Reading for meaning: the component skills, knowledge, and processes that enable success

Hollis Scarborough Award Address

AIM Institute 13th Annual Research to Practice Symposium

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Overview

Reading comprehension: processes and product

- Beyond decoding: the skills, knowledge, and processes involved in reading for meaning

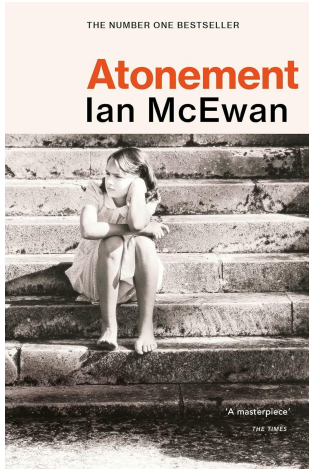
The dynamics of reading for meaning

- Using context to guide meaning selection and updating

The dynamics of development

- Reciprocal relations support knowledge growth and skill development

What is reading?



"A story was direct and simple ….. a story was a form of telepathy. By means of inking symbols onto a page, she was able to send thoughts and feelings from her mind to her reader's. It was a magical process, so commonplace that no one stopped to wonder at it. Reading a sentence and understanding it were the same thing; as with the crooking of a finger, nothing lay between them."

(Atonement, Ian McEwan, 2002, p. 23)

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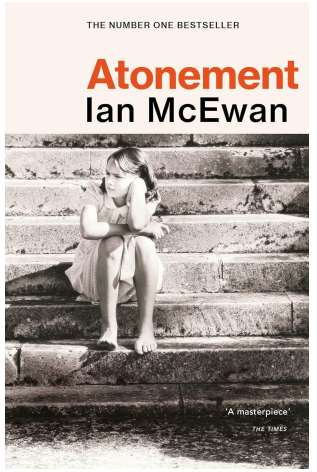

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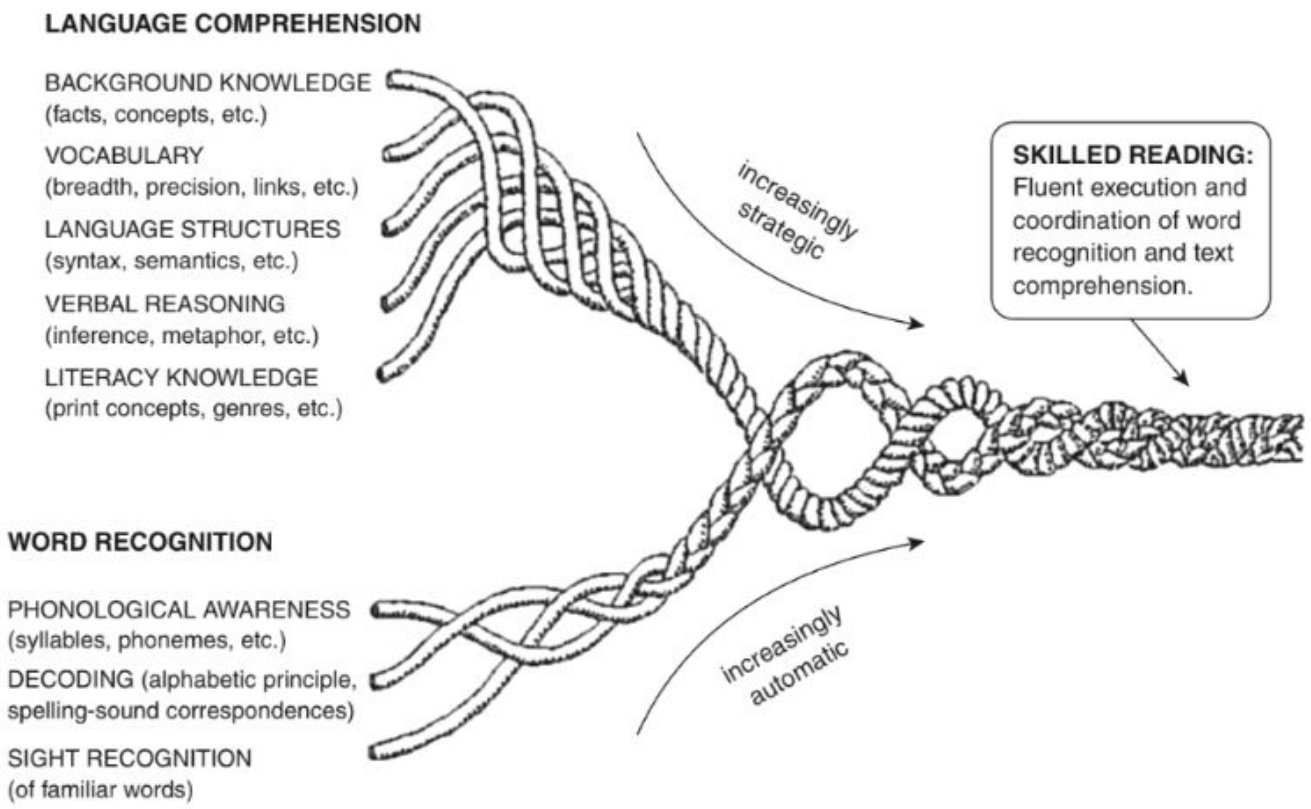
The Rope Model (Scarborough, 2001)



