Early communication and academic success in children with and without communication disorders

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"I wish to approach truth as closely as is possible, and therefore I abstract everything until I arrive at the fundamental quality of objects."
Fundamental qualities for academic success

• What are some fundamental qualities for academic success?

• Applying modifications for children with communication disorders
Fundamental qualities for academic success

1. Connect letters and sounds
2. Read, read, read!
3. Foster social-emotional skills
1. Connect letters and sounds

• The more babies listen to speech ...

• The more they know how sounds go together in their language
1. Connect letters and sounds

- Phonological awareness
  Knowing the sound structure of words

Phonological awareness reliably predicts later reading abilities.
1. Connect letters and sounds

- Bun
- Gun
- Run
- Fun
- Nun
- Sun

Run the gun to the sun.
Run! Run! Run!
Fun! Fun! Fun!
1. Connect letters and sounds

- Recognizing sounds as same/different

- Syllable completion

“Ra ______”
1. Connect letters and sounds

- Rhyming vs. not rhyming
2. Read, read, read!

- “There is perhaps no single skill more important to overall academic success than the ability to read.”

Nittroer, Caldwell, Lowenstein, Tarr, & Holloman, 2012
Make children’s books available

Make children’s books available

• Number of children’s books in the home predicts later reading scores.

• Children with >10 books at age 2 had significantly higher reading scores.
Read to children often

Read to children often

• Reading to a child regularly at age 2 yields higher reading scores ...

• And also relates to language growth and emergent literacy.
Encourage reading to self
... and to others

- Making connections to the world
- Creating new stories
Let a child see you read

• Set a good example by reading
  – Books, Newspapers, Magazines
3. Foster social-emotional skills

• “Schools are social places and learning is a social process.”

Social-emotional “literacy” is vital to a child’s early school success.
Self-regulation

- Controlling one’s own emotions, especially negative emotions
- Carrying out complex directions
- Finishing specific tasks (*tracing a star*)
Social awareness and relationship skills

- Taking others’ view
- Initiating/maintaining conversations and play
- Taking turns

Social confidence yields an advantage in peer interaction, school adjustment, and academic success.
3. Foster social-emotional skills

- Responsible problem solving

  - Problem solving
  - Improved social behavior
  - Academic success and school adjustment
Fundamental qualities for academic success

1. Connect letters and sounds
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How do these fundamental qualities to academic success change in children with communication disorders?
Communication disorder

• An impairment in the ability to receive, send, process, or comprehend concepts verbally, nonverbally, and graphically.
  – Speech
  – Language
  – Hearing
Speech disorder

• Impairment of the articulation of speech sounds, fluency, and/or voice.

“tat” for “cat”
Speech disorder

• Rules of thumb:
  – 6 mos. – Combines consonants & vowels
  – 12 mos. – Says most consonants
  – 24 mos. – 50% intelligible
  – 36 mos. – 75-100% intelligible
Effect of speech disorders on academic success

• Poorer academic outcomes
  – Reading deficits related to impaired phonological awareness, vocabulary, and word order
  – Math deficits related to impaired storage of information

• Poorer socialization and communication scores

Hall & Segarra, 2007; Shevell, Majnemer, Webster, Platt, & Birnbaum, 2005.
Fundamental qualities for academic success: Speech disorder

1. Connect letters and sounds
2. Read, read, read!
3. Foster social-emotional skills

   Relationship skills

   Self-confidence

   Peer relationships
Language disorder

• Impaired ability to express or understand spoken or written ideas

![Graph showing number of words produced with age in months, with 90th, 75th, and 25th percentiles, and median indicated. The graph has labels for age in months ranging from 12 to 24, and the number of words produced ranging from 0 to 100. The graph includes a line for average production and a note for very broad normal range.]
Language disorder

• Rules of thumb:
  – 12 mos. – Says 1-2 words
  – 18 mos. – Says 15-30 words
  – 24 mos. – Puts together 2 words
  – 36 mos. – Produces 3-word sentences
Effect of language disorders on academic success

• Poorer academic outcomes
  – Reading and learning deficits
  – Class participation

• Lower self-esteem

• Social isolation

Hall & Segarra, 2007; Shevell, Majnemer, Webster, Platt, & Birnbaum, 2005.
Fundamental qualities for academic success: Language disorder

1. Connect letters and sounds
2. Read, read, read!
3. Foster social-emotional skills
Hearing disorder

• Impaired auditory sensitivity
Hearing disorder

• Rules of thumb:
  – 3 mos. – Reacts to loud sounds
  – 6 mos. – Looks toward sound
  – 12 mos. – Understands simple words and commands
  – 18-24 mos. – Points to body parts and pictures when asked
Hearing disorder

Put your fingers in your ears. Listen.

