AAC intervention to build language and literacy skills with children with complex communication needs

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RERC on AAC

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Development of language & literacy skills

- During the first 5 years of life, children with typical development make a remarkable transition
  - from birth where they are
    - preintentional and presymbolic
  - to the school years where they
    - express a wide range of intents
    - know thousands of vocabulary concepts
    - generate complex sentences to communicate ideas
    - acquire conventional literacy skills to read & write
- This language & literacy development is essential to their development of communicative competence

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How do we promote the "magic" of language development for children with complex communication needs?

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Components of AAC intervention

✓Set appropriate goals
✓Provide appropriate AAC supports
✓Provide numerous opportunities for communication
✓Model AAC
✓Wait
✓Respond to all communicative attempts

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Stages of language development (Beukelman & Light, 2020)

- Children who are presymbolic
- Children who are developing symbolic communication
  - "First words" stage
- Children who are combining symbols to communicate more complex messages
- Children who are learning literacy skills to increase generative capacity

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It is never too early to start intervention

It is never too late to start

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AAC intervention for children who are presymbolic

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Children who are presymbolic: Characteristics

- In typical development, the presymbolic stage occurs between
  - 8-9 months when intentionality emerges and
  - 12 months when first words emerge.
- Children who are presymbolic initially learn to communicate to
  - Express needs and wants /regulate the behavior of others
    - Focus is on the object or activity
  - Interact socially / develop social closeness
    - Focus is on the communication partner
- Later children learn to coordinate their focus to the communication partner & shared activities
  - Demonstrate joint attention / foundation for information sharing

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Children who are presymbolic: Characteristics

- Children who are presymbolic do not yet use spoken words, signs, or aided AAC symbols
- They are tied to the immediate context
  - Initially they use contact gestures
    - Reaching for, pushing away, showing off
  - Gradually they learn to point
    - Marks early transition to symbolic communication
  - They also learn to use early representational gestures
    - Holding up their arms to be picked up
    - Miming drinking from a cup or eating

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Provide intervention in natural contexts

- Since individuals who are presymbolic are context bound
  - Provide intervention in the natural environment
  - Include familiar communication partners
    - Parents and siblings
    - Teachers, aides, etc
    - Job coaches, etc.
  - Extend intervention throughout the day
    - Increase opportunities for learning

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Goals for children who are presymbolic

- Develop clear **signals to express needs and wants** / regulate the behavior of others
  - *Focus is on the object or activity
  - Signals may include contact gestures, pointing, representational gestures
  - Sequence of goals
    - Accept or reject a single object /activity
    - Communicate a choice between two objects or activities
    - Initiate a request for an object or activity

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Establish early signals

- Work with OT/ PT to establish viable signals
- Early signals may include
  - Contact gestures
    - E.g., reaching for, pushing away
  - Pointing
    - E.g., open hand, pointer finger
  - Representational gestures
    - E.g., Pretending to drink, holding arms up
  - Facial expressions
    - E.g., smile, frown
  - Eye pointing
    - E.g., extended gaze to object, three point eye gaze (partner-object-partner)

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Develop signal dictionaries

- Signal dictionaries include
  - Description of the signal
    - Text, photo, and/or video
  - Meaning of the signal
  - Response from the communication partner

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Use video VSD technology to support partners (Light, McNaughton& Caron, 2019)

- Early signals are often difficult for partners to interpret
  - Inconsistent interpretation can impede communication development
- Video VSD technology can be used to support partners in interpreting signals
  - Quick capture of photos or videos of child producing signals
  - Quick addition of hotspots with speech and/or text output to define meaning

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Effects of video VSDs on partners (Holyfield, Light, Drager, McNaughton, & Gormley, 2018)

- Research question
  - What is the effect of video VSD technology on the interpretation of the presymbolic signals of students with multiple disabilities by their middle school peers?
- Prior to training, peers had difficulty interpreting presymbolic signals
  - <33% of signals interpreted accurately
- Video VSD technology used to capture presymbolic signals of 3 students with multiple disabilities
  - Programmed with hotspots to support consistent interpretation
  - Peers completed 15 min training with video VSD technology
- After training, peers in experimental group showed substantial increases in accuracy interpreting signals
  - 86% of signals interpreted accurately compared to 28% in control group

