

Augmentative and Alternative Communication in Autism: Evidence-based Strategies to Enhance Communication and Remediate Challenging Behavior

Workshop at the 40th Annual
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Program (Morning)

- Principles of AAC, AAC from the Perspective of Verbal Behavior, Intro to Graphic Symbols
- Exchanged-based Communication and Speech-Generating Devices (SGDs)
BREAK
- Transitions from Exchanged-based Communication to SGDs and Tablets
- Hands-on with iPads and SPEAKall!
- AAC to Remediate Problem Behavior, Functional Communication Training
- AAC and Natural Speech Production



Program (Afternoon)

- Center-based ABA Programming (including SGDs), Behavior Skills Training, Expanding to other Operants (on SGDs), Parent Training
- Future of AAC, ABA & Autism
- Discussion / Q&A



Disclosure Statement

Oliver Wendt is Chief Science Officer for SPEAK MODalities, LLC.



Principles of AAC

Oliver Wendt, Ph.D.
Purdue University



Definitions

- Augmentative and Alternative Communication (AAC):
The supplementation or replacement of natural speech and/or writing. (Lloyd, Fuller, & Arvidson, 1997, p. 1)
- Augmentative Communication:
A strategy that is used in combination with residual speech skills and that enhances, aids, or supplements natural speech
- Alternative Communication:
Total reliance on an AAC strategy for a function that typical individuals would accomplish using speech

(Lloyd & Kangas, 1994)



Aided versus Unaided Communication

- **Aided communication:** involves use of some external device or equipment, which may range from very simple handmade materials ... to highly complex electronic devices that produce computer-synthesized speech (Lloyd, Fuller, & Arvidson, 1997, p. 1)

Examples of Aided Communication



Aided versus Unaided Communication (cont.)

- **Unaided communication:** requires no additional pieces of equipment, using only the individual's own body as the mode of communication (Lloyd, Fuller, & Arvidson, 1997, p. 1)



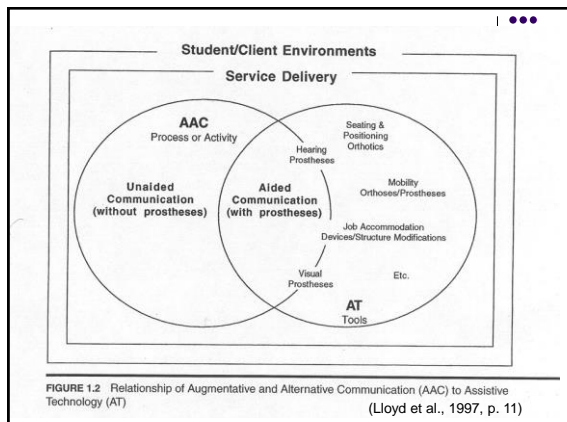
Assistive Technology

- **Assistive Technology:** any technology used to enable individuals to perform tasks that are difficult or impossible due to disabilities (Lloyd, Fuller, & Arvidson, 1997, p. 524)

Low Technology vs. High Technology

- **Low Technology:** simple electronic communication devices or non-electronic devices that lack an integrated circuit
- **High Technology:** communication devices that operate with an integrated circuit (e.g., a computer, speech generating device) (Lloyd, Fuller, & Arvidson, 1997, p. 1)

Myth: AAC = AT
Reality: AAC ≠ AT



Multimodal Communication

- Typical speakers use multiple means for communication. AAC users need:
 - Options for different listeners
 - A way to communicate when technology is not available
 - A way to communicate when technology is not appropriate

Myths about AAC Intervention

- My child won't learn to speak
- High technology is better than low technology
- Once an AAC system is chosen, the student will be motivated and able to communicate
- AAC is done only with the SLP, or only at 10:00am