Recognizes two components of reading: language comprehension and word recognition.

Details a range of separate strands - skills and processes - involved in each.

Highlights the interaction between these strands, within and across development.

Strands of the rope in action: the process of reading comprehension

Molly was carrying the tumbler of juice. She tripped on the step. Her eyes filled with tears. *“Don’t worry"* said Mum, and went to fetch the mop.

Strands of the rope in action: vocabulary

Molly was carrying the tumbler of juice. The little girl tripped on the step. Her eyes filled with tears. *“Don’t worry"* said Mum, and went to fetch the mop.

tumbler = glass

Strands of the rope in action: syntax

Molly was carrying the tumbler of juice. The little girl tripped on the step. Her eyes filled with tears. *“Don’t worry"* said Mum, and went to fetch the mop.

Strands of the rope in action: inference, genre and background knowledge

Molly was carrying the tumbler of juice. The little girl tripped on the step. Her eyes filled with tears. *“Don’t worry"* said Mum, and went to fetch the mop.

Reading comprehension: the product

The product of skilled comprehension is an accurate, coherent and integrated memory-based representation of the situation or the state of affairs described in the text – a Mental Model or a Situation Model.

(Johnson-Laird, 1983; Kintsch, 1998)

Multiple strands are important for reading comprehension: a strong and converging evidence base

Concurrent relations: Vocabulary and conceptual knowledge, grammar, inference, knowledge of text structures, comprehension monitoring all make unique contributions to young children's reading comprehension, beyond word recognition (Cain et al., 2004; LARRC & Logan, 2017; and others).

Longitudinal relations: These skills predict outcomes in reading comprehension across time (Oakhill & Cain, 2012; LARRC & Chiu, 2018; and others).

