Session Objectives

- Learn how to apply your knowledge of language development and assessment to the design and fabrication of communication displays
- Name at least two language tests/procedures that can be used to assess the cognitive-language performance of users of AAC systems
- Discuss the impact of a language disorder on the development of aided syntactic and pragmatic goals

AAC Language Intervention Goals

- Communicative intent
- Semantic or vocabulary acquisition
- Symbolic development
- Communicative functions
- Pragmatic rules of discourse
- Development of syntax (grammar)
- Translating language knowledge to comprehending and producing text
**Essence of Effective AAC Intervention**

- Establishing appropriate intervention goals based upon the augmented communicator’s age and language abilities
- Selecting and organizing a “vocabulary set” appropriately matched to the user’s language abilities and communication goals
- Integrating use of the AAC system (i.e., enabling communication) in functional and meaningful activities

**Requisites for Facilitating Language Development in AAC**

- Understanding the normal language acquisition process
- Implementing the appropriate intervention strategies and tools for augmented communicators

**The Preintentional Child (Birth - 8 months)**

- **Patterns of Performance**
  - Demonstrates little evidence of goal-oriented actions
  - Does not carry-out intentional communication
The Intentional Child (8-12 months)

- Patterns of Performance
  - Does not yet use words
  - Acts on new objects in rapid succession
  - Can imitate on-going actions
  - Begins to engage in joint attention

The Sensorimotor Child Stage 5 - (12-18 Months)

- Patterns of Performance
  - Uses communicative gestures with stereotyped vocalizations
  - Requests objects, attention, or object removal
  - Understands words when referents are present
  - Acquired 10-30 words
  - Unable to bring an object or action to mind on the basis of a symbol or label

Representational Thought Stage 6 - (18-24 months)

- Patterns of Performance
  - Understands words when referents are NOT present
  - Understands action words out of routines
  - Carries out 2-word conversations
  - Begins to understand questions
Stages of Syntactic and Morphologic Development

- MLU can serve as a predictor of the complexity of language of the young English-speaking child.
- MLU
  - relates to age,
  - is reliable,
  - is a good predictor of language development (i.e., utterance complexity - up to an MLU of 4.0)
  - may increase by 1.2 morphemes per year from 18 mos - 5 years

Brown’s Stage 1
(15-30 months)

- Sentence Length 1.75 morphemes
- 50-60 word vocabulary
- Operations of Reference
  - Nomination
  - Recurrence
  - Negation - denial, rejection, non-existence
- Semantic Relations
  - Agent+Actor;
  - Action +Object;
  - Agent+Object;
  - Action +Locative;
  - Entity + Locative;
  - Possessor + Possession;
  - Entity+Attributive; Demonstrative+Entity

Early Preoperational - Brown’s Stage II
(28 - 36 months)

- Patterns of Performance (MLU - 2.0 -2.5)
  - Begins to use grammatical morphemes
    - -ing without is
    - prepositions “in and on”
    - plurals “s” and “s”
  - Uses 3-4 words declarative sentences
  - Uses negatives
  - Forms interrogatives with rising intonation; “Wh” questions
  - Uses imperatives - “Give me.” “I want!”
Brown’s Stage III
(36-42 months)

- Patterns of Performance (MLU - 2.5-3.0)
  - Uses the grammatical morphemes for
    - Irregular past tense
    - Possessive
    - Immediate future “gonna”
    - Uncontractible copula (Is she coming?)

Brown’s Stage IV
(40-46 months)

- Patterns of Performance (MLU - 3.0-3.7)
  - Articles
  - Regular past tense (ed)
  - 3rd person regular present tense
  - Uses well-formed negatives
  - Uses tag questions, who, why

Brown’s Stage V –
(42 - 52+ months)

- Patterns of Performance - (MLU - 3.7-4.5)
  - Articles
  - Coordination of sentences
    - When, before, after, but, because
  - Uses the grammatical morphemes for
    - 3rd person singular
    - 3rd person irregular (she has, she does)
  - Uses contracted “she’s” and uncontracted “are”
  - Contractible auxiliary (they’re)
  - Uses the modal verbs “could” and “would”
  - Forms questions using how and when
... and along comes a child needing AAC

• Some of you may
  • ... panic
  • ... forget everything you learned about language development and disorders
  • ... have an App for that
  • ... focus on Core Words
  • ... use Aided-Language Stimulation

IF the Student is succeeding ...

