


AAC-RERC
SPREAD THE WORD

AAC Interventions to Maximize Language Development for Young Children

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- Children with significant communication disabilities are at risk in all aspects of development
 - Functional communication
 - Language development
 - Cognitive development and learning
 - Literacy development
 - Social participation
 - Quality of life
- Early intervention is critical

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The challenge

- To provide children with complex communication needs access to the magic and power of language and communication at an early age
 - AAC interventions offer the potential for enhanced communication and language development for children
 - To date, the potential has not been fully realized for young children

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Goals of the presentation

- To share results of research to enhance language and communication for young children who require AAC
- To discuss implications for practice to improve outcomes for young children

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AAC -RERC



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Effects of AAC Interventions with Young Children

(Light, Drager, Curran, Hayes, Kristiansen, Lewis, May, Page, Panek, Pendergast, & Witte, in progress)

- Longitudinal study
 - investigate impact of AAC intervention on language development and communication of young children with complex communication needs
- 7 participants to date
 - 16-36 months old
 - Significant communication disabilities
 - All minimally symbolic at baseline
 - <25 symbols expressively
 - Longitudinal data

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AAC interventions

- Develop and implement appropriate AAC systems
 - Ensure children have the tools to communicate
- Provide appropriate intervention to build language and communication skills
 - Ensure children learn the skills to support effective communication
- Work with parents and other facilitators
 - Ensure children have meaningful opportunities to communicate
- Intervention scheduled 1x week for 1 hour



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Goals of AAC Interventions

- Maximize language and communication
 - Increase participation and build social interaction/ turn taking
 - Express range of communication functions
 - Social interaction, needs and wants, sharing information/ joint attention
 - Develop breadth of semantic concepts to support more diverse communication
 - Build greater complexity of language structure to support more complex communication
 - Semantic-syntactic development
 - Morphological development
 - Build phonological awareness / foundations for literacy development



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Steps in AAC Interventions

1. Identify meaningful contexts for communication
2. Develop appropriate AAC systems
3. Work with parents /facilitators to ensure appropriate scaffolding support
4. Infuse communication into all activities
5. Monitor progress /Evaluate outcomes



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Identify meaningful contexts for communication

- Select contexts as priorities
 - Interactive
 - Motivating to the child
 - Meaningful /familiar
 - High frequency
 - Valued by child & family
 - High impact / greatest need



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- Start with contexts that:
 - provide opportunities for sustained social interaction
 - E.g., shared reading activities, songs, play activities
 - not just the expression of needs and wants
- Infuse opportunities for communication into all activities



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Develop appropriate AAC systems

- Systems must be:
 - Versatile
 - Appealing
 - Dynamic
 - Easy to use



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AAC systems must be versatile

- AAC systems must be versatile
 - Must meet needs in various contexts
 - Must be flexible
 - Must provide growth potential
- Use multiple modes to maximize language and communication
 - Speech
 - Unaided – e.g., signs, gestures
 - Aided - e.g., light tech and high tech



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AAC systems must be appealing

- Many AAC systems
 - Reflect adult perspectives
 - Do not have strong appeal for young children
- If AAC systems are appealing
 - Young children will be more apt to use them
 - Peers will be more apt to interact



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Systems must be appealing

(Light, Drager, & Nemser, 2004; Light, Curran, Page, & Pitkin, 2005)

- Suggestions to increase the appeal
 - Infuse motivating activities
 - Incorporate popular characters
 - Incorporate sound effects, songs, musical instruments, laughter, voices
 - Use multiple bright colors; add decorations
 - Allow child to choose
 - Have fun!



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AAC systems must be dynamic

- Typically developing preschoolers learn more than 5 new words a day
- Children who require AAC can only learn new words if we provide them with access to the vocabulary
 - Signs
 - Aided symbols
- Add vocabulary regularly!!
- Make sure that AAC systems are available at all times



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Select appropriate vocabulary

- Be sure to include a range of concepts
 - people, actions, objects, places, social words, relational concepts, questions, etc.
- Check to make sure that the vocabulary is
 - Individualized
 - Motivating / fun
 - Functional
 - Developmentally appropriate
 - Culturally appropriate
 - Supports language learning
- Choose appropriate wording for each concept
 - Kids should sound like kids!
- Model concepts the child knows as well as new concepts



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AAC systems must be easy to learn

- Current AAC technologies reflect the conceptual models of nondisabled adults
 - These models are not congruent with young children's conceptual models
 - As a result, AAC systems are difficult for children to learn to use



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AAC systems must be easy to learn

- Reduce the learning demands of AAC systems for young children by using appropriate designs
 - Representations of language concepts
 - Layout, organization, and navigation
 - Selection of these concepts
 - Output



