

Early Speech-Language Issues
and
Later Literacy

Will Slow to Talk
Mean Slow to Read?

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Beginning with Books Keynote
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**The Connection Between
Early Speech-Language
Problems
and Literacy**

Overview

- Background: Speech and Language Skills
- Early speech-language problems relate to literacy difficulties through
 - 1) an underlying deficit in processing symbolic information/language delay
and/or
 - 2) phonological processing/awareness deficits
- What we can do (in brief!)

Speech is ...

producing the sounds of language

- articulation is the movement of the speech musculature to produce sounds



- phonology is the organization of the sound system into patterns that code meaning



tea



key

Language is ...

- a socially shared code of arbitrary symbols that is used to communicate meaning

Language can be expressed in many modes:
spoken, gestural, written, pictures



- Speech and language development are highly interactive.
 - Sounds from babble are heard in first words.
 - Children learn new sounds (speech) by recognizing segments within familiar words
 - Children acquire new words (language) by using sound segments in novel ways

- Development of words and sounds is closely linked in both normal and delayed language development.

- There is a strong correlation between the number of vocalizations containing consonants and language outcome in “late talkers”
 - A large number of vowel-only vocalizations is associated with poor expressive language growth

(Whitehurst, Fischel, Lonigan, Valdes-Menchaca, Arnold, & Smith, 1991)

- 20% of preschoolers with speech disorders required special services by the time they reached school age (Bishop & Edmundson, 1987; Shriberg & Kwiatkowski, 1988)

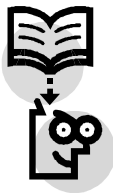
- As many as 60% of children with language impairment will have a language learning disability (academic impact) (Schoenbrodt, Kumin, & Sloan 1997)

- Unfortunately, the existence of persistent speech errors plus language problems seems to have an additive effect (Raitano, et al., 2004)

Early speech-language problems relate to later literacy difficulties through...

- an underlying deficit in processing symbolic information/language delay and/or

- phonological processing/awareness deficits



Processing Symbolic Information

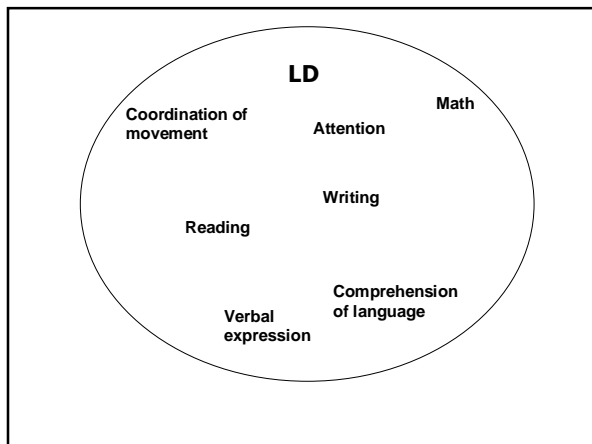
- Language impairment (LI) is a problem of processing symbolic information in the verbal modality (listening and speaking)
- Difficulty processing symbolic information will likely affect language across all modalities (speaking/listening, reading and writing)

Processing Symbolic Information

- Learning disabilities (LDs) are disorders that affect the ability to understand or use spoken or written language, do mathematical calculations, coordinate movements, or direct attention. (NIH definition)



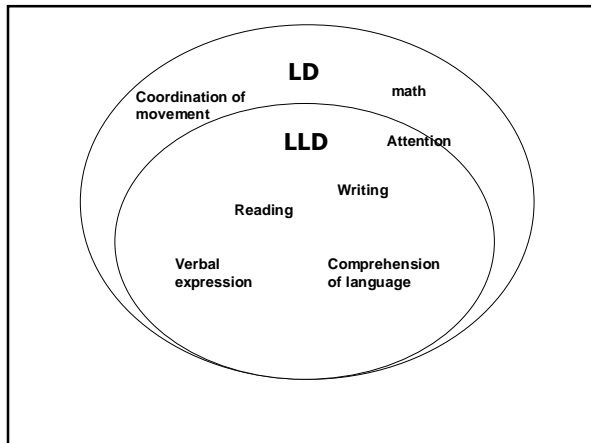
processing symbolic information is an important aspect of LDs



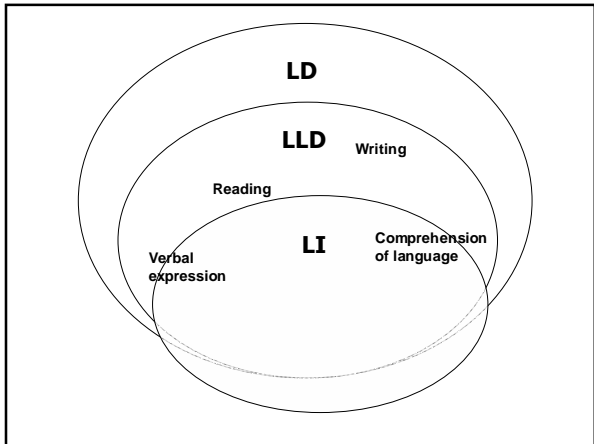
Language Learning Disability (LLD) is...