Now It’s Party Time!

IF the student is struggling ...

• Is it the device or App?
• Is it the vocabulary?
• Is it a mismatch between the student’s abilities and goals?
  • O’Neill, K. & McCarthy, R. Pitfalls of Presumptions. The ASHA Leader, 1, December, 2018
• Is it the lack of appropriate LANGUAGE intervention?
### AAC Intervention Strategies

**The Preintentional Child – (Birth - 8 months)**

- **Skills**
  - Demonstrates little evidence of goal-oriented actions
  - Does not carry out intentional communication

- **AAC Strategies**
  - Use symbols that are common objects
  - Facilitate child-caregiver interaction
  - Create opportunities for the child to develop social bonds
  - Use gestures when interacting
  - Teach signs/symbols in meaningful repeated routines

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### AAC Intervention Strategies

**The Intentional Child - (8-12 months)**

- **Skills**
  - Does not yet use words
  - Acts on new objects in rapid succession
  - Can imitate ongoing actions
  - Begins to engage in joint attention

- **AAC Strategies**
  - Use signs, objects and spoken words in “play” (i.e., functional and meaningful) routines
  - Focus on communicative interactions
  - Encourage joint attention in activities

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### AAC Intervention Strategies

**Sensorimotor Child - Stage - 5**

(12-18 Months)

- **Skills**
  - Uses communicative gestures with stereotyped vocalizations
  - Requests objects, attention, or object removal
  - Understands words when referents are present
  - Acquired 10-30 words
  - Unable to bring an object or action to mind on the basis of a symbol or label

- **AAC Strategies**
  - Facilitate comprehension and use of objects and/or signs
  - Use pictures (e.g., symbols) to enhance comprehension (Aided Language Stimulation)
  - Provide opportunities to express “Want”; “Look!”; “Don’t want!”
  - Intervention must focus on referents that are present
AAC Device Considerations ... (Part 2)
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AAC Intervention Strategies
Representational Thought - (18-24 months)

- **Skills**
  - Understands words when referents are NOT present
  - Understands action words out of routines
  - Carries out 2-word conversations
  - Begins to understand questions

- **AAC Strategies**
  - Use pictures or other symbols (e.g., objects, signs, gestures) to enhance comprehension
  - Use pictures/objects to evoke absent objects
  - Teach a symbolic means for referencing objects - symbol, sign, pointing, looking
  - Stimulate the use of actions, requests, responses to Ts, single words in succession
  - Model and stimulate pivot word utterances (Aided Language Stimulation)
  - Use symbols communicatively throughout the course of daily activities, routines and play.

AAC Intervention Strategies
Brown's Stage I - (MLU 1.5 - 2.0)

- Communication displays to include words across grammatical categories enabling expression of:
  - Operations of Reference
    - Nomination
    - Recurrence (more)
    - Negation - denial, rejection, non-existence (no, don’t)
  - Semantic Relations
    - Agent + Action;
    - Action + Object;
    - Agent + Object;
    - Action + Locative;
    - Entity + Locative;
    - Possessor + Possession;
    - Entity + Attributive;

AAC Intervention Strategies
Early Preoperational - Brown's Stage II - (MLU 2.0 - 3.5)

- Communication displays to include:
  - grammatical morphemes (ing, s)
  - core word vocabulary
  - question words
  - negatives
  - Use symbols communicatively throughout the course of daily activities, routines and play.
  - Aided Language Stimulation, Modeling
### AAC Intervention Strategies