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There is more to life than cookies

Do not just focus on requests for objects or activities

Also build social interactions

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Goals for children who are presymbolic

- **Take turns consistently in familiar routine social interactions**
  - *Focus is on the communication partner
  - Signals may include contact gestures, representational gestures, facial expressions
  - Sequence of goals
    - Fulfill turn in a repetitive social interaction
      - e.g., peek-a-boo, Row Your Boat, high fives, fist bump
    - Gradually increase length of the interaction
    - Gradually increase range of signals

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Intervention to teach turn taking in social interactions

- ✓Establish routines within familiar motivating activities
- ✓Initiate the interaction
- ✓Pause and wait expectantly
- ✓Watch carefully for a signal
- ✓Respond immediately to the signal
- ✓Continue repeating these steps
  - ✓Gradually increase the length of the interaction
  - ✓Gradually increase the precision of the signal
  - ✓Gradually increase the range of signals

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Case Example: Building social interaction

- Initial turn taking routines
  - Simple repetitive actions
  - Single gross motor response
    - Peek a boo
    - Row row row your boat
    - Tickle games
    - Bye bye
- More complex turn taking routines
  - Twinkle twinkle little star
  - I'm a little teapot

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But what about older children or adults who are beginning communicators?

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Case Example

- Establish routines within familiar motivating activities
  - E.g., music, greetings
- Focus on age appropriate activities
  - Gradually introduce range of age appropriate activities
  - Observe preferences
- Choose appropriate signals

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Case Example

Young adult with multiple disabilities
- 25 years old
- Near drowning as a child
- Loves basketball, especially LeBron James highlights

- Initial turn taking routines
  - Age appropriate
  - Simple repetitive actions
  - Single gross motor response
    - High five, fist bump, dabbinb
- More complex turn taking routines
  - Age appropriate
  - LeBron James highlight videos
    - Pause at key junctures
    - Wait expectantly for Hassan to signal
    - Respond immediately
    - Gradually build representational gestures

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Goals for children who are presymbolic

- Children first learn to
  - **Take turns in social interactions**
    - focus on their communication partner
  - **Make requests / regulate behavior**
    - Focus on object or activity
- Then they develop **joint attention**
  - *Requires coordination between communication partner and object or activity
  - Joint attention is critical to language development
    - Share the focus of attention with partner
    - Make the link between the referent and spoken word, sign, or symbol

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Intervention to teach joint attention

✓Involve familiar partner and motivating activity
✓Initially partner should hold object or activity close to face
  ✓Minimize joint attention demands
✓Use speech, sound effects, movement, or pointing to capture the attention of the child
  ✓First to the communication partner
  ✓Then to the shared activity
✓Comment on the activity using speech + AAC
✓Wait
✓Respond to communicative attempts
✓Gradually move the object or activity further away
✓Gradually fade prompts as appropriate

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Minimize the joint attention demands

Child

Partner

AAC supports infused with activity

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Start by targeting presymbolic modes
e.g., contact gestures
pointing
representational gestures

Gradually introduce symbols within familiar activities
signs
aided AAC

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Case Example

- Consistently makes choices between two objects or activities
- Gradually introduce AAC symbols onto familiar interactions
  - Explicitly map symbols to actual objects
- Fade objects as symbols are learned

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Start by teaching skills to request objects /activities
AND
take turns in social interactions

Then teach **joint attention**

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AAC intervention for children who are early symbolic communicators

Learning "first words"

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Children who are early symbolic communicators: Characteristics

- In typical development, children transition from presymbolic to symbolic communication gradually
  - Approximately 12 months (range from 10-14 months)
- First words
  - Learned in the context of their immediate interactions
  - Reflect people, objects, and activities in their environment
  - Highly personalized
    - No common set of "core" words that emerge across all children
    - Early vocabularies vary across children depending on interests, experiences, partners, & environments

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First words of children with typical development

- Early vocabularies reflect meaningful experiences in their immediate environment
  - Concepts that capture child's attention /interest
  - Often **animate** (e.g., people, animals)
  - Things that **move or make noise**
- Early vocabulary
  - 60-65% are nouns (e.g., people, toys, animals, vehicles, places, etc.)
  - 14-19% are action words
  - Also modifiers
  - Person-social words (e.g., bye-bye, peek-a-boo)
- Early vocabularies
  - Predominantly content words
  - Only a very small number of function words (0-4%)