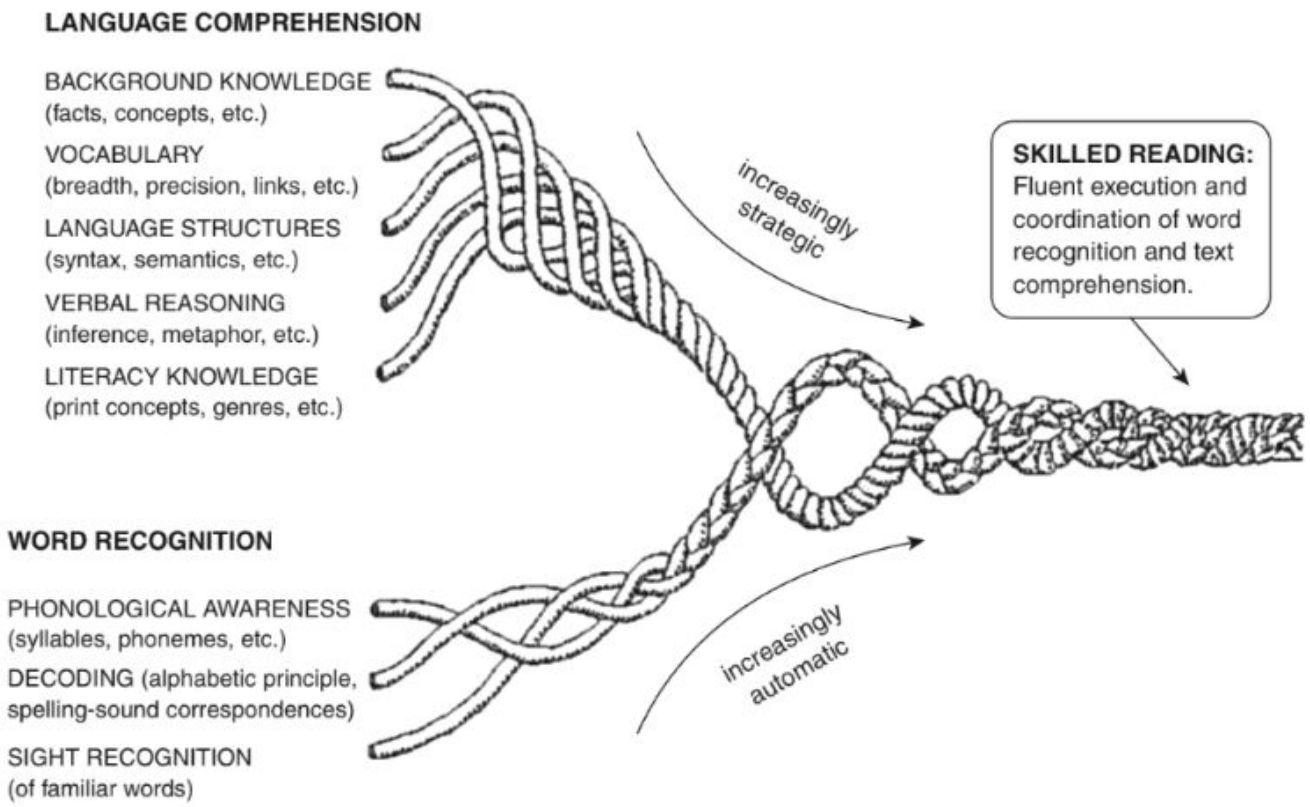
Poor reading comprehension: They are weak in children with specific reading comprehension difficulties (Cain & Oakhill, 2006; Nation et al., 2004, and others).

Take home message #1

Beyond word recognition, a range of language skills, knowledge, and processes support reading for meaning.

Converging evidence that multiple levels of language skill and knowledge contribute to successful reading comprehension.

Beyond decoding: reading for meaning



Multiple skills and knowledge support successful comprehension.

Overview

Reading comprehension: processes and product

- Beyond decoding: the skills, knowledge, and processes involved in reading for meaning

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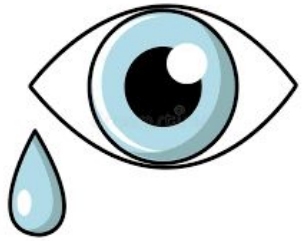
The dynamics of development

- Reciprocal relations support knowledge growth and skill development

The dynamics of reading for meaning: context and meaning selection

tear



Less familiar meaning: a rip in material

More familiar meaning: produced when crying

Correct pronunciation when reading aloud indicates use of context and reading for meaning.

Roch, Cain & Jarrold (2021) *Brain Sciences*

The dynamics of reading for meaning: context and meaning selection

Participants: children with ASD; children with Down Syndrome; ‘neurotypical’ children; in each group categorised children into groups with good and poor reading comprehension

Task: self paced reading of short texts that included homographs

Measures: pronunciation of the homograph

Roch, Cain & Jarrold (2021) *Brain Sciences*

The dynamics of reading for meaning: context and meaning selection

Less familiar, before context: There was a big tear in her dress.

Less familiar, after context: The girls were climbing over the hedge. Ruby's dress was spotless, but in Mary's dress there was a big tear.

Familiar, before context: There was a big tear in her eye.

Familiar, after context: Molly was very happy, but in Lily's eye there was a big tear.

Good comprehenders were more likely than poor comprehenders to pronounce the word correctly (and select the correct meaning) **after context** – more sensitive to context as they were reading.