**Brown’s Stage III**  
(MLU 1.5-3.0)

- Communication displays expanded to include:
  - irregular past tense
  - possessives
  - Use of the copula (is, are, etc)
  - question words - who and why
  - negatives
  - Facilitate use of AAC system in multiple environments within a range of activities.
  - Aided Language Stimulation, Modeling

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**AAC Intervention Strategies**  
**Brown’s Stage IV –**  
(MLU 3.0-3.7)

- Communication displays expanded to include:
  - Articles
  - Regular past tense (-ed)
  - 3rd person regular present tense
  - Questions words - who, why
  - Use AAC system in a range of spoken and written communication activities.

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**AAC Intervention Strategies**  
**Brown’s Stage V –**  
(MLU 3.7-4.5)

- Communication displays expanded to include:
  - Third person irregular (does, has, etc.)
  - Contractions (if high tech device is used)
  - Modal verbs - could and would
  - Question words - how and when
  - Use AAC system in a range of spoken and written communication activities.
Assessing Language Performance

... a means of guiding selection of appropriate goals and intervention strategies ...

Assessing Language Performance

- Can use “Formal” or informal measures
- Testing enables ...
  - Develop a comparative index of children’s strengths and weaknesses
    - If tests are reliable, the examiner can have confidence in the results
    - If tests are valid, the examiner will know what abilities are being evaluated
  - Determine children’s competencies ⇒ functional performance level(s) in order to establish appropriate intervention goals
  - Design/select an appropriate AAC system
  - Document progress and/or outcomes

Standardized Language Assessment Measures

- Receptive Vocabulary (PPVT)
  - Requires Picture Recognition
- Test of Auditory Comprehension of Language (TACL)
  - Requires Picture Recognition
- Preschool Language Scale (PLS)
  - Requires Object and Picture Recognition
- Test of Language Development (TOLD-)
  - Requires Picture Recognition
Receptive Vocabulary PPVT

- "... an individually administered, untimed, norm-referenced, wide-range test ... of receptive vocabulary.
- Results (raw scores) can be converted to the following age-referenced normative scores: SS, %ile, age equivalents.
- Select from a field of 4 - Use optimal response mode (e.g., pointing, eye-gaze, yes/no)
- Reliable measure for persons w/ CP using yes/no.
- Provide deviation and developmental types of norms.
- PPVT-III & WISC are highly correlated - (the Verbal IQ correlation is slightly higher than Performance and Full Scale IQ correlations).

Test of Auditory Comprehension of Language

- Designed to test understanding of the structure of spoken language.
- Grammatical Morphemes (i.e., prepositions, noun number, verbs, auxiliary, adjectives, and adverbs)
- Norms 3-0 through 9-11
- Provides age-referenced norms - SS, %ile, age equivalent (language ages)
- Easily adapted for children w/ physical disabilities
- Select from a field of 3 - Use optimal response mode (e.g., pointing, eye-gaze, yes/no)
- No information about whether or not it correlates w/ PPVT or WISC.

Preschool Language Scale

- Measures children’s receptive and expressive language performance.
- “Useful tool for severely involved children”
- Expressive test asks children to name objects, use concepts that describe objects and express quantity, use specific prepositions, grammatical markers and sentence structure.
- Norms Birth through 6 years 11 months
  - Total Language, Auditory Comprehension, Expressive Communication, SS, %ile, Language Age Equivalents
- Information from PLS can be used for a portfolio assessment.
Preschool Language Scale

- Receptive
  - Use optimal response mode (e.g., pointing, eye-gaze, yes/no)

- Expressive
  - Use multi-modal approaches for responses (e.g., speech, gestures)
  - Aided AAC device or language board as alternative
    (Must be familiar with vocabulary contents and organization)

PLS- (Required vocabulary - 29 Months)