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Process of vocabulary learning

- Initially children learn first words slowly
- Then vocabulary learning increases rapidly
- By age 5, children have expressive vocabulary of more than 2,000 words

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Goals for children who are early symbolic communicators

- Build a robust vocabulary
  - Provide access to **power of communication**
    - Request objects and activities of interest
    - Participate in motivating social routines
    - Comment and ask questions
  - Provide a **foundation for language development**
    - Numerous concepts
    - Wide range of semantic relations

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How do we build a robust vocabulary with early symbolic communicators?

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Project Core vocabulary

Only 3 words acquired by 20 months (highlighted in red)
Majority not acquired by 24 months

- all
- can
- different
- do
- finished
- get
- go
- good
- he
- help
- here
- I
- in
- it
- like
- look
- make
- more
- not
- on
- open
- put
- same
- some
- she
- stop
- that
- turn
- up
- want
- what
- when
- where
- who
- why
- you

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Limitations of core vocabulary
(Laubscher & Light, 2020)

- "Core vocabulary" is **not** developmentally appropriate for beginning communicators
  - Does **not** reflect early vocabulary learning processes
  - Does **not** include high interest, salient, personalized concepts
    - Confuses frequency of occurrence with importance
  - Does **not** support meaningful communication for a range of functions
  - Does **not** support early semantic-syntactic development
  - Is **not** responsive to child's needs & interests
    - Is adult-directed rather than child responsive
  - Instruction is often displaced from meaningful context

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Case example: Building a robust vocabulary to support language development

- 17 months old
- Down syndrome
- Lives at home with parents & 2 older siblings
- Attends day care with peers with typical development
- Loves animals & books (especially *Pete the Cat*)
- Not yet walking; loves to "dance"
- No spoken words
- Pointing to people, objects, activities
- 2-3 early representational gestures

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Intervention to build a robust vocabulary that supports generative communication

- ✓Introduce new concepts in the context of familiar motivating daily activities
- ✓Respond to child's interest
  - ✓Observe child's interests
  - ✓Respond to these interests
    - ✓ Introduce AAC symbols in response to these interests
    - ✓ Explicitly link symbol to referent
  - ✓Focus on people, activities, objects, actions, places, descriptors, people-social words that occur in daily interactions
  - ✓Empower child to be actively involved in vocabulary selection
    - ✓ Provide vocabulary just-in-time

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First words (17-21 months old)

- all gone
- baa
- baby
- bear
- bird
- boom
- bye bye
- cat
- clap
- dance
- dog
- drink
- duck
- eat
- "Ella"
- eye
- fall down
- fish
- fly
- frog
- funny
- grrr
- hair
- horse
- jump
- mama
- meow
- Miss Tara (teacher)
- monkey
- mouth
- no
- nose
- peek-a-boo
- that
- there
- tickle
- toes
- tummy
- strawberries
- shoes
- uh oh
- up
- vroom vroom
- wet
- wheels
- where
- wow
- woof woof
- yucky

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Ella's first words (17-21 months old)

*Project Core vocabulary highlighted

Core vocabulary would allow her to communicate only 6% of messages

- all gone
- baa
- baby
- bear
- bird
- boom
- bye bye
- cat
- clap
- dada
- dance
- dog
- drink
- duck
- eat
- "Ella"
- eye
- fall down
- fish
- fly
- frog
- funny
- grrr
- hair
- horse
- jump
- mama
- meow
- Miss Tara (teacher)
- monkey
- mouth
- no
- nose
- peek-a-boo
- [redacted]
- there
- tickle
- toes
- tummy
- strawberries
- shoes
- uh oh
- [redacted]
- vroom vroom
- wet
- wheels
- [redacted]
- wow
- woof woof
- yucky

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Ella's first words

- In contrast to "core vocabulary", Ella's first words
  - Focus on her personal interests in the environment
  - Reflect early vocabulary learning processes
  - Include high interest, salient, personalized concepts
  - Support meaningful communication for a range of functions
    - Not just requesting objects and activities
    - But also commenting & sharing
    - Participating in social interactions
  - Include a range of semantic concepts
  - Support early semantic-syntactic development
  - Were learned in the context of her daily interactions

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How do we determine appropriate vocabulary for beginning communicators with complex communication needs?

