Learning to Read and Learning to Comprehend

Kate Nation
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Overview

• Set out the problem space and some comments on the simple view of reading
• Poor comprehenders, the difficulties of dissecting causes and the importance of knowledge
• The language bases of poor reading comprehension
• Interventions: what and when?
THE DAY THE CRAYONS QUIT

By DREW DAYWALT

PICSURE BY

OLIVER JEFFERS
Hey Duncan,
It's me, RED Crayon. We need to talk. You make me work harder than any of your other crayons. All year long I wear myself out colouring FIRE ENGINES, APPLES, STRAWBERRIES and EVERYTHING else that's RED. Holidays! I even work on all the SANTAS at CHRISTMAS and all the HEARTS on VALENTINE'S DAY! I NEED A REST!
Your overworked friend,
RED Crayon
Dear Duncan,

I’m tired of being called “light brown” or “dark tan” because I am neither.
I am BEIGE and I am proud.
I’m also tired of being second place to Mr. Brown Crayon.
It’s not fair that Brown gets all the bears, ponies and puppies while the only things I get are turkey dinners (if I’m lucky) and wheat, and let’s be honest—when was the last time you saw a kid excited about colouring wheat?

Your BEIGE friend,

Beige Crayon
The Alphabetic Principle

• The insight that in English, letters represent language via sound: there’s a systematic relationship between letters and the sounds they make

• Fundamental and non-negotiable and best taught via explicit and systematic phonics instruction

• Necessary foundation to reading

• But clearly, there’s more to reading comprehension than being able to read individual words
RIGHT

Adjective
1. morally good, justified, or acceptable: "I hope we're doing the right thing"
2. true or correct as a fact: "I'm not sure I know the right answer"
3. in a satisfactory, sound, or normal state: "that sausage doesn't smell right"
4. on, towards, or relating to the side of a human body or of a thing which is to the east when the person or thing is facing north: "my right elbow"
5. complete; absolute (used for emphasis): "I felt a right idiot"
6. relating to a person or group favouring conservative views: "are you politically right?"

Adverb
1. to the furthest or most complete extent or degree: "the car spun right off the track"
2. correctly: "he had guessed right"
3. on or to the right side: "turn right off the B1269"

Noun
1. that which is morally correct or honourable: "the difference between right and wrong"
2. a moral or legal entitlement: "she had every right to be angry"
3. the right-hand part, side, or direction: "take the first turning on the right"
4. a group or party favouring conservative views: "the Right got in at the election"

Verb
1. restore to a normal or upright position: "we righted the capsized dinghy"
2. restore to a normal or correct state: "righting the economy"

Exclamation
1. used to indicate agreement: "'Oh, right'"
Most words (80% plus) are ambiguous to some degree

Dawn was casting spun-gold threads across a rosy sky over Sawubona Game Reserve as Martine Allen took a last look around to ensure there weren’t any witnesses. She leaned forward like a jockey on the track, wound her fingers through a silver mane, and cried, ‘Go, Jemmy, go.’

*Slide from Dr Jenni Rodd, UCL, https://jennirodd.com*
Most words are ambiguous

Being able to select appropriate word meanings is vital for comprehension.

Dawn was casting spun-gold threads across a rosy sky over Sawubona Game Reserve as Martine Allen took a last look around to ensure there weren’t any witnesses. She leaned forward like a jockey on the track, wound her fingers through the silken rope, and cried, ‘Go, horse!’

*Slide from Dr Jenni Rodd, UCL, https://jennirodd.com*
Sandra lied to Elaine during the trial because she was scared

Sandra lied to Elaine during the trial because she was gullible

Garnham, 2001
Reading comprehension is complex!

• Reading words, accurately and fluently
• Vocabulary knowledge, and ready access to meanings in context
• Connections between ideas in the text
• Background knowledge, and connections with background knowledge
• Constant monitoring, updating, predicting & inferencing
Simple View of Reading:
both components necessary, neither alone is sufficient
'explains' everything, but *explains* nothing

Input → **BLACK BOX** → Output

“word reading” ← ← “comprehension”
Simple View of Reading: both components necessary, neither alone is sufficient
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Who are Poor Comprehenders?

Kim stopped on her way to school. In the middle of the traffic lay two children. Their bicycles had crashed into each other. Kim ran quickly to help. She saw that no-one was hurt. The children pointed to a television camera. ‘We are taking part in a road safety lesson’ they said.

