AAC Intervention for People with Aphasia

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Disclosures

- WVSHA
  - I am being paid as an invited speaker to give this presentation; however, the views expressed are mine.
- Mine
  - Some of the information is related to multiple studies for which I am an author; some are published and others are in progress.

AAC and Aphasia

- Why AAC?
- AAC Strategies
- Aphasia AAC Assessment
- Designing Interfaces
- Multimodal Communication Program for Aphasia

What is AAC?

- Strategies, techniques, or devices intended to **supplement or replace**, either permanently or temporarily, insufficient or ineffective communication skills.
- Supports production as well as **comprehension** skills
  - (ASHA, 2002, p. 420).
- A combination of strategies and techniques to minimize barriers to communication

Frameworks

- Living with Aphasia: Framework for Outcome Measurement (A-FROM)
- CAPE Roberta Elman
  - C – connecting people with aphasia
  - A – augmentative and alternative communication
  - P – partner training
  - E – education and community resources

Compensation for Expression

- Spoken Expression
  - Gestures
  - Writing
  - Drawing
  - Written Choice Strategy
  - Communication Notebooks
  - Speech Generating Devices
- Written Expression

Gestures

- Must directly teach how & when to use them
  - Visual action therapy (Helm-Estabrooks, 2004)
  - Drill and practice
  - Imitation
  - Practice in real-life or simulated situations
- Review of Gesture in Aphasia Treatment
  - 18 studies used gesture compensation
    - All report positive outcomes following intervention
    - Variable designs (often not experimental)

(Rose, 2006)

Writing

- Instructional Programs
  - Anagram and Copy Treatment (ACT)
    - Spelling by arrangement of component letters
    - Copying target words
  - Copy and Recall Treatment (CART)
    - Repeated copying of target words in the presence of pictured stimuli, followed by recall trials in the form of written picture naming
    - Weekly treatment and daily homework

(Beeson, Rising, & Volk, 2003; Clausen & Beeson, 2003)

Drawing

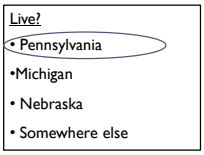
- Copying
- Tracing
- Matching
- Listening to instructions
- Items, actions, scenes or cartoon strips
- Limited reports of carryover to everyday activities

(Beeson & Ramage, 2000; Lyon, 1995; Morgan & Helm-Estabrooks, 1987; Rao, 1995; Sacchett, Byng, Marshall, & Pound, 1999; Taylor, 2012; Ward-Lonergan & Nicholas, 1995)

Written Choice

- Partner-dependent
  - Benefit from redundancy in multiple modalities

"Where do you live? Pennsylvania, Michigan, Nebraska, or somewhere else?"



(Garrett & Beukelman, 1992; Garrett, 1993; Lasker, Hux, Garrett, Moncrief, & Eischeid, 1997)

Communication Notebooks

- Purpose:
  - Convey basic wants and needs
  - Information sharing
  - Establish social closeness
- Remember:
  - Instructions to communication partners
  - Set up plan for updates
  - Not just basic needs or medical issues
    - Life experiences and personal narratives

(Fried-Oken, Daniels, Ettinger, Mooney, Noethe, & Rowland, 2015)

Speech Generating Devices (SGDs)

- Mostly case reports & single-participant designs

(e.g., Aftomonos, Steele, & Wertz, 1997; Hough & Johnson, 2009; Johnson, Hough, King, Vos, & Jeffs, 2008; Koul, Corwin, & Hayes, 2005; Lasker, LaPointe, & Kodras, 2005; McCall, Shelton, Weinrich, & Cox 2000; McKelvey, Dietz, Hux, Weissling, & Beukelman, 2007; Linebarger, Romania, Fink, Bartlett, & Schwartz 2008; Nicholas, Sinottee, & Helm-Estabrooks, 2011; van de Sandt-Koenderman, Wiegers, & Hardy, 2005; Waller, Dennis, Brodie, & Cairns, 1998)

Speech Generating Devices (SGDs)

- Successful use is influenced by
  - Impairments in executive functions, semantic knowledge, and syntactic skills
  - Facilitator support
  - Instruction provided
  - Interface features
    - Personalization
    - Contextually relevant text

(e.g., Nicholas, Sinottee, & Helm-Estabrooks, 2011).

Speech Generating Devices (SGDs)

- Static displays might be most appropriate for:
  - Someone who has difficulty navigating a dynamic display
  - Acute care or early teaching of AAC strategies
  - Specific communication situations

Speech Generating Devices (SGDs)

- Dynamic display might be appropriate for:
  - Fairly independent communicators
  - People familiar with computerized devices

Written Expression

- Speech-to-text technology
- Word prediction software
  - Choices following 1st letter selection
  - Reduces number of key strokes

(Armstrong & MacDonald, 2000; Murray & Karcher, 2000; Ball, et al., 2009; Bruce et al., 2003; Dietz, Ball, & Griffith; 2011)

Compensation for Comprehension

- **Auditory & Reading Comprehension**

Auditory Comprehension

- Augmented Input (AI)
  - Strategies designed to supplement spoken speech & support auditory comprehension
  - Written keywords, visuographic images, or the use of prosodic emphasis or gestures
  - In combination with spoken utterances

(Garrett & Lasker, 2013 ;Wallace, Dietz, Hux, & Weissling, 2012)

Reading Comprehension

- People with aphasia often experience residual reading comprehension deficits

(Brennan, Worrall, & McKenna, 2005; Dietz, Ball, & Griffith, 2011; Parr, 1995, 2007; Rose, Worrall, Hickson, & Hoffman, 2011)

https://www.wpclipart.com/education/reading/animal_reading/cat_reading.jpg

Aphasia Friendly Techniques

- Abundant white space
- Large and standard fonts (18pt)
- Simplified syntax and vocabulary
- Relevant pictures

