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Current Best Practices in the Evaluation & Management of CAS: A Multidimensional Approach

Guest Editor: Kimberly Farinella, PhD, CCC-SLP

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Part 4: Let's Talk AAC for Childhood Apraxia of Speech

Cass Faux, MS, CCC-SLP

Moderated by:
Amy Hansen, MA, CCC-SLP, Managing Editor, SpeechPathology.com

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Let's Talk AAC for Childhood Apraxia of Speech

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Learner Objectives

Participants will be able to:

- List types of communication aids for childhood apraxia of speech.
- Describe augmentative and alternative communication assessment techniques with childhood apraxia of speech.
- Describe treatment approaches using augmentative and alternative communication for childhood apraxia of speech, including implicit and explicit teaching.

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- Overview of AAC and CAS
- Assessment Principles
- Treatment Approaches
- Communication Aids

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Overview

- CAS
- Evidence

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Diagnostic Criteria ASHA, 2007

- Inconsistent speech production
- Difficulty sequencing syllables
- Inappropriate prosody including disturbances to lexical and phrasal stress
 - Range of severity
 - Range of disorders



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Consider AAC when

- Compromised intelligibility/comprehensibility
- Communication frustration
- Challenging behaviors
- Learned passivity
- Compromised social interactions
- Delayed language development

Binger 2007; Light, Collier, & Parnes, 1985

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Communication partners tend to:

*Dominat*e interactions

Ask predominately *y/n* questions

Take the *majority* of conversational *turns*

Provide *few opportunities* for initiation or response

Interrupt communicative attempts

Focus *disproportionately* on technology

Cumley & Beukelman, 1992

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Traditional Thinking

- Eliminate AAC because it will be a “crutch”
- Exclude AAC because speech might improve

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Evidence for AAC with CAS

- Increased number of speech attempts and increased number of interactions. **Cumley (1997)**
- Using AAC aids and strategies, the children had greater opportunities to initiate and maintain interactions as well as to repair communication breakdowns across various communication situations with both familiar and unfamiliar communication partners. **Cumley & Swanson (1999).**
- **Dierks & Ray, (2007):** found more consistent productions using AAC and an increase in intelligibility
- Binger, 2005; Bornman et al, 2001; Culp, 1989

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AAC with CAS

- AAC does not hinder the development of speech (Dowden, 1997; Cumley, 2001)
- Enhances communication
- Does not replace existing communication skills
- Supports language development and literacy skills
- Supports speech
- Can be used with traditional therapy

Children will use their most efficient & effective system, so when speech develops to that level they will discontinue use of AAC

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Jessie

- Would you consider using AAC with this child?

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Assessment

- Many types of AAC systems

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What type of AAC might you consider?

- Gestural system (non aided)?
- Aided system?
 - Low technology (communication book)?
 - High technology (voice output)?

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Making the Right Choice

- Needed as an alternative to provide complex language (Lawrence, 2017)
 - Speech generating device (SGD) if it is the primary communication mode (Ball, 2008)
- Needed as an augmentative system to provide conversational repair or expansion (highly flexible so partner can understand the message) (Lawrence, 2017)
 - Maybe accessing a category, a phrase, or a word
 - More typical for children with CAS or phonological disorders (don't ignore the power of an SGD)

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Making the Right Choice

- Needs assessment
- Feature match

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Needs Assessment

- Current method of communication
 - Not just face to face communication but includes communication by email, text, phone
- Communication environments
 - Situations understood best
 - With whom AAC user communicates
- Mobility and access
- Other technologies to be integrated into AAC

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Needs Assessment

- Participation Model (Beukelman and Mirenda, 2005)
 - Identifying communication needs and levels of participation
 - Opportunity, access, policy, and procedure barriers
- SETT (Student, Environments, Tasks, and Tools Framework (Zabala, 1995))
- Competencies (Light, 1989) gain confidence across social, linguistic, operational, strategic

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Feature Match

- AAC User
- AAC System

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AAC User

- Cognitive
- Language
- Academic
- Communication Needs
- Motor Skills
- Perceptual Abilities
- Environment
- Motivation Behavior

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AAC System

- Motor Access
- Durability/Repair Issues
- Symbols
- Vocabulary Organization
- Auditory/Visual Features
- Output capabilities
- Flexibility
- Portability

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Treatment Approaches



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- No treatment has conclusive evidence to date (Murray, 2017) heterogeneous (varying symptoms, severity, and comorbidity)
- AAC solutions
 - Use of AAC facilitates communicative and linguistic development of children with severe CAS (Luke, 2016; Millar, Light, & Schlosser, 2006)
- Using a multimodal approach

