Developing AAC Competence in Children with Complex Communication Needs

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North Carolina Assistive Technology Program

- State & federally funded program created under the Federal Tech Act.

- NCATP serves: children and adults, older adults experiencing difficulty with daily activities, professionals in disability related fields, and employers/employees in private/public settings.

- Agencies, Schools, and Other Organizations can purchase: technical assistance, assistive technology assessments, training, consultation services, and specialized workshops.
NCATP Provides…

• Services to all 100 counties in NC
• Hands-on demonstrations of assistive technology
• Short-term AT loans
• AT resource information and referral to other programs.
• Awareness activities on AT and overview of services.
• Advocacy
• Funding Resource Information
• Access to previously owned technology on NC Technology Exchange Post (Partnerships in Assistive Technology)
Speech to Speech (STS)

- Individuals with a speech disability can use his/her own voice or voice synthesizer over the phone.

- Specially trained operators mediate phone calls and repeat the individual’s responses, when necessary, to ensure that the speech-disabled person will be heard and understood.

- For more information visit:  [www.relaync.com](http://www.relaync.com)

- 1-877-735-8261 (speech-to-speech)
Session Topic

- Developing Augmentative Communication Competence in Children with Complex Communication Needs

- Handout: http://www.ncatp.org/
What Does Complex Communication Need Mean?

• “Approximately 1.3% of all individuals (i.e., more than 3.5 million Americans) have such significant communication disabilities that they cannot rely on their natural speech to meet their daily communication needs. Without access to speech, these individuals are severely restricted in their communication and participation in all aspects of life - education, employment, family, and community.”

What Does Complex Communication Need Mean?

• Includes individuals with no physical involvement to very complex seating, positioning and access needs.

• Includes individuals with severe cognitive deficits to average or above average IQ.

• Includes individuals who may or may not have vision and/or hearing impairments.

• Includes individuals who may or may not have difficulty with sensory processing impairments.
What Does Complex Communication Need Mean?

A heterogeneous group of non-speaking persons who have a common need for AAC strategies to support their expressive communication activities of daily living.
How Do We Manage The Communication Needs Of Children With Complex Communication Needs?

- Models of typical language development.
- Models of AAC Competencies.
- Research for insight into best AAC practices.
- Examine innovative applications of theory into practice.
How Do We Manage The Communication Needs Of Children With Complex Communication Needs?
Models Of Language Development

- Language development theories are really the guides for determining the direction of both assessment and intervention practices.

- Provides the framework for developmental expectations.

- The skill is in being able to infer how these models relate to the language development of AAC users.
# Language Acquisition Theory and AAC Intervention
—Anne Sutton (June 2008)

## Perspectives on Augmentative and Alternative Communication

<table>
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<tr>
<th>Theoretical Approach</th>
<th>Supporting Arguments</th>
<th>Role Attributed to Production in Acquisition</th>
<th>Implications for AAC Intervention</th>
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<tr>
<td><strong>Nativist</strong> (Chomsky, 1995)</td>
<td>Poverty of the stimulus, universality, early emergence</td>
<td>Limited role for production, Acquisition of grammatical knowledge based primarily on comprehension</td>
<td>Underlying grammatical knowledge should be unimpeded</td>
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<td><strong>Cognitive</strong> (Piaget, 1997)</td>
<td>Correlation of linguistic development with other cognitive skills. No special status for language.</td>
<td>Tight link with cognitive development, Acting (=speaking) drives development</td>
<td>Grammatical knowledge would not exceed conceptual development and would be limited to what can be produced.</td>
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<tr>
<td><strong>Social</strong> (Bruner, 1966)</td>
<td>Communicative intents, Importance of contact, joint interaction</td>
<td>Social needs drive acquisition of grammar Refine production for communicative purposes</td>
<td>Grammar would develop as a function of its communicative use, but not beyond that</td>
</tr>
<tr>
<td><strong>Processing</strong> (Bates &amp; MacWhinney, 1987)</td>
<td>Sensitivity to distribution in input Use of multiple cues to make sense of the input, cues change over time</td>
<td>Production may play a facilitative role rather than being essential for acquisition of grammar</td>
<td>Grammatical knowledge should be acquirable as long as sufficient cues available in the input</td>
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Limitations of Language Acquisition
Theories to Guide AAC

• Developed to account for language learning under typical circumstances.

