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Current Best Practices in the Evaluation & Management of CAS: A Multidimensional Approach

Guest Editor: Kimberly Farinella, PhD, CCC-SLP

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Part 5: CAS, Reading, and Writing

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CAS, Reading and Writing

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Disclosures

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Objectives

- For children with speech-language impairment, including CAS:
 1. Identify risks for deficits in reading and writing.
 2. Describe the connection between spoken language skills, reading, and writing.
 3. Identify general intervention techniques for children of different ages.

Introduction

- Do SLPs have a role in reading and writing?

YES!

ASHA Position Statement

- “Speech-language pathologists (SLPs) play a critical and direct role in the development of literacy for children and adolescents with communication disorders..... These roles are implemented in collaboration with others who have expertise in the development of written language and vary with settings and experience of those involved..”

1. Risk

- There is a well-established link between speech-language impairment and later literacy/academic difficulties
- There is variability in expression, depending on factors that include
 - Child's age
 - Level of linguistic development
 - Language domain(s) affected

CAS and Risk

(ASHA Practice Portal)

- A child with CAS may be at increased risk for problems in expressive language and weakness in the phonological foundations for literacy (Lewis, Freebairn, Hansen, Iyengar et al., 2004; McNeill, Gillon, & Dodd; 2009a).
- “These problems may reflect the consequences of CAS, nonrelated co-occurring problems (e.g., learning disabilities and attentional difficulties), or even the effects of compensatory strategy use and include:

- delayed language development;
- expressive language problems, like word order confusion and grammatical errors;
- problems when learning to read, spell, and write (literacy)...

(Crary & Anderson, 1991; Davis et al., 1998; Dewey, Roy, Square-Storer, & Hayden (1988); McCabe et al., 1998; Shriberg et al., 1997)