1. Where was Kim going?
2. Why did Kim stop?
3. What had happened to the bikes?
4. How do you think Kim felt?
5. What did Kim do?
6. Were the children hurt?
7. What were the children really doing?
8. How did Kim find out what was happening?
Who are Poor Comprehenders?

- Average word readers for age but poor at reading comprehension
- Up to 10% of population in mid-childhood
- Useful population to assess theoretical questions
- Critical that children identified and their needs are met
Why might comprehension fail?

• For these children, not with reading words
• Difficulty holding information in memory
• Difficulty understanding words, or accessing their meanings rapidly and in context
• Difficulty connecting ideas in text
• Difficulty making inferences
• Difficulty bringing knowledge to bear when reading
• Difficulty using strategies to foster comprehension
The Role of Text Memory in Inferencing and in Comprehension Deficits

Anh N. Hua and Janice M. Keenan

University of Denver
• Read (or listen to) stories
• After each, retell everything she or he could remember
• Then answer 6 open-ended questions, some literal, some requiring inferences to be made
• Poor comprehenders worse than controls
• Inference harder than literal
• More premises need to be remembered to answer inference questions
• If premises recalled:
  • No difference between performance on inference vs. literal questions
  • No difference between poor comprehenders and skilled comprehenders, against inference account

What’s inference/integration and what’s memory?
Why do poor comprehenders remember less?
Memory and Poor Comprehenders

• Some evidence of weaknesses
  • Impaired sentence memory
  • Errors often fail to capture meaning or gist of sentence
  • Poor verbal span

• Yet ‘poor memory’ in general not the answer
  • Normal verbatim recall of digits, familiar words and nonwords
  • Normal nonverbal span

Nation et al., 1999, 2004; Pimperton & Nation, 2010
repetition of nonwords and sentences

Marshall & Nation, 2003
**Target:** “If the coach had let us stop practice earlier, we would have been home long ago”.

**Response:** “If the bus driver would have stopped the coach, we would have been there earlier”.

*Marshall & Nation, 2003*
Poor Verbal Working Memory

Poor Reading Comprehension
Target: “If the coach had let us stop practice earlier, we would have been home long ago”.

Response: “If the bus driver would have stopped the coach, we would have been there earlier”.
text comprehension

answer inference q's

memory for text
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Reading develops from an oral language base. Do poor comprehenders find aspects of oral language difficult? And, if so, is this causally implicated in their difficulties with reading comprehension?
Semantic task: synonym judgement
vs.
Phonological task: rhyme judgement
Synonym Task

- Poor Comprehenders: 21.3%
- Controls: 9.4%

Rhyme Task

- Poor Comprehenders: < 1%
- Controls: 2.7%

Nation & Snowling, 1988
• Considerable evidence base that poor comprehenders (generally) have oral language weaknesses (generally)

• But phonological aspects of language (generally) fine

• Implications for reading:
  • Word reading OK, but
  • Difficulties with comprehension
What’s cause and what’s effect?

Oral language weaknesses → poor reading comprehension

Poor reading comprehension → oral language weaknesses

Reading is major determiner of vocabulary growth

Poor comprehenders read less leading to difficulties in reading comprehension and vocabulary becoming compounded over time
Combination of standardised tests, experiments, teacher ratings, parent report and school achievement at each time point

Nation, et al., 2010
Just one question, for today!

If oral language weaknesses $\rightarrow$ poor reading comprehension…

… then language weaknesses should be evident early in development, before reading comprehension fails
Group Selection: NARA (8.0 years)
NARA reading accuracy over time

No evidence of slow start to word reading
NARA reading comprehension over time

![Graph showing reading comprehension scores over time for Poor Comps and Controls.](image)
Listen	
  Comp	
  6

Read	
  Comp	
  6

Listen	
  Comp	
  7

Read	
  Comp	
  7

**Listening Comprehension**

**Reading Comprehension**

Poor Comps | Controls
• Children who go on to become poor comprehenders:
  • Are good word readers from the outset
  • (have appropriate phonological skills from the outset)
  • Start school with lower levels of oral language

• Differences in oral language are fairly modest but nevertheless consistent across time and across measures

Nation, et al., 2010
• But, important to note that reading comprehension influences oral language too
  • Written language is not spoken language written down
  • Differences in vocabulary density and diversity and in syntactic complexity