• The language-learning scenario for a child needing AAC is different from a typical situation in several key ways.
  – Reduced means of expressing language
  – Limited means of initiating and controlling interactions
  – Reduced opportunities to practice for exploring the world and acquiring knowledge

Sutton, Anne (June 2008). Language Acquisition Theory and AAC Intervention, Perspectives on Augmentative And Alternative Communication, 56-61
How Do We Manage The Communication Needs Of Children With Complex Communication Needs?

Models Of AAC Competencies
Types of Communication Interaction

**Expression of wants and needs**
- Goal is to obtain something
- Most AAC devices are initially designed with needs/wants vocabulary

**Information Transfer**
- Share information with others
- Goal is to communicate in detail on a wide variety of topics

**Social Closeness**
- Develop or maintain a relationship through communication
- Extremely important to most AAC users
- Feeling of connectedness to social interactions is felt to be more important than content, speed, and accuracy of message.

**Social Etiquette**
- Politeness
- Reflection of Personality

Defining Communication Competence

**Linguistic**
- Receptive and expressive language skills as well as the ability to use the symbols of a communication system to create messages with complex meanings.

**Operational**
- Technical Skills to operate AAC systems
- Includes the symbol system and hardware

**Social**
- Skills in the social rules of interaction
- Knowledge and judgment needed to initiate, maintain, and terminate interactions.

**Strategic**
- Compensatory strategies that AAC users require to overcome communication breakdowns.

Spontaneous Novel Utterance Generation (SNUG)

- Goal of AAC is interactive communication.
- Successful use of an AAC system can be related to vocabulary organization.
- Emphasized the role of “core” vs. “fringe” vocabulary selection.
- Features of the AAC system will guide the selection process.
Six Points Supporting The Use Of SNUG

• AAC parallels normal language development in that as language develops children begin to apply rules governing sequencing of language’s basic units (i.e. words, word endings, prefixes, etc.)

• Most of the sentences that we formulate have never been used in our lifetime. Therefore, it would be nearly impossible to store messages in advance for the future.

• Pre-stored messages are rarely used in conversations occurring in a natural environment.
Six Points Supporting The Use Of SNUG

- People that rely on AAC clearly indicate that they do not find pre-stored messages useful for what they wish to say.

- Logged language samples of AAC users suggest that high level communicators use pre-stored utterances for less than 2% of output generated.

- Research project by Sue Balandin and Teresa Lacono results indicated that less than 10% of predicted topics were useful to employees in a workshop during breaks.

Katya Hill, Ph.D., CCC-SLP, Achieving Success in AAC: Assessment and Intervention / http://www.aacinstitute.org/, 02/12/2009
How Do We Manage The Communication Needs Of Children With Complex Communication Needs?

Insight Into Best Practices
Building Grammar Skills in Children Who Use AAC

• Looked at an intervention program designed to facilitate the bound morpheme acquisition of three school-aged children who used augmentative and alternative communication (AAC).

• Results indicated that the children quickly began to use the bound morphemes that were taught; however, the morphemes were not maintained until a contrastive approach to intervention was introduced.

Binger, Cathy (June 2008). Grammatical Morpheme Intervention Issues for Students Who Use AAC, Perspectives In Augmentative And Alternative Communication, 62-68
Five Principle of Grammatical Intervention With Children

1. Basic goal of all grammar interventions should be to help children improve use of grammar so they are better communicators in conversation, narration, exposition, and other textual genres in written and oral modalities.

2. The specific goals of grammatical intervention should be based on the child’s functional readiness and need for targeted forms.

3. The social, physical, and linguistic contexts of intervention should be manipulated to provide frequent opportunities for both adult models of and child (misuse) of specific grammatical targets. (Creating a real need will increase response rate and opportunity).