(Rose et al., 2003; Dietz, Knollman-Porter, Hux, Toth, & Brown, 2012; Dietz, McKelvey, Hux, Beukelman, & Weissling, 2009; Howe, Worrall, & Hickson, 2004; Rose, Worrall, & McKenna, 2003)

Text-to-Speech Applications

- Emerging research
- People with TBI:
  - Increased reading rates and maintained comprehension
  - Preferred text-to-speech condition
- Person with mild aphasia increased reading rate and maintained comprehension

Zoom Reader
Text Speaker
Verbose Text to Speech
Sayvoice Text to Speech Reader
NaturalReader
iSpeech
ZoomReader
Macintosh platforms (e.g., Alex)
Windows platforms (e.g., David)
Kindle
Nook
Read and Write Software
KNFB Reader

(Harvey, Hux, & Snell, 2013; Harvey, & Hux, Scott, & Snell, 2013)

Text-to-Speech Applications

- Emerging research
  - Some people with aphasia understand some synthetic speech almost as well as digitized speech.
  - Some people with chronic aphasia perform best when reading and listening to synthetic speech as compared to reading or listening only.

(Hux et al, in press; Brown et al., under review)

Mobile Technology

- Types of AAC apps available
  - Single words or phrases that are topic specific
    - Lingraphica (some help with practice for apraxia)
  - Traditional Multi-level Grid Systems
    - Sounding board (Ablenet)
    - Proloquo2go
- Traditional apps used for AAC
  - Texting 1st letter, photographs, maps, weather, clock, calendar

A-FROM

Severity of aphasia

- Understanding other people
- Speaking
- Reading
- Writing

Tools

- Western Aphasia Battery-Revised
- Boston Diagnostic Aphasia Examination-3
- Boston Assessment of Severe Aphasia
- Communication Activities of Daily Living-2

http://www.speakwithit.org/wp-content/uploads/2013/07/brain-diagram-300x262.png

A-FROM

Communication and Language Environment

- Services, systems, and policies
- Attitudes of others to aphasia
- Communication supports
- Aphasia-friendly adaptations

Tools

- Craig Hospital Inventory of Environmental Factors – Short Form
- Interview (communication partners)
- Needs Assessment

http://www.marchofdimes.ca/EN/programs/Publishing/Images/sf_man_sign.gif

A-FROM

Participation in Life situations

- Activities
- Roles and responsibilities
- Relationships
- Communication and conversation involvement

Tools

- Interview (self-report)
- Functional Assessment Communication Skills for Adults (ASHA FACS)
- LIV Cards

http://www.girlfriendsocial.com/blog/why-dont-you/why-dont-you-host-a-girls-only-poker-night/

A-FROM

Personal identity, Attitudes, and Feelings

- Self-perception
- Feelings and emotions
- Perception of aphasia and living with aphasia

Tools

- Burden of Stroke Scale
- Comprehensive Aphasia Test: Disability Questionnaire

Addition: Cognition

- Cognitive Linguistic Quick Test (CLQT)
  - Trail Test
  - Design Memory
- Test of Everyday Attention – Map Search

Addition: Multi-modal Communication Screening Task for Persons with Aphasia

- Assesses communication with an external system: search pictures, categorize, combine symbols, combine communication modalities, and use symbols for story telling or to convey a message.

(http://aac.unl.edu/screen/screen.html)

Participation Model of AAC

- Operational competence – volume control, navigate among pages, create page sets
- Social competence – greeting, use etiquette, provide analysis
- Linguistic competence – combine words, use word prediction, grammatically correct
- Strategic competence – correct error, use humor, conduct interview

Based on research of Janice Light and DynaVox Dynamic AAC Goal Grid by Dynamic Therapy Associates, Kennesaw, GA.

Visual Scene Displays

- Elements:
  - Episodic organization
  - Color
  - Full text in boxes
  - Contextual photographs
  - Speech buttons (high tech)
  - Navigation Ring (high tech)

High-Context Photographs

- Represent situations, places, or experiences
- Convey the "gist" of a situation or event
- Provide support for conversational exchanges

4 criteria:

1. Environmental context
2. Interaction
3. Personal relevancy
4. Clarity

High-Context Photographs

- Many Uses
  - Therapy stimuli – naming, pictures descriptions, Sentence Production Program for Aphasia
  - Communication notebooks
  - High technology AAC systems

- *Show many examples prior to collection of photos

Multimodal Communication Program

- People with moderate to serve aphasia learn to use alternative modalities in structured settings
  - BUT generalization is LIMITED!
- Traditional interventions teach a single modality for a single word/concept
  - People do not switch to other strategies
  - May relate to executive function impairments

(Mikola, 2011; Nicholas, Sinotte, & Helm-Estabrooks, 2011; Purdy, 2002; Purdy, Duffy, & Coelho, 1994; Yoshihata et al., 1998)

Multimodal Communication Program

- Teach multiple communication strategies for a single concept in an integrated manner
  - Linking the alternative modalities to the linguistic system
  - Facilitating **switching automaticity**

(Purdy & VanDyke, 2011)

Multimodal Communication Program

- Clinician: "How do you communicate this? Show me all the ways"
  - While holding up picture of target concept
- Clinician: Model each noun using all modalities
- Person with Aphasia: Imitate
- Clinician: Feedback
  - Direct: oral directions & hand-over-hand assistance
  - Cueing gradually fads
- Clinician: reviews & models each modality
- BEGIN NEXT TARGET WORD

AAC and Aphasia Summary

- Consider a system of AAC strategies to meet participation goals.
- Use guiding framework for assessment
- When it comes to strategy use – how we teach it may make all the difference.
  - Consider methods to promote and measure generalization.