Proportion of Minimally-Verbal Children with Autism

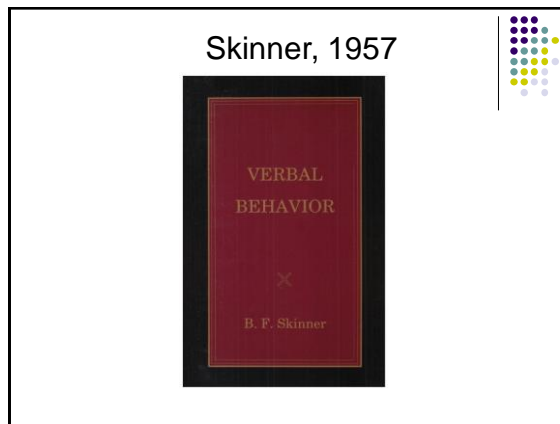
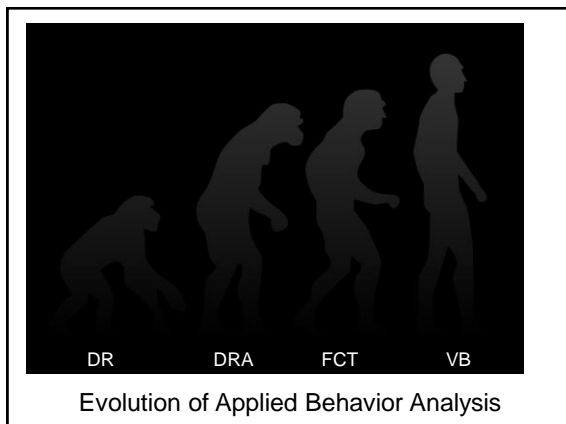
- Autism includes a "delay in, or lack of the development of spoken language"
(American Psychiatric Association, 2000)
- 14-25% of children diagnosed with an autism spectrum disorder (ASD) present with little or no functional speech (Lord & Bailey, 2002; Lord, Risi, & Pickles, 2004)
 - Autistic disorder only: 50% of children are functionally non-verbal
 - No sufficient natural speech or writing to meet their daily communication needs (Light, Roberts, DiMarco, & Greiner, 1998) ⇒ Candidates for intervention in augmentative and alternative communication

AAC and Autism

- AAC strategies particularly used in autism:
 - Manual signs and gestures
 - Pictographic symbols sets/systems
 - High technology speech generating devices (SGDs) for synthesized and/or digitized speech output
- Practitioners face difficult task selecting a suitable approach
- Evidence-based practice (EBP):
 - Using research outcomes as a major basis for clinical and educational decisions (Lloyd, 2001)

AAC from a Verbal Behavior Perspective

Tim Courtney, M.S.
Purdue University



Verbal Behavior vs. Vocal Behavior

- Verbal behavior – functionally defined
 - Vocal, sign, gesture, written, speaking, AAC, etc.
- Vocal behavior - using the vocal apparatus/musculature to produce sounds
 - It is a “mode” when used for verbal behavior
 - Coughing is vocal but not verbal

Verbal Behavior

Speaker – the behavior

Listener – person who responds to speaker

Verbal Community – a community of competent listeners

Ex.: English speakers; signers; French speakers; behavior analysts; cardiologists; Muslims; Christians; etc.

Consequences that Strengthen Verbal Behavior:

- Specific Reinforcement:
 - Mand.
 - You get what you want.
 - The mand specifies the reinforcer!
- Generalized Reinforcement:
 - Generalized conditioned social SR+/-.
 - Typically need to be conditioned (paired)
 - Tact, duplic, codic, intraverbal, etc.


Verbal Behavior

	Controlling Antecedent Variables	Behavior	Consequences	Example
Receptive	Verbal Stimulus	Nonverbal - following directions	Generalized; conditioned; nonspecific	A tendency to touch a picture of a dog when someone tells you to do so.
Echoic (duplic)	Verbal Stimulus: Point to point correspondence	Verbal - echoing	Generalized; conditioned; nonspecific	A tendency to say "dog" after someone else says "dog"
Mimetic (duplic)	Verbal stimulus: Point to point correspondence; formal similarity	Verbal - imitation	Generalized; conditioned; nonspecific	A tendency to clap after someone else claps
Tact	Nonverbal stimulus	Tact - label	Generalized; conditioned; nonspecific	A tendency to say "dog" because you see a dog
Mand	Establishing Operation	Mand - request	Specific reinforcement	A tendency to ask for a dog because you want one
Intraverbal	Verbal Stimulus; no point to point correspondence; no formal similarity	Verbal behavior - Intraverbal	Generalized; conditioned; nonspecific	A tendency to say "dog" when someone says "Labile."
Textual	Verbal Stimulus (Cursive, printed, typed, fingerpointed); point to point correspondence; no formal similarity	Verbal - textual-reading	Generalized; conditioned; nonspecific	A tendency to say "dog" because you see the written word "Dog"
Transcriptive/spelling	Verbal Stimulus; point to point correspondence; No formal Similarity	Writing / spelling	Generalized; conditioned; nonspecific	A tendency to write or spell the word "dog" because you hear someone say it.