Fey, Marc (June 2008). Thoughts on Grammar Intervention in AAC, Perspectives In Augmentative And Alternative Communication, 43-49
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Determining Grammatical Targets

- Observe the child’s performance in communication contexts.

- Pay attention to the constructions that the child sometimes uses correctly or forms for which the child demonstrates a need but consistently fails to use or use correctly.

- In AAC, we have the additional consideration of whether the communication system is sufficiently efficient to render such targets truly useful for a child.

Fey, Marc (June 2008). Thoughts on Grammar Intervention in AAC, Perspectives In Augmentative And Alternative Communication, 43-49
How Do We Manage The Communication Needs Of Children With Complex Communication Needs?

Innovative Applications Of Theory Into Practice
Tools of the Mind (T.O.M.)
Early Childhood Literacy Project:
Elena Bodrova and Deborah J. Leong

• Based on the theories of Vygotsky
• Focused on Language Skills Involved in Executive Functions
• Goal of intervention is to develop the capacity for directing own behavior

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Executive Functions

• What is Executive Function?
  – Processes involved in making decisions and carrying them out.
  – Capacity behind the transformation of an infant from dependence to independence, conscious control over their own thoughts, actions, and emotions.

• The key here is the ability to use language to direct ones own behavior.
  – May actually be a more significant predictor of academic achievement than IQ or school readiness.

Zelazo, P, Executive Function A series by Philip David Zelazo, Ph.D. from http://aboutkidshealth.ca (9/18/2008)
Development of Executive Function in Infancy and Early Childhood

- **Infant** – Behavior is dependent on events beyond their conscious control (Saliency of stimulus captures attention)

- **Age 8 Months** – Search for hidden objects

- **Age 8-12 months** – A-Not-B Errors (perseveration errors, failure of executive function)

- **Age 2(+) Years** – Able to use language to regulate their own behavior (Development of rule use, executive functions can fail with task complexity

Zelazo, P, Executive Function A series by Philip David Zelazo, Ph.D. from http://aboutkidshealth.ca (9/18/2008)
Executive Functions

- Continue to develop through adolescence and early adulthood

- Difficulty with executive functions common with many developmental disabilities (Autism, ADHD, Deaf, SLI)

- If language skill is crucial in the development of Executive Function, how can an AAC system support the development of executive functions?
Executive Functions Involve:

- Orchestration of the four sub-functions:
  - Representing the problem
  - Devise a plan for solving the problem
  - Carry out that plan
  - Evaluate the adequacy of that plan
Executive Functions

- This orchestration seems to parallel the processes involved in using an AAC system to communicate.
Tools of the Mind (T.O.M.)
Early Childhood Literacy Project:
Elena Bodrova and Deborah J. Leong

T.O.M Teaching Strategies that seem to be amenable to AAC assessment and design practices include:

- Zone of Proximal Development
- Orienting Basis Of An Action
- External Mediators
- Scaffolding
- Private Speech
- Shared Activity
- Play A Key Learning Activity

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Zone of Proximal Development

• The difference between what a child can do with help and what he or she can do without guidance. (Vygotsky 1978)

• Learning activities are structured so that the child functions between the baseline and ceiling of capacity.

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Zone of Proximal Development

- The concept of the ZPD is applicable to development only to the degree in which development might be influenced by learning (Vygotsky, 1978).

- A child does not "have" a ZPD—Rather a ZPD is created whenever children interact with more-capable others in particular activities (Tharp & Gallimore, 1988).

- Behaviors having a strong developmental or maturational component can not be described using the ZPD.
Scaffolding

- Is the process of transitioning from teacher assistance to independence.

- Provides maximum assistance at the beginning stages of learning and then, as the learner’s mastery grows, withdraws the assistance.

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Scaffolding

- Breaking Down Information Into Comprehensible Components
- Modeling
- Coaching
- Providing Feedback
- Appropriating Responsibility For Learning To Learners (Kaufman, 2004)
Scaffolding

- Eventually the assistance of the adult is dropped because the skill is internalized by the child. (Schneider & Watkins, 1996)
External Mediators

- Language-based tools.