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Developmentally appropriate vocabulary selection tools

- **MacArthur Bates Communication Development Inventories (CDI)** (Fensen et al.)
  - Parent report instruments that documents early vocabulary comprehension & expression
  - Focus on vocabulary development from 8-36 months
  - Organized by categories
    - Sound effects, animals, vehicles, toys, food, people, places, action words, descriptors, questions, outside things, games, routines, etc.
  - Reflect range of semantic roles
  - Adapted to 100 languages
  - Word bank of developmental norms

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Ella's first words (17-21 months old)

*Words from the MacArthur Bates CDI highlighted
By 24 months in typical development

- all gone
- baa
- baby
- bear
- bird
- boom
- bye bye
- cat
- clap
- dance
- dog
- drink
- duck
- eat
- "Ella"
- eye
- fall down
- fish
- fly
- frog
- funny
- grrr
- hair
- horse
- jump
- mommy
- meow
- Miss Tara (teacher)
- monkey
- mouth
- no
- nose
- peek-a-boo
- that
- there
- tickle
- toes
- tummy
- strawberries
- Shoes
- uh oh
- up
- vroom vroom
- wet
- wheels
- where
- wow
- woof woof
- yucky

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AAC supports for early symbolic communicators

- Introduce developmentally appropriate vocabulary
- Incorporate existing modes
  - Vocalizations/ speech approximations
  - Facial expressions
- Introduce
  - Representational gestures / signs
  - Photos
  - AAC technology
    - Personalized photo VSDs & video VSDs of motivating and meaningful activities

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Visual scene displays (VSDs)
Video VSDs
(Light, McNaughton & Caron, 2019)

- Take photo or video of meaningful activities
- Add vocabulary as "hot spots" in VSD
- Language is presented in meaningful context in which learned
- Scene processed as an integrated unit
  - Preserves functional relationships
  - Maintains spatial relationships
- Meaning is derived from the entire scene

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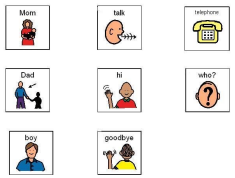
Traditional AAC displays

Traditional grid layout

- Each language concept is represented by separate AAC symbol organized in rows & columns
- Language is taken out of context
- Understanding symbols often relies on semantic memory
- Each representation must be processed separately, understood, & then integrated

Grid for "playing telephone"



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Visual scene displays (VSDs)
Video VSDs

- Especially effective for beginning communicators at the early stages of language development
  - Drive visual attention to the central concepts
    - People and activities /actions
  - These are the concepts /vocabulary that are acquired first

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Factors to consider when designing VSDs & video VSDs
(Light, Wilkinson, Thiessen, Beukelman, & Fager, 2019)

- Design principles
  - Use personalized photos or videos
  - Capture meaningful & motivating life events
  - Include people & shared activities
    - These are the concepts that are acquired early on by beginning communicators
- Well designed VSDs facilitate
  - visual cognitive processing
  - comprehension
  - language learning
  - communication performance

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Intervention to build a robust vocabulary that supports generative communication

- ✓Introduce new concepts in the context of familiar motivating activities
- ✓Respond to child's interests
- ✓Use appropriate AAC supports / representations
  - ✓Always model spoken words
  - ✓Model AAC
    - ✓signs and/or
    - ✓aided AAC
- ✓Wait to provide the child with time to communicate
- ✓Respond contingently to all communication attempts
  - ✓Expand

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Case example

- 9 month old girl
- Down Syndrome
- Lives at home with mom & dad, 3 older siblings
- Some vocalizations ; no functional speech
- Very low tone
- Loves animals
- Loves the book, *Brown Bear*

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Model AAC + speech
(O'Neill, Light, & Pope, 2018)