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Murray et al., 2017

ICF	Treatment Subarea	Treatment Approach	Description	Published Papers	Level of Evidence	Clients Suitable (including comorbidities)
Activities and Participation	Multi-modal/ augmentative and alternative treatment	Aided AAC Modeling	Aims to teach children to use communication boards or voice output devices to communicate and learn and use trained language features.	Binger, Kent-Walsh, Berens, Del Campo, & Rivera (2008); Binger & Light (2007); Binger et al. (2011)	III – pre-post	Children with severe CAS aged 3;4–6 years (comorbid disorders include cognition, language, and velocardiofacial syndrome)

Aided Augmented Input Terminology

- Aided AAC modeling (with or without SGD): facilitator points to symbols sequentially while labels *
- Aided language stimulation: facilitator points out symbols on the child's system in conjunction with all ongoing language (Goosens, 1992); simple short phrases
- Augmented input: facilitator points to key words
- Natural aided language stimulation: facilitator points to symbols while emphasizing key words
- Aided language modeling: facilitator points to the referent in the environment then points to the symbol

Allen et al., 2017

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Goals for Treatment

- Target functional communication
- Encourage spontaneous productions
- Model on the device
- Depending on severity, use device as the primary mode of communication, a supplement, or practice tool

(Nordness, 2008)

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Treatment Techniques

- Provide models on AAC
- Provide expectant delays
- Ask open ended questions
- Provide a contingent response to a child's communicative attempt
 - Request for clarification; expand; recast; follow-up questions; confirm

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Implicit vs Explicit Teaching

- Implicit
 - Provide models of navigation and symbol location but not require it of the learner
- Explicit
 - More direct treatment (assisting the child to locate a symbol)

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Principles of Motor Learning and AAC

- Variability
- Repetitive Practice (mass vs distributed)
 - Mass practice: quicker acquisition but worse generalization
 - Distributed: slower acquisition but better generalization

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- GREATER exposure to words on an SGD than on a static display; increased number of exposures to vocabulary on a dynamic display (Drager et al, 2003)
- Non personalized visual scene displays: Personalized scenes may give children a more easy grasp (Light and Drager, 2005)

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Grid and Visual Scene Display



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Motor Learning with AAC

Variability (specific vocabulary with mass practice;
different activities to give distributed practice)

- Let's go
- Make the car go
- It goes fast
- Ready, set, go

Implicit teaching: model and navigate as you produce
but don't instruct the client to use the device

Explicit: directly teach

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Video

Landon

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Tools: Assistive Communication Aids

- Low Technology
 - Remnant Books
 - Theme-specific (topic) boards (play: use of Fitzgerald key (agent action object L to R to assist with message complexity)
 - Communication Dictionaries
 - Alphabet Supplementation
- High Technology
 - Pre-programmed Messages on SGDs
 - Embracing an SGD in all communication
- Gestures and Manual Signs
 - Cued speech (touch cue methods, Bashir, 1984)
 - Touch Cues

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Remnant Books

- Visual Tactile way to help clients record important events in their lives
- Client decides what goes in the book
- Doesn't have to be the client's favorite thing
- Pick a familiar remnant for face-to-face conversation (Beukelman & Mirenda, 2005)
- Assist with selecting a topic for writing (Musselwhite and Hanser, 2003)

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Remnant Books



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Theme Specific Boards (Topic Boards)

- Communication Boards
- Communication Books

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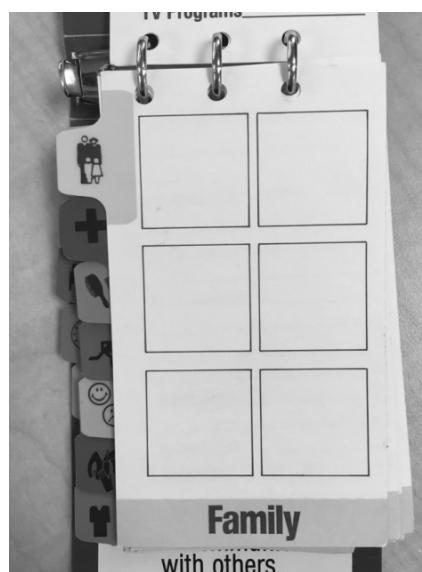
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Person	Place	Thing	Something Else
• Family	• Home	• Looks like	• Important
• Friend	• School	• Used for	• Not Important
• Someone else	• Somewhere else	• Something else	• I don't know.
Feeling	Time	Medical	Problem
• Good	• Now	• Pain	• Health
• Bad	• Later	• Medicine	• Appointment
• Something else	• Past	• Something else	• Something else

www.PrAACticalAAC.org

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Communication Dictionary

- Communication profile which outlines how a person communicates

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Communication Dictionary

What I do (what's the behavior)	What does it mean (what is your interpretation)	What you should do (how should the communication partner respond to the behavior)
Cover my face	Need a time out	Leave me alone and give me time to adjust

