Adolescent Reading Abilities & Education Policies

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Overview

I. The developing brain, particularly adolescents

II. The specific case of reading
   • Components of reading
   • Findings

III. Implications for policy
PART I: THE DEVELOPING BRAIN: 
Growth in Brain and In Education Are 
Dynamic and Interactive Processes
Adolescence in particular is a time of important brain changes.
• One area that is known to be late-maturing is the frontal cortices; adolescence is a time of great change in frontal cortex.

• Frontal cortices are known to be important for executive function, or:

  “top-down control processes used when going on automatic or relying on instinct or intuition would be ill-advised, insufficient, or impossible”

  ~Diamond, p.136 (2013)
PART II: THE SPECIFIC CASE OF READING
A Common Developmental Framework for Reading: The Simple View (but expanded)

**LANGUAGE COMPREHENSION**
- Background knowledge
- Vocabulary
- Language Structures
- Verbal Reasoning
- Literacy Knowledge

**WORD RECOGNITION**
- Phono Awareness
- Decoding
- Sight Recognition (of Words)

Skilled Reading

Adapted from Scarborough, 2001
Executive Function

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- Language Structures
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WORD RECOGNITION
- Phono Awareness
- Decoding
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Extended and adapted from Scarborough, 2001
Can Reading Skills Be Improved in Poor Readers?

Yes, especially in younger readers.
Studies Generally Show
Brain Changes after
Intervention and with
Improvements in Reading
BUT...
Adolescent poor readers typically have problems in both strands, and have more difficulty overcoming their reading problems than younger kids.
WHY?*

*To truly know, this is a life long pursuit in science, but we have some very good clues
Connections between domain general networks are related to areas in the “lower strand”, and these connections are related to intervention response.

Barquero, Swett, & Cutting, in prep
Domain general networks: Turns out they are also important for connecting two strands of reading in adolescents.

Bilateral angular, precuneus, dmPFC

OT region (z = -14)

Passages

Words

Swett & Cutting, under review
PART III: IMPLICATIONS FOR POLICY
1. Intensity – many adolescents are “nonresponders”
2. Treating all aspects of reading difficulty
3. Understanding why a child who has been a good reader can all of a sudden have reading difficulty in adolescence.
4. Domain general networks also interact with other academic areas (math, writing).
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YOUTUBE VIDEO:
https://www.youtube.com/watch?v=VEk-433lQf8