- Children learn language by seeing and hearing others communicate
  - Children with typical development see and hear hundreds of thousands of models before say their first words
- Children who rely on AAC also benefit from models of AAC
  - Very large effect on expressive communication
    - Pragmatic
    - Semantic
    - Morphosyntactic
  - Large effect on comprehension
- Be careful to continue to provide a rich language learning environment that is developmentally appropriate

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"Just in time" programming of vocabulary
(Holyfield, Drager, Light & Caron, 2017; Holyfield, Caron, & Light, 2019)

- Language learning occurs in context of daily activities
  - Provide new vocabulary on the fly in response to child's needs & interests
- JIT programming
  - Increases partner responsivity
  - Empowers children to be involved in vocabulary selection
  - Decreases programming demands for partners

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AAC technology with just-in-time (JIT) programming

- Allows quick & easy import of photos & videos
  - Using onboard camera or cell phone with Bluetooth connection
- Allows quick & easy addition of hotspots and programming of vocabulary
  - Drawing of hotspots with finger or stylus
  - Recording of speech output
- Provides simple programming controls easily understood & used by young children

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With just in time programming, vocabulary development is part of, not separate from, daily interactions

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Goals for children who are early symbolic communicators

- Build a robust vocabulary
  - Provide access to power of communication
  - Provide a foundation for future language development
- Extend pragmatic development
  - Increase skills to express a range of communicative functions
    - Initiate requests for objects and activities
    - Comment on activities
    - Ask questions
- Support expression of early semantic relations / combinations

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Intervention to support early symbolic communicators

- ✓Introduce new concepts in the context of familiar motivating activities
- ✓Respond to child's interests
- ✓Use appropriate AAC supports / representations
  - ✓Always model spoken words
  - ✓Model AAC
    - ✓ signs and/or
    - ✓ aided AAC
- ✓Wait to provide the child with time to communicate
- ✓Respond contingently to all communication attempts
  - ✓Expand

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AAC intervention for children who are developing more complex language

Communicating more complex messages
Learning syntax & morphology
Acquiring literacy skills

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Children who are combining symbols: Characteristics

- In typical development, once children have acquired approximately 50 concepts, they begin to combine concepts to communicate more complex messages
  - Approximately 18-24 months
- Require a sufficiently large & diverse vocabulary to combine concepts generatively
- Express range of semantic relations
  - E.g., agent-action, action-object, action-locative, recurrence-action, descriptor-entity
- Gradually attempt longer messages
  - E.g., agent-action-object
- Gradually add structural words

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Goals for children who are learning to combine symbols

- Continue to build a robust vocabulary
  - Provide access to **generative power of communication**
  - Extend **language development**
  - Promote **cognitive development**
- **Support development of more complex messages**
  - **Early semantic relations**
  - **Longer messages**

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How do we support development of more complex language?

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Case example: Supporting development of more complex language

(Light, Barwise, Gardner, & Flynn, 2021)

- 38 months old upon referral
- Global developmental delay
- Strabismus
- Severe expressive language delay
- Extremely limited speech production
  - 6 consonant sounds; vowels distorted
- Approximately 100 sign approximations
- Communicates in single signs
- Introduced to mobile technology with AAC app (Touch Chat with Word Power & personalized vocabulary)

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Intervention to build more complex language

- ✓Infuse intervention into the context of familiar motivating daily activities
- ✓Model use of early semantic relations
  - ✓Use speech + AAC
- ✓Wait expectantly for the child to communicate a longer message
  - ✓If child communicates a single concept, continue to wait expectantly
- ✓Respond by fulfilling communicative intent
- ✓Expand on the message
  - ✓Model more complex message using speech + AAC

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Examples of early combinations 38-44 months

Early 2 word combinations

- Big boots
- Baby sad
- More pop
- Cold outside
- Fox backpack
- More bubbles
- Read book

More complex messages

- Open please book
- Mom hurt back
- Mom zip coat
- Dad hurt lip
- Fox backpack there
- Molly has a shirt
- Dad has a blue coat
- Molly has black boots

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Examples of early combinations
*Project Core vocabulary highlighted

Early 2 word combinations
- Big boots
- Baby sad
- More pop
- Cold outside
- Fox backpack
- More bubbles
- Read book

More complex messages
- Open please book
- Mom hurt back
- Mom zip coat
- Dad hurt lip
- Fox backpack there
- Molly has a shirt
- Dad has a blue coat
- Molly has black boots

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Core vocabulary does **not** support early semantic-syntactic development

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Examples of early combinations
*Words from MacArthur Bates CDI highlighted

Early 2 word combinations
- Big boots
- Baby sad
- More pop
- Cold outside
- Fox backpack
- More bubbles
- Read book

More complex messages
- Open please book
- Mommy hurt back
- Mommy zip coat
- Daddy hurt lip
- Fox backpack there
- Molly has a shirt
- Daddy has a blue coat

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How do we best support more complex language development?