TOLD - Primary

- The Test of Language Development-Primary: Fourth Edition can be used to:
  - (1) identify children who are significantly below their peers in oral language proficiency,
  - (2) determine specific strengths and weaknesses in oral language skills,
  - (3) document progress in remedial programs,
TOLP-Primary

- Picture Vocabulary – Measures a child’s understanding of spoken English.
- Relational Vocabulary – Measures a child’s understanding and ability to orally express relationships between two spoken stimulus words.
- Oral Vocabulary – Measures a child’s ability to give oral directions to common English words spoken by the examiner.
- Syntactic Understanding – Measures a child’s ability to comprehend the meaning of sentences.
- Sentence imitation – Measures a child’s ability to imitate English sentences.
- Morphological Completion – Measures a child’s ability to recognize, understand, and use common English morphological forms.
- Word Analysis – Measures a child’s ability to segment words into smaller phonemic units.
- Word Discrimination – Measures a child’s ability to recognize the differences in significant speech sounds.
- Word Articulation – Measures a child’s ability to utter important English speech sounds.

Basic Goal of Language Intervention

- “... to facilitate communication functioning and to minimize the existing or potential social, behavioral, and academic penalties associated with children’s language deficits.”
- (Fey et al., 1995)

Basic Goals Underlying AAC Intervention

<table>
<thead>
<tr>
<th>Communication</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation within the classroom</td>
<td>Achieving core competencies</td>
</tr>
<tr>
<td>Functional use of preprogrammed messages, scripts</td>
<td>Words and word-morphology features enable self-generated messages</td>
</tr>
<tr>
<td>Pragmatic competence</td>
<td>Grammatical competence</td>
</tr>
<tr>
<td></td>
<td>Pragmatic competence</td>
</tr>
</tbody>
</table>
5 Principles of Grammatic Intervention for Children with AAC

- Principle 1:
  - The basic goal of all grammar interventions should be to help children improve in the use of grammar so they become better communicators in conversation, narration, exposition, and other textual genres in written and oral modalities.

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

(Frey et al., 2009)

5 Principles of Grammatic Intervention for Children with AAC

- Principle 3:
  - The social, physical, and linguistic contexts of intervention should be manipulated to provide frequent opportunities for both adult models of and child (mis-)use of specific grammatical targets.

- Principle 4:
  - Immature child utterances should be systematically contrasted with more grammatically complete adult forms, using sentence recasts.

(Frey et al., 2009)

5 Principles of Grammatic Intervention for Children with AAC

- Principle 5:
  - Telegraphic models should be avoided and replaced by grammatical models in well-formed phrases and sentences.

(Frey et al., 2009)
Why Are These Intervention Principles Important?

- Many users of AAC systems do not demonstrate "mature" syntactical performance
- Language and literacy are related
- Academic "success" is predicated upon language and literacy performance
- We must determine for whom, and when, syntactical competency should be an intervention goal?
- Inappropriate goals can lead to negative outcomes

AAC Intervention Issues

- Considerations affecting language development in AAC
  - Acquisition of aided language may both differ and share qualities with typical language development
  - Linguistic
  - Communicative
  - Cognitive processes
- "Planned" vs. "Natural" course (i.e., environment dependent)
  - Possible constraints on intervention - thereby acquisition - caused by prejudices and inappropriate understanding of development

"Variables Associated with the Planned Course"

- Adults decide when they provide the child access to higher communication system.
- Opportunities for communication may be reduced,
- Adults who design their systems select the child’s lexicon,
- Communication displays may or may not include words across all grammatical classes and they also may or may not include grammatical morphemes.
- Children dependent upon graphic symbols as their mode of communication have few, if any, models for learning to develop language through use of an aided language system.
## Issues Effecting Acquisition of Language

- **Language Development**
  - Normal
    - Development follows a predictable course
  - Delayed
    - Develops skills according to this predictable course, but at a slower rate
  - Disordered
    - An impairment in comprehension and/or use of spoken, written and/or other symbol system that may involve the form, content and/or function in any combination