The dynamics of reading for meaning: inference, meaning selection, and updating

Participants: children aged 6, 8 and 10 years

Task: listened to short texts that supported an inference, 1 vs 3 clues;

judged whether a word were related to meaning of the text.

target inference

bird

competing inference

plane

Currie & Cain (2015) *Discourse Processes*

The dynamics of reading for meaning: inference, meaning selection, and updating

1 clue

Mike was walking home from school with his Dad. All of a sudden they saw something **flying** above them. Mike's Dad pointed it out. Mike was very excited to see it. Mike had never seen such beautiful **feathers** before. Mike enjoyed walks with his Dad.

3 clues

Mike was walking home from school with his Dad. All of a sudden they saw something **flying** above them. It was carrying twigs for its **nest**. It had huge **wings**. Mike had never seen such beautiful **feathers** before. Mike enjoyed walks with his Dad.

Currie & Cain (2015) *Discourse Processes*

The dynamics of reading for meaning: inference, meaning selection, and updating

All age groups showed sensitivity to context; more accurate with 3 clues, responding ‘yes’ to target inference – bird.

Youngest children showed most evidence of interference between target and competing inference; less able to discriminate between them.

target inference
bird

competing inference
plane

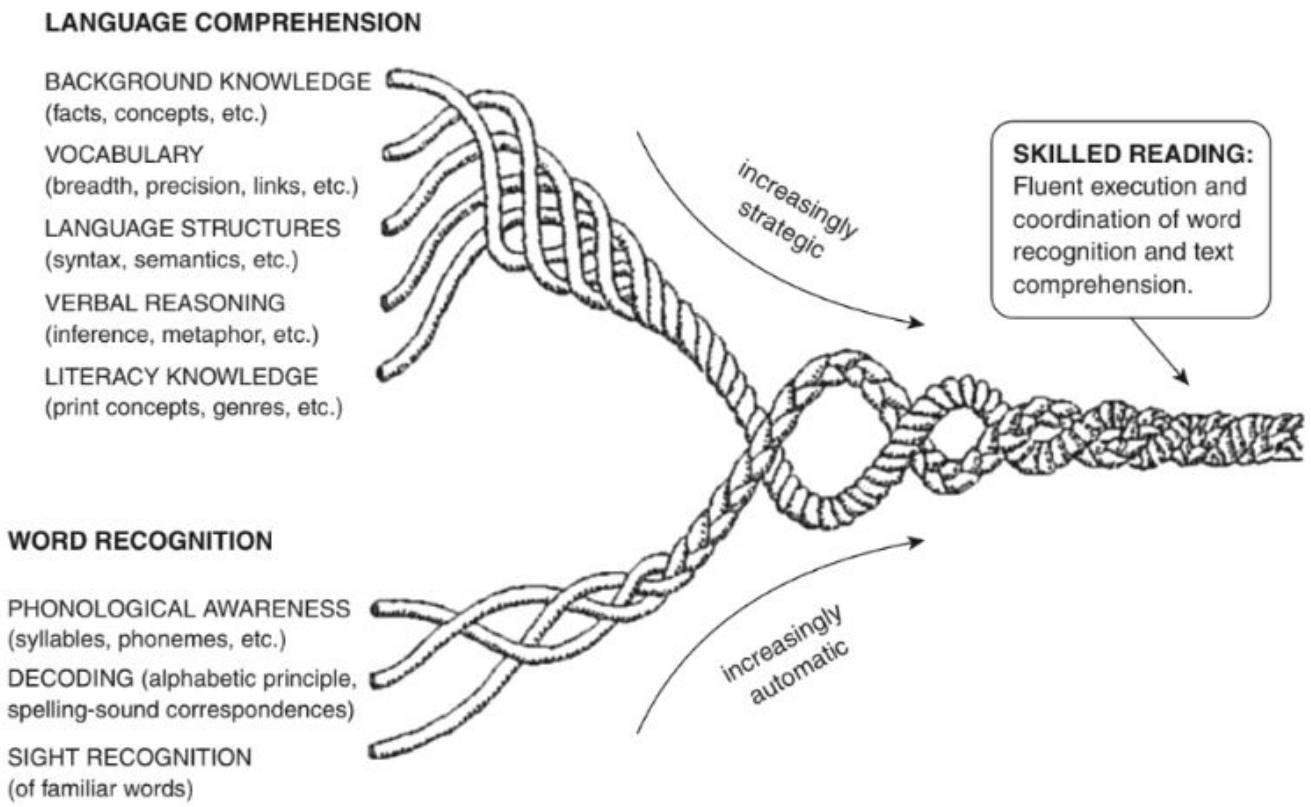
Currie & Cain (2015) *Discourse Processes*

Take home message #2

Comprehension is a dynamic process.