- First tools that children use include tangible objects, pictures of the objects, and physical actions that children use to gain control over their own behavior.

- The function of the external mediators is to expand mental capacities such as attention, memory or thinking, and to allow the person who uses the tool to perform at a higher level.

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Orienting Basis Of An Action

• How a learner represents the learning task in terms of the actions he/she will perform in relation to this task.

• In order to learn a new task, the learner’s actions must be driven by the critical attributes of the task; If not, the learner pays attention to non-essential task components.

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Private Speech

• Speech that is audible to an outside person but is not directed to another listener.

• Serves as a carrier of thought.

• Precursor of verbal thinking since it serves as a carrier of thought at the time when most higher mental functions are not fully developed.

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Private Speech

- AAC users don’t have the benefit of using private speech as a tool towards developing higher level meta-cognitive and meta-linguistic skills.
Shared Activity

- According to Vygotsky, partners in shared activity share the very mental processes and categories involved in performing this task.

- This means that the mental processes employed by a teacher or by a more experienced peer tutor should be the same ones as would be eventually appropriated by the learner.

- Shared activities contribute to the development of meta-cognitive skill and abilities.

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Play A Key Learning Activity

• Symbolic or dramatic play is the activity that is most conducive to development in young children.

• Although play may look simple to an observer, it is actually a very complex activity.

• Play activities itself should include imaginary situation, roles and rules.

• Play provides a unique context in which children are motivated to act and at the same time develop the ability to self-regulate their behavior.

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
Play And Play Planning

• A play plan is a description of what the child expects to do during the play period, including the imaginary situation, the roles and the props.

• Helps children first initiate and then sustain an imaginary situation.

• Children can develop their plans orally or dictate to the teacher/facilitator.

• Leads to both improved quality of child play and the level of self-regulation - both cognitive and social.

Bodrova, Elena and Leong, Deborah (2001). Tools Of The Mind: A Case Study Of Implementing The Vygotskian Approach In American Early Childhood And Primary Classrooms, International Bureau Of Education
How do we incorporate competencies, executive functions, and T.O.M. into AAC intervention?

- **Identify Zone of Proximal Development**
  - Develop Cueing Techniques that Scaffold the ZPD
  - Aided Language Stimulation Techniques
  - Contrasting Techniques

- **AAC Representation Method can be considered in terms of External Mediators**
  - Allow users to perform at a higher level, expand mental capacities such as attention, memory/thinking)
How do we incorporate competencies, executive functions, and T.O.M. into AAC intervention?

• Evaluate the orienting bases of the AAC target behavior:
  – Identify features of the task that are not critical to the targeted AAC learning objective.
  – Motor Planning Component
  – Differentiating learning goals that may use AAC strategies, but target outcomes that are considered primary to the communication act.
  – Focus on elements of AAC access, processing and use that are interfering with communication outcomes.
How do we incorporate competencies, executive functions, and T.O.M. into AAC intervention?

• Shared Activities
  - Therapeutic activities that go beyond rote answering of questions and recall of symbol sequences.
    - May even involve having non-disabled peers use AAC techniques and systems in addition to speech.
• Symbolic Play and Planned Play scripting.
  - Imaginary situation
  - Roles
  - Rules
How do we incorporate competencies, executive functions, and T.O.M. into AAC intervention?

• Play Planning seems to be a very natural tool to support the learning needs of the AAC user.

• We can help the user develop a plan that corresponds to therapeutic goals.
  – Motor planning
  – Vocabulary
  – Symbol Sequencing
  – Pragmatic Behaviors
How do we incorporate competencies, executive functions, and T.O.M. into AAC intervention?

• Develop Capacity For Verbal Thought (Self-Talk)
  – Aided Language Stimulation
  – Treat Language Disorders

• Ensure that AAC displays use symbols and symbol sequences from the start.

• Build Grammar based on functional readiness using conventional language models.
Case Studies