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Reference for more tools (many sites)

- PrAACtical AAC
- <http://practicalaac.org/strategy/strategy-of-the-month-back-to-school-with-aac/>
- Carol Zangari

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Alphabet Supplementation

- Linguistic cues to increase comprehensibility
(Hustad & Beukelman, 2000)

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Speech Generating Devices

- “The use of SGDs led to an immediate increase in the communicative development of the child. An increase in all linguistic variables was observed, with a latency effect of eight to nine treatment sessions.
- Conclusions: The implementation of SGDs in speech therapy has the potential to be highly effective in regards to both communicative and linguistic competencies in young children with severe CAS.”

Luke, C (2016)

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Photos of SGDs



Accent 1000, PRC



Nova Chat; Salttilo



Go Talk; Attainment Company



Tobii DynaVox

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AAC Assessment and Treatment Model:
Children with CAS
Ball & Stading, 2006

Proposed a multi-tier model for providing AAC to
children with CAS based on functional natural speech
& communication needs

- 1. Traditional AAC
- 2. AAC for Supplementation
- 3. AAC for Breakdowns
- 4. AAC for Literacy & Academics
- 5. AAC for Practice

Traditional and AAC Approaches for Apraxia of Speech
in Adults and Children; Convention presentation 2008

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Traditional AAC

- Severe unintelligibility; unable to communicate effectively with family, peers, educators
- Observe child in the classroom/home environment
- Conduct a needs assessment (established routines)
- Involve the family
- Use of AAC in all contexts

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friend	boy	girl	mother	father	brother	sister	head	hand	foot	feet
I	me	what	where	now	later	today	same	diff'rnt	big	little
my/mine	is / am are	to	first	next	last	all gone	ready	busy	happy	sad
it	can	have	come	feel	know	give	angry-mad	messy	good	bad
you	do	eat	drink	finish	get	sing	that	a	the	and
your	don't-not	go	help	open	put	see	again	in	away	on
here	there	like	play	read	stop	walk	show	out	up	off
yes	no	want	take	tell	turn	watch	write	front	down	with

Set up using Fitzgerald Key (S-V-O)

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Video

David

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AAC for Supplementation

- Less severe, more than one word vocabulary
- AAC can clarify meaning and aids social interaction; reduces rate of speech

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AAC for Breakdowns

- Minimum: 80% intelligible
- Uses multiple word utterances
- Breakdown with morpho-syntax

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Communication Breakdown

- Communication partners need to acknowledge communication breakdown
- Communication partner indicates when a child needs to use another communication modality (repetition, topic board, gestural sign)
- Teach our families

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Communication Partner Instruction ImPAACT Program

- Improving Partner Applications of Augmentative Communication Techniques
 - Cognitive Strategy Approach
 - Aided AAC modeling
 - Expectant delay
 - Wh-Question Asking
 - Verbal Prompts
 - Increased Responsivity
 - Through: video review, modeling, role play, verbal rehearsal, coached practice
- Binger et al., 2012; Kent-Walsh & McNaughton, 2005

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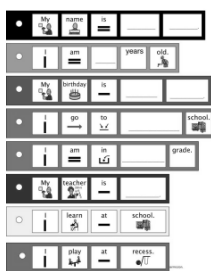
AAC for Academics

- Delayed/disordered literacy skills
- Reading and writing
- Arrange symbols from L to R
- Display the word
- Use symbols with text for reading
- Give voice output
- SGD with phonemes on cells

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Written language

- Carrier phrases in sentence strips
- SmartBoard



<https://home.smarttech.com/>

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AAC for Practice

- Use AAC to practice production targets from speech sessions
- Practice with an adult to monitor accuracy of productions
- Check pronunciations for accuracy if synthesized used

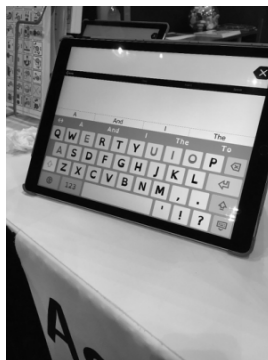
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Applications