Selection-Based


- Icon Exchange
- AAC
- Guiding
- Pointing

- Selection-based mands
- Selection-based tacts




Topography-Based


- Vocal
- Sign





Selection- vs. Topography-Based VB



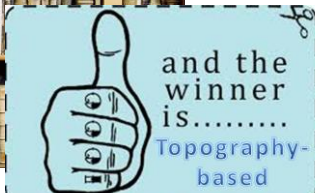
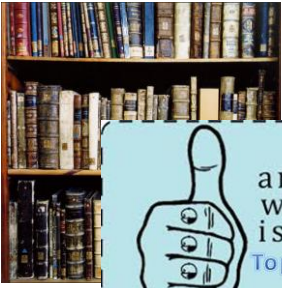
Universally Understood



Transportability



Extensive Repertoire



Ease of instruction

Selection Based

Fine Motor Coordination

Selection Based

Enable Talk

Selection based, topography based, or both?

Introduction to Graphic Symbols

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 Governors State University

Graphic Symbols

- A two-dimensional visual symbol that represents a referent to convey meaning (e.g., Blissymbol, line drawings such as PCS, Sigsymbol)
 (Lloyd et al., 1997, p. 531).

Examples of Graphic Symbols


	PCS	Oakland	Picture	Sigsymbols	PICS/MS	PIG	Blissymbols
BALL							
BED							
BOOK							
CANDY							
CAR							
COOKIE							
DOOR							

FIGURE 8.1 Representations of Selected Concrete Referents by Seven Common Aided Symbol Sets and Systems.
 From VanHecke, G. C., & Lloyd, L. L., 1998. Reprinted by permission.

(Lloyd, et al., 1997, p.52)


Picture-Based Graphic Symbols without Linguistic Characteristics

- Photographs (color or B&W)



Picture-Based Graphic Symbols without Linguistic Characteristics

- Line-Drawing Symbols



Picture Communication Symbols (PCS)

Picture-Based Graphic Symbols with Linguistic Characteristics

- Blissymbols

time	minute	hour	week	month	plural
⊕	⊖	⊙°	⊖⊕	⊖	×
year	spring	summer	autumn	winter	Return to Main Board
⊙	⊙ ₁ ↑	⊙ ₂ ↘	⊙ ₃ ⊖	⊙ ₄ ↑	←
Christmas	Easter	holiday	birthday	vacation	back a page
⊙↑↑	⊙↑↑	⊙♥↑	⊙↑↑	↑♥↑	← 1 ⊖
weather	rain	snow	air	wind	next page
⊕	↓	⊖	Z	↻	→ 1 ⊖

Iconicity

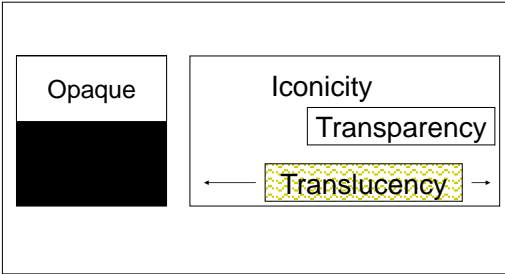
- A term that refers to the visual relationship between a symbol (e.g., manual sign or graphic symbol) and its referent. Iconicity is frequently considered in terms of transparency and translucency.

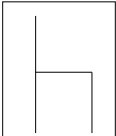

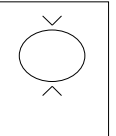
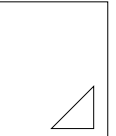
(Lloyd et al., 1997, p. 532)

Iconicity (cont.)

- Iconicity takes place across a continuum and includes:
 - Transparency
 - Operationally defined as guessability
 - Translucency
 - Operationally defined by ratings of how much the symbol looks like its referent (1-7). In general, there is considerable agreement.
- Opaqueness
 - There is no visual representation of the symbol.

Opaqueness and Iconicity Relationship



Iconic			Opaque
Transparency			
Translucency			
chair	plant	lips	rock
			

Variables Affecting Graphic Symbol Learning



- Iconicity
- Concreteness vs. abstractness
- Reinforcement value of a referent
- Spoken language comprehension
- Cultural and experiential backgrounds
- Instructional factors

Koul, Schlosser, & Sancibrian (2001); Romski & Sevcik (1996); Mineo Mollica (2003)

Questions ???



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