How do we support the acquisition of syntax & morphology?

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Teach literacy skills

- Literacy skills are critical to support
  - Education, employment, activities of daily living, social interaction, Internet access, etc.
  - Generative communication
- Literacy provides key visual supports that may facilitate
  - Language development
    - Vocabulary
    - Syntax and morphology
  - Speech production
- Literacy skills are highly valued in society
  - Increase perceptions of competence
  - Increase self-esteem

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Goals to increase language and literacy skills 38-40 months

- Language skills
  - Continue to build robust receptive and expressive vocabulary
  - Express early semantic relations / more complex messages
- Literacy skills
  - Build **phonological awareness** skills
    - **Sound blending**
  - Acquire 6-7 **letter sound correspondences**
  - **Recognize by sight a few highly motivating words**
    - In isolation
    - In shared reading

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Intervention to teach literacy skills

- Implement ALL curriculum (Light & McNaughton, 2009)
- Model
  - Instructor demonstrates the skill for the student
- Guided practice
  - Instructor provides scaffolding support /prompts to help the student perform the skill successfully
  - Instructor gradually fades the scaffolding support
- Independent practice
  - Student performs the skill independently
  - Instructor provides feedback
- Provide frequent opportunities to apply skills in meaningful contexts
  - Shared book reading & shared writing activities

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Instruction in sound blending

- Goal
  - The student will blend phonemes presented orally & determine target word
- Task
  - Present 4 or more AAC symbols/ pictures & label orally
  - Say the target word orally with each phoneme extended 1-2 seconds
  - Student must blend the phonemes and
    - point to /select the AAC symbol or
    - say/sign the word

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Teaching letter sounds

- Introduce letter sounds in context of known words
  - Say letter sound and point to letter
  - Stress / elongate initial letter sound of each photo /symbol
  - Say letter sound and point to letter

f

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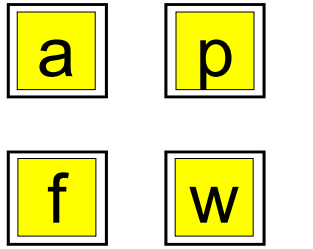
Teaching letter sounds

- Goal
  - The student will match a target phoneme presented orally to the correct letter
- Task
  - Present 4 or more letters
  - Say the target phoneme (sound) e.g., p
  - Student must select the letter that represents the target phoneme
- Alternative task
  - Show the student a letter
  - Student must say the letter sound



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Sight word recognition

- Teach sight word recognition
  - Highly motivating words that are too complex to decode
  - Irregular words that are frequently occurring
- Goal /task
  - Present 4 or more AAC symbols
    - Present the target written word
    - Student must select the correct symbol
  - Present 4 or more written words
    - Say the target sight word
    - Student must select the correct written word

swim	eat
horse	school

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Provide AAC technology to support transition to literacy (Light, McNaughton, & Caron, 2019)

- Often children who require AAC use picture-based AAC systems
  - May not support transition to literacy
- Introduce keyboard early
  - Letter sounds **not** names
  - Highlight known letters
- Introduce transition to literacy (T2L) *sight word* technology
  - Individual selects a picture symbol from the AAC display
    - Supports understanding of the meaning
  - Written text appears on screen using smooth animation to capture attention
    - Supports orthographic processing
  - Word is spoken out
    - Supports phonological processing of the text

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AAC T2L Technology

- Evaluated T2L *sight word* technology in a series of studies
  - 56 children & adults
    - Different ages and disabilities
  - 89% of participants demonstrated significant increases in literacy skills
  - Required only minimal exposure to T2L feature to acquire new sight words
  - Easy to use
- Also require AAC technology supports for **decoding**