• Complexities and reciprocal interactions, once children are reading (and comprehending)
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From Language to Reading

• An obvious implication:
  • If oral language is the critical foundation of reading comprehension, improving oral language should improve reading comprehension

• Important question for theory (causality) and for education
Clarke, Truelove, Hulme & Snowling (2013)

Clarke, Snowling, Truelove & Hulme (2010)

http://readingformeaning.co.uk

- Large study of poor comprehenders aged 8-9 years
- Intensive, 20-week programme delivered by trained TAs, 3x30 mins per week (individual and group work)
- Oral language vs. text comprehension vs. combined vs. control
- RCT showed all three groups improved in reading comprehension at post test
- 11 months later, children in the oral language group showed sustained growth; gains mediated by growth in vocabulary
How early to go?
• Followed 300 children from infancy (16-24 months) to school-age (4-9 years)

• In infancy, vocabulary measured with OCDI
  • Parental checklist of 416 words

• At school-age, measured vocabulary, phonological awareness and reading

• Research question: does infant vocabulary predict language and reading outcomes?

Duff, Reen, Plunkett & Nation, 2015
Duff, Nation, Plunkett & Bishop, 2015
Reading comprehension

Reading accuracy

Phonological awareness

Vocabulary

Vocabulary

Infancy

School-age

0.40 (16%)

0.21 (4%)

0.33 (11%)

0.43 (18%)
• Infant vocabulary is a significant predictor of language and reading outcomes approximately 5 years later
• Vocabulary a plausible antecedent of reading development

• **However**, it is not sufficiently reliable to be predictive at the individual level
  • Infant vocabulary only accounted for 16% of variance in later vocabulary
  • Indicates instability in language development pre-2 years
  • Fits with the observation that the majority of ‘late talkers’ catch up by school-age (Rescorla, 2011)
• 35% of our sample had first-degree relative with history of reading or language problems

• Infant vocabulary and family risk together explain:
  – 6% variance in phoneme awareness (cf. 4%)
  – 16% variance in vocabulary (cf. 16%)
  – 21% variance in reading accuracy (cf. 11%)
  – 30% variance in reading comprehension (cf. 18%)

• Infant vocabulary combined with family risk increases prediction of reading outcomes to a level that might have clinical relevance
From Language to Reading

• Very early identification from vocabulary check in infancy not sensitive or specific
  • Adding in other factors (family risk, broader language difficulties) might have some utility
  • But nevertheless, much variation with many earlier ‘resolvers’ and later ‘emergers’

• In contrast, abundant evidence that weak oral language skills at age 4 are predictive of risk for reading failure: and intervention here seems promising
• Children in nursery or early reception with low language
• Intensive, 30-week oral language programme delivered by trained TAs to groups of 3-4 children
• RCT showed improved expressive language, grammar and vocabulary
• Gains maintained at 6-months – and out-performed waiting-list control group in reading comprehension

• See website for further information and links to papers and materials

http://nuffieldfoundation.org/nuffield-early-language-intervention

Fricke, Bowyer-Crane, Haley, Hulme & Snowling, (2013)

Carroll, Bowyer-Crane, Duff, Hulme & Snowling (2011)
Take Home Messages I

• Reading comprehension is complex and multi-faceted
• Its critical foundation provided by both the alphabetic principle and oral language
• Some children read well, but understand poorly
• Poor language confers risk for poor reading comprehension, probably for many reasons (vocabulary, memory, integration, inference….)
Take Home Messages II

• Improving oral language is associated with improvements in reading comprehension
• Low language at school entry is a risk factor for later reading problems
• Oral language intervention just before school entry produces positive effects
• Given variability in language outcomes at an earlier age, how low should we go?
Thank you!

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PERTH CONVENTION AND EXHIBITION CENTRE

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Session Outline

• DSM-IV vs DSM-5 – What changed?
• What is the RTI model?
• What do we need to assess?
• Changes to diagnostic considerations.
• Diagnosing SLD’s.
Out with the old and in with the new – DSM-IV vs DSM-5
DSM-IV vs DSM-5

- Info about DSM-IV (specifically around SLD)
  - Blah
  - Blah
  - Blah

- Info about DSM-5 (specifically around SLD)
  - Blah
  - Blah
  - Blah
What is the RTI model

Text here to explain RTI model and an appropriate video (this is not the video that will be used).
Language, Literacy & Learning
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