Risk: Reading

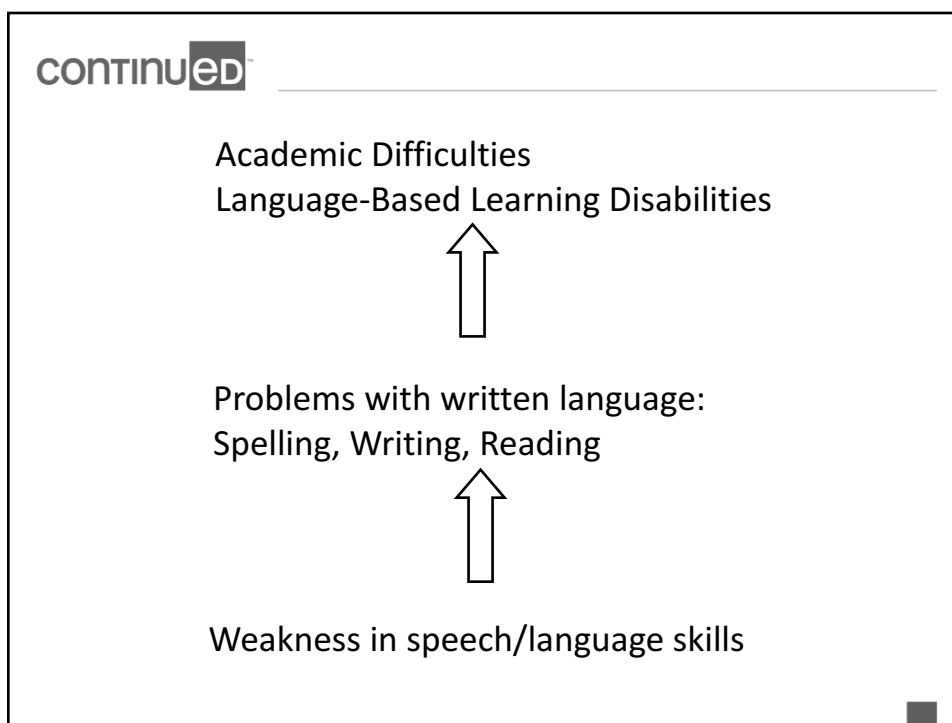
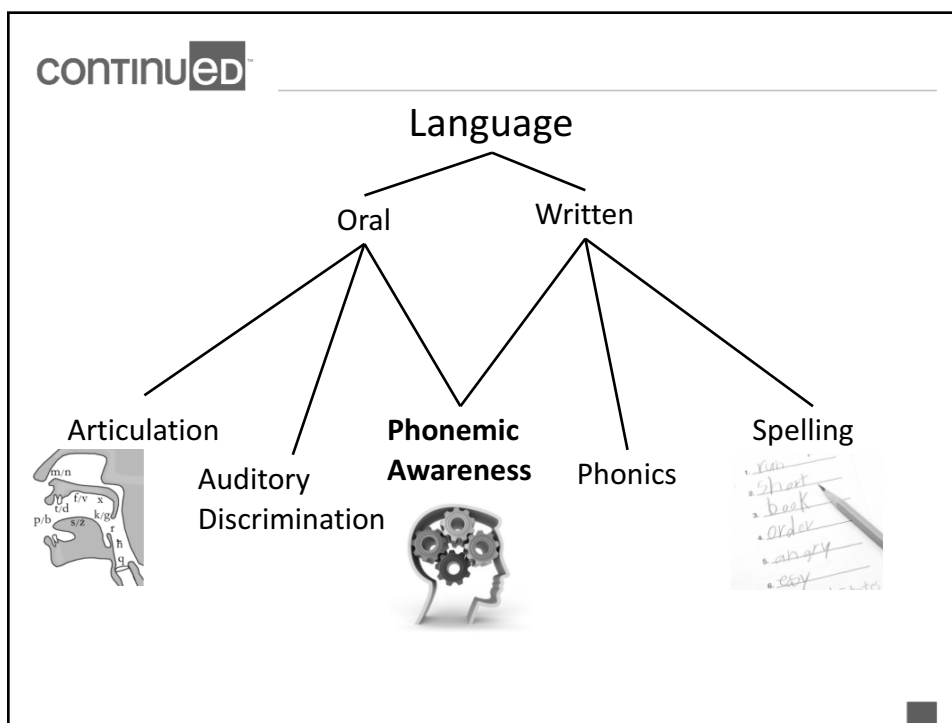
- Weaknesses in representation-related phonological processing may underlie the difficulties in phonological awareness and reading seen in children with SSDs (Anthony, et al, 2011)
- Language skills are necessary, but not sufficient, for reading comprehension (Catts & Nelson, 2017)
- Other environmental and genetic factors may contribute to increased/decreased risk (e.g., Pennington, 2006, Catts, et al., 2017; Hayiou-Thomas, et al, 2017)

Risk: Written Language

- There is a significantly increased risk of Written Language Disorder among children who had an IEP for speech-language impairment compared to children without speech-language impairment
 - The relationship is stronger when Reading Disorder is also present (Stoeckel, et al., 2013)

2. Connections

- Language, both spoken and written, is a system of arbitrary symbols
 - Language impairment is a problem of processing information in the verbal domain
 - Reading and writing impairments reflect processing in the written domain



Connections: Reading

- Reading is a language-based skill that uses visual input as the portal into the language-processing system (Catts & Kamhi, 1999; Snowling & Stackhouse, 1996)
- Meaning is conveyed through viewing abstract symbols (letters and visual characters)
- Skills include:
 1. Decoding
 2. Comprehension
 3. Fluency

1) Decoding

- the ability to read words by translating written symbols into the sounds of spoken language.
- A child may be able to decode well without comprehension
- For a child with CAS, it may be difficult to assess decoding due to speech production issues

2) Comprehension

- understanding and interpretation of what is read.
- this involves both
 - decoding, and
 - making connections between what is read and knowledge/experience
- The language issues associated with CAS for some children may influence comprehension

3) Fluency

- ability to read a text quickly and accurately
 - decoding plus sight word identification
- the bridge between word recognition and comprehension
- children with CAS may have difficulty with speeded tasks, including fluency, due to motor speech