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AAC Literacy Decoding Technology

- Individual selects a picture symbol
- Text appears dynamically
  - Motion drives visual attention to text
- Each letter highlighted in turn
  - Luminance drives visual attention to letter
- Letter sound is spoken slowly as letter is highlighted
  - Speech output supports phonological processing
- Evaluation of T2L decoding technology in progress
  - Preliminary results are very promising

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Goals to increase language and literacy skills 40-42 months

- Language skills
  - Continue to build robust receptive and expressive vocabulary
  - Combine concepts to introduce multiword sentences
- Literacy skills
  - Continue to acquire letter sound correspondences
    - Locate letters on keyboard when presented with sounds
  - **Decode words** (i.e., combine letter sound knowledge and sound blending)
    - In isolation
    - In shared reading
  - Continue to build sight word recognition skills
    - Highly motivating more complex words
    - Frequently occurring irregular words

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Teach decoding skills

- Goal
  - The student will decode a written word & match it to the correct AAC symbol /picture or say/sign the word
- Task
  - Present 4 or more AAC symbols/ pictures
  - Present the target written word
  - Student must read the word and
    - select or match the AAC symbol /picture to the target word or
    - say/sign the word

mad

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Shared book reading

- **Goal:** The student will read sight words and/or decode target written words during shared reading activity
- **Task:**
  - Present the written sentence with the target word highlighted
  - Read the sentence out loud and pause at the target word
    - *Student reads the target word and signs/says/points to AAC symbol from an array*

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Goals to increase language and literacy skills 42-44 months

- Language skills
  - Continue to build robust receptive and expressive vocabulary
  - Combine concepts to express a wide range of sentence structures
  - Incorporate function words & morphological structures
  - Tell stories with a beginning, middle, and end
- Literacy skills
  - Decode regular words using full range of letter sounds
  - Continue to build sight word recognition
  - **Read simple stories**
  - Demonstrate comprehension by responding to questions
  - Continue to build keyboard knowledge
  - Demonstrate **phoneme segmentation & early encoding skills**

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Learning early writing /encoding skills

- Let child choose content of stories
- Use photos /pictures to help structure story
- Encourage child to tell the story
- Support child in shared writing
  - Child encodes regular words
    - Letter cards
    - Keyboard
  - Instructor assists with sounding out as required
  - Gradually fades supports

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Outcomes at 3 years 8 months

(Light, Barwise, Gardner & Flynn, 2021)

38 months

- 33% intelligible in context
- 5 turns per min in interactions
- Mean length of utterance = 1.04 (range 1-2)
- Knows letter names, not sounds
- Not yet blending sounds
- Not yet decoding
- Not yet reading books
- Not yet encoding /spelling

44 months

- 95% intelligible in context
- 10+ turns per min in interactions
- Mean length of utterance = 2.00 (range 1-5)
- All letter sounds (170 min of instruction)
- >90% accuracy blending sounds (80 min)
- >90% accuracy decoding (300 min)
- >90% accuracy reading simple books
- >90% locating letters on keyboard
- Encoding with some assistance saying word slowly

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Impact of intervention

- Literacy skills served to
  - Increase learning opportunities substantially
  - Increase receptive and expressive vocabulary
  - Encourage more complex language /discourse skills
  - Enhance development of syntax and morphology
    - Visual supports of sentence structures
    - Visual supports of morphological endings
  - Enhance speech production
    - Knowledge of letter sounds
    - Visual supports of written words
- Will enter school with literacy skills

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Development of language & literacy skills

- During the first 5 years of life, children with typical development make a remarkable transition
  - from birth where they are
    - preintentional and presymbolic
  - to the school years where they
    - express a wide range of intents
    - know thousands of vocabulary concepts
    - generate complex sentences to communicate ideas
    - acquire conventional literacy skills to read & write
- This language & literacy development is essential to their development of communicative competence

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Raise the bar to support children with complex communication needs in developing communicative competence

Build a wide range of communicative functions with children who are presymbolic

Build a robust and diverse vocabulary with early symbolic communicators

Promote more complex language through the development of literacy skills

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- For more information, please visit our websites at
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