different communication settings

➤ initiate conversation during late stages of PPA.

➤ train other partners

(Simmons-Mackie et al, 2010)

OREGON
HEALTH
&SCIENCE
UNIVERSITY

Training Partners to facilitate

Comprehension

- Face to Face; get attention 1st
- Augmented input
  - with gestures
  - with pictures
- Speak slowly, allow to respond
- One direction at a time
- Written choice
- Yes/no choice
- Supplement Manage the environment
- To offer or confirm choices.

Expression

- "Should I finish his sentences? Give him the words?"
- Support all forms of communication
- Count to 10 in your head before expecting a response
- Set up a way to "come back to that later."

OREGON
HEALTH
&SCIENCE
UNIVERSITY
OHSU

Measuring progress:

- Given the degenerative nature of PPA, global measures of language function will not be sensitive to improvements in specific skills or behaviors that occur as a result of interventions

- Goals based on current assessment information; relevant to both caregivers & clients.

- Frequency counts
  - behaviors of interest
  - amount of assistance or cues required to perform a task
  - number and type of errors made during an activity
  - caregiver communication behaviors