- a broader term than LI that involves
 - difficulty with aspects of communication that interfere with the ability to succeed in school, and is
 - applied to children who have mastered basic vocabulary, sentence structure, and functions of language, but have trouble progressing to higher levels of language performance

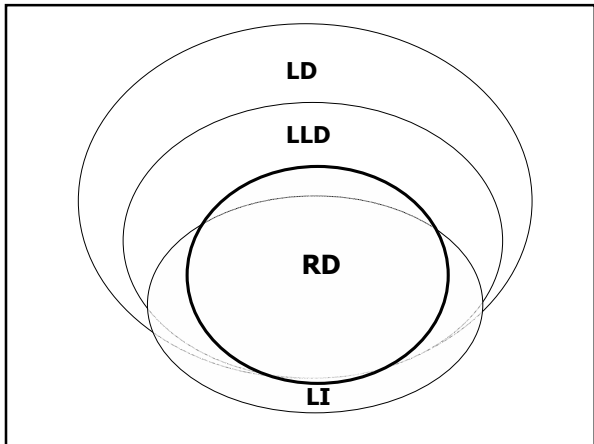
(Paul, 2001)



- Not all children with LLD have a history of LI, but
- a high proportion of children with history of LI also have LLD



A subset of LLD
is Dyslexia/Reading Disorder (RD)



Reading is...

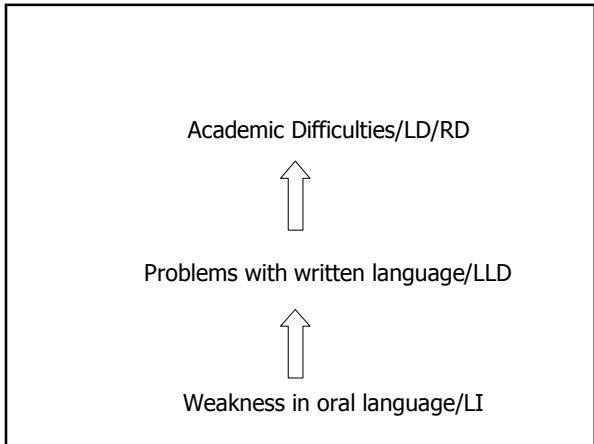
- a language-based skill that uses visual input to tap into the language-processing system (Catts & Kamhi, 1999; Snowling & Stackhouse, 1996)

Dyslexia/Reading Disability (RD) is

- ...a specific learning disability characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from
 - a deficit in the phonological component of language that is
 - typically unexpected in relation to other cognitive abilities

(IDA Board of Directors, Nov. 12, 2002. Also used by the National Institute of Child Health and Human Development -- NICHD)

- Children with mild-moderate LI may “change diagnosis” to RD upon entering school, not because the underlying nature of the problem changes, but because the academic setting puts new demands on a weak language system



- Understanding meaning through reading calls upon the same processes used to extract meaning from oral language
 - a child who has poor comprehension of spoken language will therefore also have trouble comprehending text

- Degree of impairment is a factor
 - The more severe the language impairment, the more at risk the child is for academic problems
 (Bishop & Edmundson, 1987)

Language Impairment → Reading Comprehension and Written Composition Problems

Early Speech-Language Delay
and
Phonological Processing/
Phonological Awareness

- Phonological Processing is establishing and retrieving accurate phonological representations
 - That is, segmenting words into sounds, then storing sound-by-sound auditory representations and retrieving those representations as a basis for producing sounds
 - It is acquisition of knowledge about sounds

Phonological Processing

Children learn to recognize acceptable variations within sound categories

- Phonological Awareness is the general appreciation of speech sounds as distinct from their meaning; the ability to manipulate sound representations
- It is making use of knowledge about sounds

Phonological Awareness (PA)

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



- There is a well-established correlation between PA and reading.
 - Many investigators believe that deficits in PA are central to a majority of problems seen in poor readers