Connections: Writing

- Meaning is conveyed via production of abstract symbols (letters or characters). This includes:
 - Encoding (spelling)
 - Process
 - Formulating, editing, awareness of audience and purpose
 - Product
 - Word choice, grammar, text level structure

For children with CAS, writing skills can be influenced by both fine motor issues (fine motor for writing/physical process) and language (cognitive process/product)

Connections for Children with CAS

**Phonological
Processing
Deficit**



- Sound-letter correspondence
- Phonological knowledge
 - Phonemic awareness
 - **phonics**

Phonological Knowledge

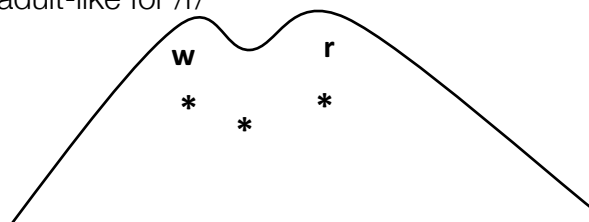
C: Mommy, I see a wabbit!

M: You see a "wabbit"?

C: No, it's a WABBIT!

M: Oh, you see a rabbit!

The child may be producing a sound acoustically different from /w/, but their output representation is also not adult-like for /r/



Phonological Knowledge

Understanding that an abstract representation of a sound can be extracted from a syllable, stored, and retrieved to make a novel syllable or word



c a t

b a t



c a p



Connections for Children with CAS

Phonological Processing Deficit



- Sound-letter correspondence
- Phonological knowledge
 - Phonemic awareness
 - **phonics**

Language Impairment



- Vocabulary & grammar
- Experience & background knowledge

Connections for Children with CAS

Phonological Processing Problem

Language Impairment

Motor Issues



- Reading fluency
- Attention (use of mental resources)
- Handwriting

Connections for Children with CAS

**Phonological
Processing
Problem**

**Language
Impairment**

Motor Issues

**Co-occurring
Problems**

↓
Vision, attention, auditory
memory, auditory processing,
hearing, cognition, etc.

Connections for Children with CAS

**Phonological
Processing
Problem**

**Language
Impairment**

Motor Issues

**Co-occurring
Problems**

3. Intervention

- Understand the child's developmental level and current skills
 - Most children with CAS have other diagnoses (e.g., unpublished Mayo Clinic study; Iuzzini, 2016)
 - Most children with one area of learning difficulty have multiple areas (Katusic, et al., 2002; Barbaresi, et al., 2005; Katusic, et al., 2009; Katusic, et al., 2017)
 - There is variability among children with any diagnosis or disorder

Intervention: Use Relevant Materials

- Functional vocabulary was one factor thought to enhance progress in speech therapy (Strand & Debertine, 2000)
- Children with greater knowledge of material they read recalled more than children with less knowledge
 - Students with high reading ability but low knowledge did no better than students with low reading ability and low knowledge on a reading task (Recht & Leslie, 1988)

Intervention for Speech

- Intervention for children with CAS will need to prioritize targets, depending on child's age, stage of therapy, etc. to address:
 - Continuing motor speech impairment
 - Phonological error patterns
 - Language issues, including vocabulary, grammar and syntax
 - Speech perception/phonological awareness
 - Incorporating support for literacy

- Early therapy
 - Fewer targets
 - Less complex targets
 - Use of visual/gestural/tactile cues
 - May include orthographic representations
 - Emphasize functional vocabulary for requesting, rejecting, social interaction, academic needs
 - Early phonological awareness skills

- Later therapy
 - More targets
 - More complex targets
 - More advanced phonological awareness skills
 - Increased length of utterance with age-expected grammar and syntax
 - Heavier use of written text to support work on speech
 - Dictation/typing to generate narratives

What Reading Program is “Best” for Children with CAS?

- The one that addresses their unique needs
 - Phonics vs sight-word approaches
 - Awareness of segmenting for decoding vs coarticulation for speech intervention

Intervention should target the underlying areas of deficiency (Nippold, 2017)

Intervention for Reading

- Appropriate assessment is needed to guide intervention
 - CAS-related issues may need to be accommodated (e.g., fluency, fine motor for writing, etc.)
 - Comprehensive reading assessment to identify both strengths and weaknesses
- Intervention provided in collaboration with other disciplines (classroom teacher, Learning Disabilities teacher, etc.)