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Representation of language

(Lund, Millar, Herman, Hinds & Light, 1998; Light, Drager, Burki, D'Silva, Haley, Hartnett, Kristiansen, Worah, & Hammer, 2004)

- Young children's learning of concepts
 - Embedded in context
 - Differs from adult concepts
- Current AAC symbol sets
 - Represent adult conceptual models
 - Often incorporate parts of objects and people
 - May require metalinguistic skills
 - May not be meaningful to young children
 - May take time for young children to learn



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Use appropriate representations

(Lund, Millar, Herman, Hinds & Light, 1998; Light, Drager, Burki, D'Silva, Haley, Hartnett, Kristiansen, Worah, & Hammer, 2004)

- Use representations that reflect child's understanding of concept
- Use symbols that represent meaningful contexts /experiences in the child's life
 - Digital photos of the child /family in meaningful activities
 - Line drawings that represent children's understanding
 - Avoid isolated parts of objects or events
- Teach symbols in context
 - Introduce symbols in context
 - Link the symbol to the concept explicitly



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Organization, layout & navigation

- Once there is more than one language concept,
 - they must be organized in some way
 - they must be displayed in some way
 - the user must navigate the system
- The organization, layout and navigation affects:
 - ease of learning
 - ease /accuracy of use



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Use appropriate organizations

- Use personalized schematic organizations
 - Organize vocabulary according to familiar events /activities (Fallon, Light & Achenbach, 2003)
- Organize vocabulary in small groups
 - build "page" organizations from small groups (Fallon, Light & Achenbach, 2003)



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Use appropriate layout

- Types of layouts
 - Traditional grid layout
 - Visual scene display
 - Hybrid displays



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Traditional grid layout

- Vocabulary represented by separate AAC symbols in “boxes”
- Language is taken out of context
- “Decontextualized”
- Concepts are separate
- Imposes greater processing demands



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Use appropriate layout

- Visual scene layout
 - “Graphic metaphor” (Shane, 1998)
 - Vocabulary embedded under “hot spot” in visual scene
 - Vocabulary presented in meaningful context
 - Concepts linked visually and conceptually



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Use appropriate layouts

- Very young children are more accurate using visual scene layouts than traditional grid layouts (Drager, Light, Fallon, Jeffries, & Speltz, 2003)
- Transition to use various layouts over time
 - Visual scene displays
 - Hybrid displays
 - Visual scene displays with some items presented in a grid-type layout
 - Traditional grid displays



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Reduce navigational demands

- It is difficult for young children to learn navigation to locate language concepts
- Traditionally we have reduced navigational demands by reducing number of language concepts available
- Do NOT hold back language development
- Reduce navigational demands
 - Appropriate design
 - Partner scaffolding



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- Use explicit menus that make options visible
 - Use screen shots of actual vocabulary pages as choices on menu pages (Drager, Light, Larsson, Pitkin, & Stopper, 2004)
- Provide scaffolding support to help child locate page initially
- As child develops competence,
 - Model use of menu page and navigational tools to find page
 - Teach organization of system



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Implement AAC systems

- It is challenging for young children to use AAC systems
 - They must coordinate attention to
 - Themselves
 - The partner
 - The ongoing activity
 - The AAC symbols
- Provide scaffolding support to reduce the demands by
 - Positioning the partner appropriately
 - Infusing the AAC symbols into the activity
 - Infusing the activity into the AAC system



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Position the partner

- Ensure that the partner is closely aligned with
 - The AAC system
 - The activity
- Maximize attention to
 - Partner
 - AAC system
 - Activity



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Integrate AAC systems and play

- Children's language learning & communication is infused in play and daily activities
- Too often aided AAC systems
 - sit "outside" of children's lives/ activities
 - decontextualize language & communication
- Re-design AAC systems
 - Infuse AAC symbols into play activities
 - Construct AAC symbols with velcro on back
 - Bring the symbols into the activity; link symbols to the referents explicitly; use them in play
 - Infuse play activities into AAC systems



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Working with parents to maximize communication & language

- Implement AAC in meaningful contexts in natural environment
- Identify opportunities for communication within these contexts
- Model AAC + speech
- Wait
- Respond to the child
- Monitor progress/ Evaluate outcomes



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Identify opportunities for communication

- Within each context, identify opportunities for communication
 - Meaningful
 - Motivating
 - Numerous
 - Varied
 - Fun



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- Clearly mark the opportunity
- Wait and allow the child time to communicate
 - Use expectant delay
 - Focus attention on child; maintain eye contact
 - Use expectant body posture
 - Wait