- Text-to-speech
- SGDs
- Literacy
- Academics

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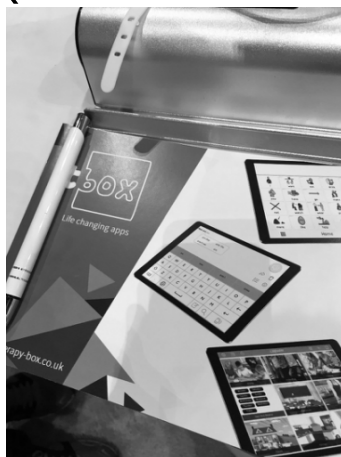
Proloquo4Text with Keeble AssistiveWare



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Therapy Box



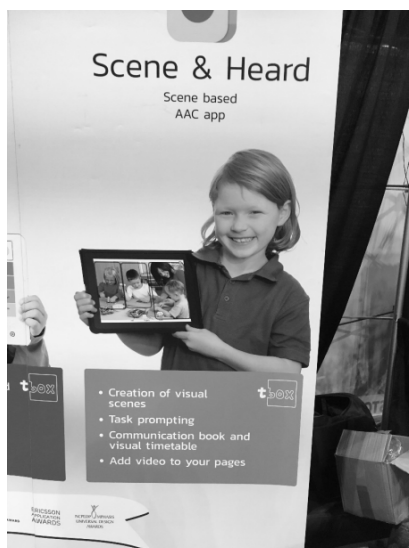
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AbleNet



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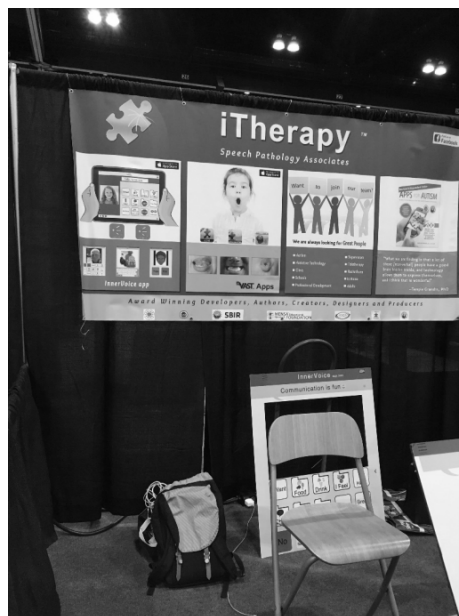
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Add to any system



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continued™

iTherapy



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continued™

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Application Name	SGD	Application made for CAS	Not dedicated to CAS, but CAS explicitly mentioned	Website
1. Acorn AAC	X		X	http://www.aacornapp.com/#solution
1. Speak for yourself			X	http://www.speakforyourself.org/
1. Apraxia Picture Sound Cards		X		http://www.speech-ez.com/apraxia-picture-sound-cards.html
1. ApraxiaVille		X		http://smartyearsapps.com/apraxia-ville/
1. Linguistics Apraxia Cards		X		https://www.linguistics.com/products/product/display?itemid=10831
1. MouthWorks			X	https://www.saritasa.com/portfolio/mouthworks-educational-app
1. Speechbox for Speech Therapy			X	http://www.speechboxapp.com/
1. Speech FlipBook		X		http://tactustherapy.com/app/speechflipbook/
1. Speech Therapy for Apraxia—NACD Home Speech Therapist		X		http://www.nacd.org/products/speech-therapy-for-apraxia-app/
1. Speech Therapy for Apraxia—Words by NACD		X		http://www.nacd.org/products/speech-therapy-for-apraxia-words-app/
1. Apraxia RainbowBee		X		https://www.virtualspeechcenter.com/app/apraxia_rainbowbee_app
1. Articulation Scenes		X		http://smartyearsapps.com/articulation-scenes/
1. Articulate It!		X		http://smartyearsapps.com/articulate-it/

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From Carrig et al., 2015

- AAC introduced at 17 years (history of persistent speech sound disorder and dx of CAS).
- “I am able to communicate with other people using a communication device, which I got when I was 17. Before that I didn’t had a functioning way of communicating with the people outside my family....I am now able to communicate my needs and my thoughts, which is something I wasn’t able to do for most of my life.” (BJ, age 22, email)

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“ AAC doesn’t make successful people;
people make AAC successful.”

in Carrig et al., 2015 (Chaple, 2000 p 160)

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