Reading and Phonological Awareness

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Apsy 658
Overview...

- Learning to read
- Cognitive processes of Reading
  - Cattell-Horn-Carroll theory (CHC theory)
- Phonological Awareness
- Implications
- Strategies
  - Best Practices
  - Sample Program – Sound Connections
- Questions
Basic reading and writing skills are essential in today’s technology oriented society.
The ability to read helps pave the way to success in school
The Many Strands that are Woven into Skilled Reading
(Scarborough, 2001)

LANGUAGE COMPREHENSION

BACKGROUND KNOWLEDGE
(facts, concepts, etc.)

VOCABULARY
(breadth, precision, links, etc.)

LANGUAGE STRUCTURES
(syntax, semantics, etc.)

VERBAL REASONING
(inference, metaphor, etc.)

LITERACY KNOWLEDGE
(print concepts, genres, etc.)

WORD RECOGNITION

PHONOLOGICAL AWARENESS
(syllables, phonemes, etc.)

DECODING (alphabetic principle,
spelling-sound correspondences)

SIGHT RECOGNITION
(of familiar words)

SKILLED READING:
Fluent execution and coordination of word recognition and text comprehension.
Neuropsychological research continues to increase our understanding of the reading process. (Riccio & Hynd, 1995)

- Complex process involving many skills putting demands on the cognitive system and requires use of a network of brain areas
  - Phonemic awareness
  - Language comprehension
  - Lexical/semantic skills
  - Verbal working memory
  - Rapid automatic naming and oral word fluency

- The phonological processing skills essential to reading development are thought to be associated with regions in the left temporal lobe of the brain (Muter, 2004).
Cattell-Horn-Carroll Theory

• Supporting evidence of the links between the Cattell-Horn-Carroll theory of cognitive processes and reading achievement

• The Cattell-Horn-Carroll theory is a merging of two theories of intellectual abilities
  Cattell’s Gf-Gc theory and Carroll’s three-stratum theory

(Fiorello et al., 2006)
Cattell Fluid and Crystallized Intelligence

- Human abilities consists of two types of intelligence:
  1. Fluid intelligence (Gf)
     - Ability to think logically and solve problems using unfamiliar information or novel procedures
  2. Crystallized intelligence (Gc)
     - Ability to use skills, knowledge and experience
Carroll’s three Stratum theory

- Individual differences in cognitive abilities
  - relationships
- Theory proposes the relationships among the differences in cognitive ability can be derived by classifying them into three different strata:
  - Stratum III
    - General fact
  - Stratum II
    - Broad abilities
  - Stratum I
    - Narrow abilities

(Flanagan & Harrison, 2005)
Cattell-Horn-Carroll Theory

- Combination of the two theories provides a comprehensive and empirically supported psychometric framework for understanding the structure of human cognitive abilities
- Specific broad and narrow abilities can be identified as linked to reading achievement across the population

(Flanagan, & Harrison, 2005)
Basic Reading Skills

Auditory Processing
- Phonetic coding analysis and synthesis

Processing speed (Gs)

Fundamental to Basic Reading Skills

Crystallized abilities

Short-term memory
- (Gsm) auditory memory span and working memory
Over thirty years of evidence has led to a near consensus among researchers that young readers need to have a certain level of phonological awareness to acquire proficiency in reading.

Phonological awareness

explicit awareness of an ability to manipulate the sound structures of oral language

(Engen & Hoien, 2002)
### Phonological Awareness

Deleting, adding, or substituting syllables or sounds

<table>
<thead>
<tr>
<th>Sentences</th>
<th>Words</th>
<th>Onset Rime</th>
<th>Individual Phonemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• words</td>
<td>• syllables • Simple</td>
<td>• Stop</td>
<td>• s/t/i/c/k</td>
</tr>
</tbody>
</table>

![Image of phonological awareness concepts](image-url)
Spoken Language

Syllable Level
- Reduces the strain on memory
- Helps pronunciation
- Syllabic awareness is easy

Onset-Rime Level
- Facilitates reading
- Facilitates spelling

Individual Phonemes
- s/t/i/c/k

Being phonologically aware means having a general understanding at all of these levels
Implications for Cognitive and Academic interventions

Phonological weakness

- Blocks decoding
- Interferes with word identification
- Prevents a reader with dyslexia from applying higher-level skills
- Low self-esteem
Assessment Measures

Two purposes

1. Identify students who appear to be at risk for difficulty in acquiring beginning reading skills
2. Regularly monitor progress of students receiving instruction
Measuring Phonological Awareness

- Adams (1990) divides phonological awareness tasks that successfully predict reading skills into four main types:

1. The child taps to indicate the number of phonemes within the word.
2. Second-phoneme manipulation tasks which require the child to delete, add, substitute, or transpose phonemes within words, for example, in consonant deletion task, “cat” without the “c” says “at”.
   - Examiner provides the phonemes of a word and the child is asked to put them together, for example, d-o-g blends to become “dog”.
4. Rhyming tasks that include knowledge of nursery rhymes and the identification of the “odd word out” in a sequence of three or four words as in the sound categorization task identifying the odd word out cat, pat, fan.
Children who can successfully manipulate the sounds within words tend to be more successful in literacy tasks as they have strategies with which to attack reading and spelling.

A child without these skills relies heavily on memory and visual skills.
Dyslexia: Implications

Language impairment that effects the way in which the brain encodes the phonological features of spoken word

The core deficit is in phonological processing and stems from poorly specified phonological representations

Affects the development of reading and spelling skills

Muter, 2004
Best Practice Intervention Strategies

• Conduct assessments that lead to appropriate data-based decision-making and problem-solving activities before and after intervention.

• Work collaboratively with teachers, parents, school psychologists and other interested stakeholders.

(Joseph, 2002)
### Strategies for Teaching Phonemic Awareness

## Phonemic Awareness Instruction

<table>
<thead>
<tr>
<th>Analysis of phonemic awareness assessment data—should drive instruction</th>
<th>Positive enriching experience allowing students to engage in language play</th>
<th>Instruction should provide for individual differences in abilities and use scaffolding to facilitate growth</th>
<th>Developmentally appropriate instruction uses chant, poetry, songs and rhythms to engage students’ curiosity about language and to develop metalinguistic</th>
<th>Instruction explicitly labels sounds and demonstrates the process of blending-segmenting of sound</th>
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Applied Intervention Programs

- Effective approaches to teaching phonological awareness
  - include activities that are age appropriate
  - highly engaging
- Programs based on research
  - Ladders to Literacy (O’Connor, Notari-Syverson, & Vadas, 1998)
  - Teaching Phonemic Awareness (Adams et al., 1996)
  - The Lindamood Phonemic Sequencing (LIPS) Program (1986)
  - Jolly Phonics (1987)
  - Go Phonics (2001)
  - Sound Connections (2007)
Sound Connections Props
Sound Detectives
Magic bag
Gesture

Add to the flashcards

Props
What is happening inside your mouth?
Puffing pig

Puffing pig was very fond
Of blowing bubbles with his wand.
big   pp   p   pp
Big ones, small ones, any kind
He liked them all, he didn't mind.
p   pp   p   pp
Then one day poor puffing pig
Blew a bubble very big.

p   pp   p   pp
It took him up into the sky
Over tree tops. Oh so high!
p   pp   p   pp
Activity Sheets


Rogers, A. & Rogers, R. (2004). *Sound Connections Early Intervention Programme*.