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- If the child attempts to communicate, respond immediately
 - Fulfill the intent
 - Expand on the child's message
 - Model AAC + speech
 - Continue the activity
 - Continue to set up meaningful opportunities for child to communicate



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- If the child does not attempt to communicate,
 - Model an appropriate turn
 - use AAC + speech
 - Use a third party model if available
 - Parent, sibling, aide
 - Present the opportunity again



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- Always
 - Model AAC + speech
 - Expose the child to more vocabulary/ more complex messages than he/she currently uses
 - Model AAC as a means to communicate
 - Provide opportunities for child to learn new concepts & new structures



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Results – Case #1

- Boy with severe CP, trach
- Baseline (age: 25 months)
 - No vocalizations, gestures, or signs
 - Uses <25 digital photos of toys
 - Participates minimally
 - Expresses 1 concept or less per 20 minute interaction
 - Expresses requests for objects only
 - Communicates in single telegraphic messages



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Results – Case #1

- After 12 weeks of intervention (age: 28 months)
 - Expresses >480 words via light tech and high tech AAC
 - Increased vocab by >5 words per day
 - Active participant in interaction
 - Expresses >48 concepts per 20 minute interaction
 - Increase of approximately 50 x rate of baseline
 - Communicates in 1-2 word messages
 - Expresses range of semantic relations
 - agent, action, object, locative, demonstrative, possessor, quantifier, instrument, questions, etc.



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Results – Case #1

- After 9 months of intervention (age: 34 months)
 - Expresses >1,000 words via light tech and high tech AAC
 - Continues to increase vocab by >5 words per day
 - Active participant in interactions
 - Expresses approx 50 concepts per 20 minute interaction
 - Increase of approximately 50 x rate of baseline
 - Communicates in 1-4 word messages
 - Expresses wide range of semantic relations
 - agent, action, object, locative, demonstrative, possessor, quantifier, instrument, questions, etc.
 - Beginning to include grammatical markers e.g., present progressive, plurals, possessive, past tense
 - Learning phonological awareness skills, letter-sound associations, early literacy skills



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Results – Case #1

- After 12-14 months of intervention (age: 37-39 months)
 - Has acquired several thousand words via light tech & high tech AAC
 - Continues to increase vocab by >5 words per day
 - Participates actively in interactions with adults and peers
 - Sustained rate of communication 40-50 turns per 20 min. interaction
 - Increase of approximately 50 x rate of baseline
 - Communicates in multiword messages
 - Expresses wide range of semantic relations
 - Uses grammatical markers as required
 - e.g., present progressive, plurals, possessive, past tense
 - Demonstrates early literacy skills
 - E.g., phonological awareness skills (initial phoneme segmentation, sound blending)
 - letter-sound associations
 - decoding single words (cvc) in isolation and shared reading



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Results – Case #2

- Boy with Down Syndrome, otitis media
- Baseline (age: 29 months)
 - Says <10 spoken word approximations
 - Has < 10 signs
 - Participates minimally
 - Expresses <1 concept per minute in interaction
 - Expresses < 20 words/concepts in 25 minutes
 - Only expresses object concepts
 - Requests preferred items



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- After 7 months of intervention (age: 36 months)
 - Expresses >1,210 words via speech, signs, light tech and high tech AAC
 - Increased vocabulary by >5 words per day
 - Active participant in interaction
 - Expresses >10 words per minute
 - Expresses >250 words in 25 minutes
 - Increase is 10 x rate of baseline
 - Expresses wide range of semantic relations
 - agent, action, object, locative, demonstrative, possessor, quantifier, instrument, questions, etc
 - Requests items, comments, interacts socially, asks questions, etc.



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Results to date

- All children have demonstrated significant increases in their rate of turn taking
- All children sustain interactions with others for significantly longer
- All children participate in interactions that involve
 - Social routines
 - Play activities
 - Not just expression of needs and wants



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- Children use their AAC systems independently for play & learning as well
- Some of the children use their systems as contexts for interaction with peers
 - Shared books
 - Shared singing
 - Play



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- All children have acquired a range of semantic concepts
- All but one child has learned to combine concepts to communicate more complex meanings



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- All children have been able to use scene displays on initial introduction once use is modeled
 - seem to be more interested & motivated when scene displays are used to integrate AAC & play, book reading, music
- All children have learned to use other displays
 - Hybrid displays
 - Grid displays



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- Children move through different stages
 - Increase participation and build social interaction
 - Develop breadth of semantic concepts /vocabulary to support more diverse communication & conceptual development
 - Build greater complexity of language structure to support more complex communication
 - Build phonological awareness skills and foundations for literacy development



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The future

To realize the magic and power of language and communication for young children with complex communication needs so that they can achieve their full potential



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