Remove your fingers from your ears.
Hearing disorder

FREQUENCY (Hz)

Mild hearing loss
Moderate-severe hearing loss
Severe-profound hearing loss
Hearing disorder

Severe-profound hearing loss

Cochlear implant
Effect of hearing loss on academic achievement

- Average academic achievement of deaf or hard of hearing students is considerably below that of their hearing peers.
  - Wide variability

Effect of hearing loss on phonological skills

Delayed acquisition of consonants and vowels

Poorer phonological awareness skills

Negative effect on word learning and reading

Briscoe, Bishop, & Norbury, 2001; Spencer & Tomblin, 2008.
Effect of hearing loss on vocabulary development

- Later word onset
- Vocabulary spurt occurs later
- Average or low average performance
- Slower rate of language development

Davis et al., 1981; Geers & Sedey, 2011; Mayne et al., 2000; Moeller, 2000; Moeller et al., 2007.
Effect of hearing loss on reading

- Age 8-9: Read at grade level
- Age 16: ~2 years behind grade level
- Great variability in outcomes
  - From 4.3 years below to 2.6 years above grade level

Average Reading Scores for children with cochlear implants

Archbold et al., 2006; Geers, 2005.
What changed?
• Around 4th grade in the U.S., we stop teaching children how to read.

We shift from
LEARNING TO READ
READING TO LEARN
Effect of hearing loss on social-emotional skills

- May miss subtleties of social language
- May feel:
  - Uncomfortable in social situations
  - Less accepted by hearing peers
  - Less satisfied at school

Moog, et al., 2011; Loy et al., 2010; Warner-Czyz et al., 2009; Warner-Czyz et al., 2011.
Effect of hearing loss on academic success

- Difficulties with phonological skills
- Later- and slower-developing vocabulary skills
- Difficulties with reading
- Social-emotional difficulties

GREAT VARIABILITY IN OUTCOMES!
Which factors make a difference?
Effect of hearing loss on academic success

• GREAT VARIABILITY!
  – Age at identification/intervention
  – Degree of hearing loss

Davis et al., 1981; Geers & Sedey, 2011; Mayne et al., 2000; Moeller, 2000; Moeller et al., 2007.
Age at intervention matters for vocabulary.

Yoshinaga-Itano et al., 1998.
Age at intervention matters for reading, too.

Later intervention (Cochlear implant <5 years)
Earlier intervention (Cochlear implant <3 years)

Average Reading Score

<table>
<thead>
<tr>
<th>Age</th>
<th>NH mean</th>
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<tbody>
<tr>
<td>8</td>
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<tr>
<td>16</td>
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<td>10</td>
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Slide courtesy of Ann Geers.
Early educational intervention positively affects outcomes.

• Especially when occurring at 1-2 years of age.

• Early Childhood Intervention (ECI)
  – Focus on early development (0-3 years)
  – Part of Individuals with Disabilities Education Act (IDEA, P.L. 108-446)

Moog et al., 2010.
Degree of hearing loss affects speech and language outcomes.

- Speech production
- Vocabulary
- Language

Davis et al., 1981; Davis et al., 1986; Sininger et al., 2010.
Which other fundamental qualities affect outcomes?
Facilitators of Academic Success

- High family expectations
- High teacher and school expectations
- Open communication with parents and professionals
- Providing opportunities to develop social skills
- Additional disabilities

Reed, Antia, & Kreimeyer, 2008; Sweeney, personal communication.
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Fundamental qualities for academic success

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2. Read, read, read!
3. Foster social-emotional skills
4. Early identification/ intervention
5. Family involvement
6. Family-school communication
Thank you.