(Larrivee & Catts, 1999; Liberman & Liberman, 1990; Mann & Liberman, 1984; Snowling & Stackhouse, 1996; Snow, Burns, & Griffin, 1998; Stackhouse & Wells, 1997)

Phonological Knowledge/ Phonological Awareness

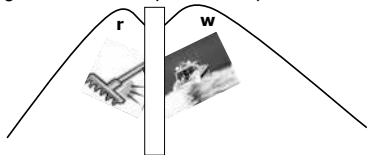
- Is built on a child's experience with the ambient language (i.e. receptive vocabulary)
- Depends heavily on a child's ability to perceive differences among the sounds of language

Phonological Knowledge/ Phonological Awareness

- Can be influenced by a child's ability to produce the sounds of language
 - therefore is "at risk" if a child has speech-language delay or disorder

Phonological Processing Difficulty

- Mental representations may not be as flexible within a category
 - It may be harder to recognize variations in production by different speakers, or in different contexts, especially noise (APD?)
 - There may be less precise matching of the mental image and verbal output → disrupted feedback loop



C: Mommy, I see a ¹wabbit!

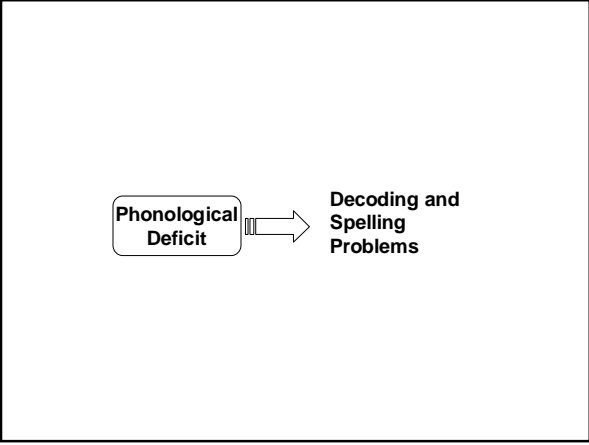
M: You see a ²wabbit”?

C: No, it’s a ¹WABBIT!

M: Oh, you see a ³rabbit!

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

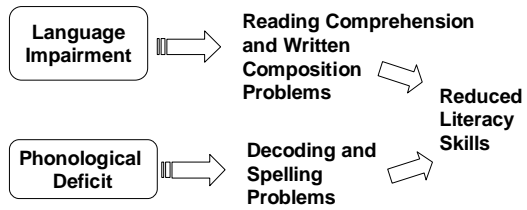
There is a weak link in the child’s feedback loop for developing an abstract representation for the /r/ sound.



Use of Symbols and Phonological Awareness Come Together in Reading

- “The alphabetic principle” and “breaking the code” refer to making the association between sound structure (phonological knowledge) and its written representation (symbolic knowledge)
- Verbal skills influence literacy development
 - Perceptually segmenting sounds into phonemes provides a basis for being able to associate sounds with letters
 - And vice versa – we need to be able to segment letters in a word into individual sounds

So, What's the Connection?



Outcomes: Early Speech-Language Delay and Literacy

- Children may “outgrow” the major aspects of language delay, but not the underlying disorder of processing symbolic information. (Scarborough & Dobrich, 1990)
- Early delays in communication appear to be stable predictors of later LLD. (Aram, Ekelman, & Nation, 1984; Thal, Tobias & Morrison, 1991)

Conclusion:

- Children who are slow to develop strong speech-language skills during the preschool years are at risk for later trouble with higher-level language skills even when the earlier problems are no longer evident

**What
Can
We
Do
To
Help?**



Aspects of Emergent Literacy (National Early Literacy Panel, 2004)

1. Oral Language
 - Talk during daily routines, tell stories, and play with the child to:
 - build vocabulary, but also listening/comprehension skills, higher level language skills
 - build speech sound repertoire
 - develop knowledge of sentence structure
 - develop reciprocal interaction skills
 - increase sophistication of symbolic play schemes

2. Emergent writing

- model the use of reading and writing for communication (e.g., writing letters/emails)
- encourage “writing” in any way that is meaningful to the child

3. Print knowledge

- connect meaning with symbols



- Look at how books are organized

4. Alphabet knowledge

- Play with letters (fridge magnets, puzzles, formboards, etc.)
- Alphabet songs and games





5. Phonological Awareness

- nursery rhymes/songs/fingerplays
 - recognizing and producing rhymes
- tap out syllables
- listen for sounds at beginning or end of words
- match up letters and sounds



Summary

Children with a history of speech-language delay are at high risk for later language-based learning difficulties, including problems with reading

There are things we can do to support children who are at risk