- Two skills necessary *but not sufficient* for achieving literacy skills:
 - Phonological/Phonemic Awareness
 - Language competence
- The way these skills influence literacy may vary over time (Skebo, et al., 2013)

		Decoding	Comprehension
Early Elementary	Phonological Awareness	TL	
	Vocabulary	SSD	SSD
	Language	SSD+ LI	SSD+ LI
Middle School	Phonological Awareness	TL	TL
	Vocabulary		
	Language	SSD	SSD
High School	Phonological Awareness		No predictors for TL or SSD
	Vocabulary	SSD	SSD+ LI
	Language	SSD+ LI	TL

What Writing Curriculum is “best” for Children with CAS?

- The one that addresses their unique needs. May include:
 - Intervention for dysgraphia (e.g., Handwriting Without Tears)
 - Focus on developing ideas, planning structure, writing and revising a draft
 - Focus on form: vocabulary, spelling, grammar, cohesiveness, effectiveness
 - Understanding text forms: expository, narrative, etc.

- One study suggests benefit of strategy instruction (Therrien, et al., 2009):
 - Taught a 6-step mnemonic strategy vs general instructions
 - Students in the intervention condition scored higher in ratings of idea, content, and organization than control group

Integrating intervention

- Reinforce existing skills and promote growth in each area
 - The child may be at different levels for speaking, reading, and writing
 - Adapt intervention over time based on child's progress in each area

Integrating intervention: Speech Goals

- Call attention to orthographic representations of speech targets
- Intervention for articulation within a literacy context appears to facilitate both literacy and articulation
 - Phonologically based literacy skills (decoding, word recognition, and spelling) appear to promote improvement in articulatory accuracy (Norris & Hoffman, 2017)

Integrating intervention: Reinforce Reading

- Call attention to orthographic representations of speech targets and sound-letter correspondence (alphabet knowledge, print knowledge)
- Incorporate developmentally-appropriate phonological awareness activities -- minimal pairs are rhyming words

Integrating Intervention: Reinforce Writing

- Introduce word definitions, synonyms and morphology
- Review classroom assignments for written language to support needed skills

Integrating intervention

Provide exposure by modeling literate behaviors

- Show the child how you write notes to document progress
- Show curiosity about new vocabulary
 - What clues are there for the meaning?
 - Where can you find out what it means?
- Demonstrate sounding out unfamiliar words
 - Might there be more than one way to say it?

Integrating Intervention

- Intentionally demonstrate how reading and writing are used in daily routines
 - Make a point of writing out the child's "homework"; have child help check off items as they complete them
 - Point out when you leave a note for parents or teacher to convey a message via writing

Resources: Emergent Literacy

- Consider cultural norms when introducing early literacy skills
 - Use of books may not be typical for some families
- Print-focused Read-Aloud (Justice, Logan, Kaderavek, 2017)
 - <http://star.ehe.osu.edu/>
 - <https://earlychildhood.ehe.osu.edu/research/practice/read-it-again-prek/>
- Interactive Book Reading (Storkel, Komesidou, Fleming, Romine, 2017)
 - <http://hdl.handle.net/1808/20313>

School-Age Literacy

- Build awareness of text structure
 - Talk about characters and setting
 - Reinforce beginning, middle, end
 - Find the important information
 - Re-read, re-tell, paraphrase
 - Use concrete cues to reinforce story structure (e.g., graphic organizers, story grammar marker tool, etc.)

Summary

- It is well-established that there are connections between early speech-language problems, including CAS, and later literacy/academic problems.
- SLPs have an obligation to become educated about the interactions of speech-language impairment and literacy skills
 - This includes an understanding that there is no one-size-fits all intervention for children with a given diagnosis or diagnoses

continued™

Additional RESOURCES

- See Handout

continued™

Questions?