Readers draw on a range of knowledge and skills to process each new piece of information; the mental model of the text's meaning is updated *as the text unfolds* and new information is integrated into the current mental model.

The dynamics of reading for meaning



Different strands – skills and knowledge -- work together to construct accurate and coherent meaning of text.

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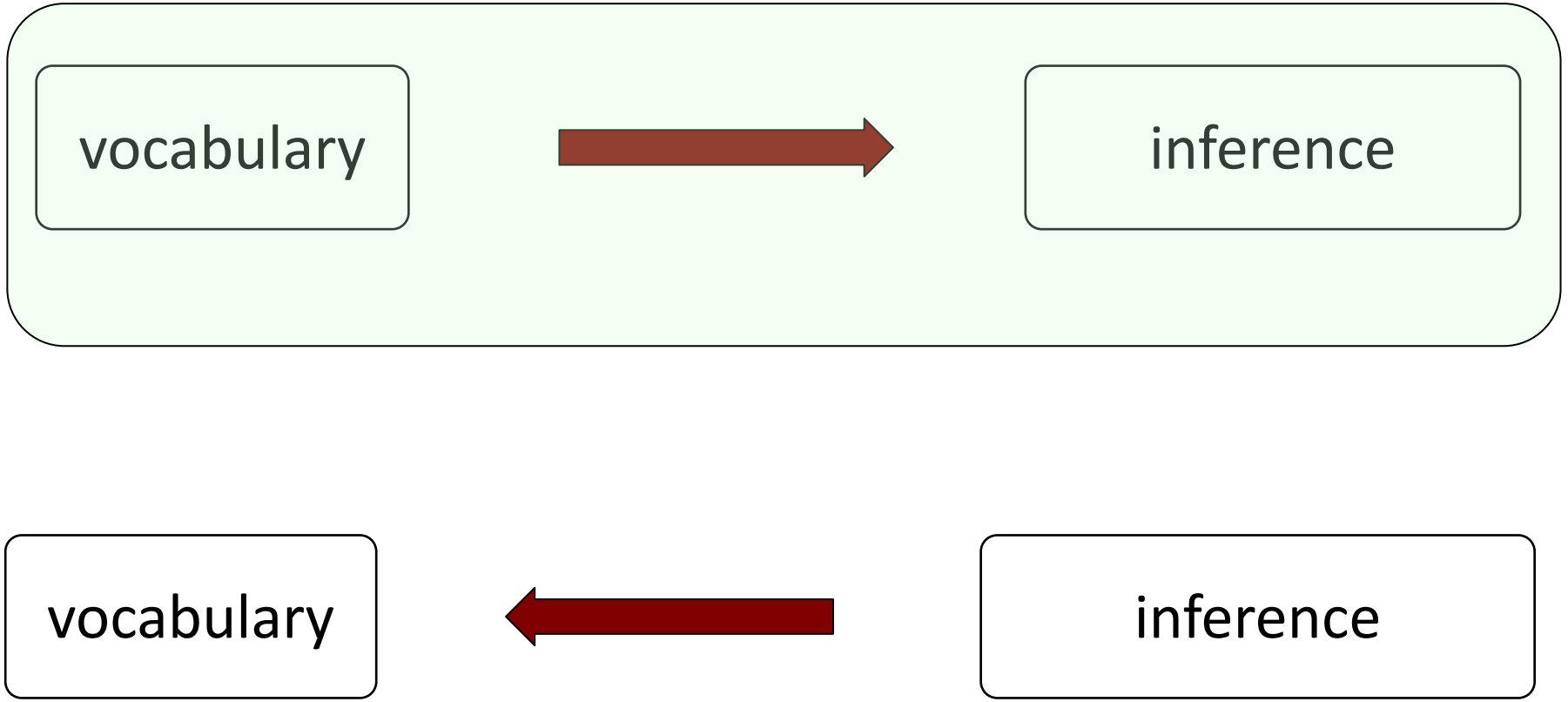
Reciprocal relations



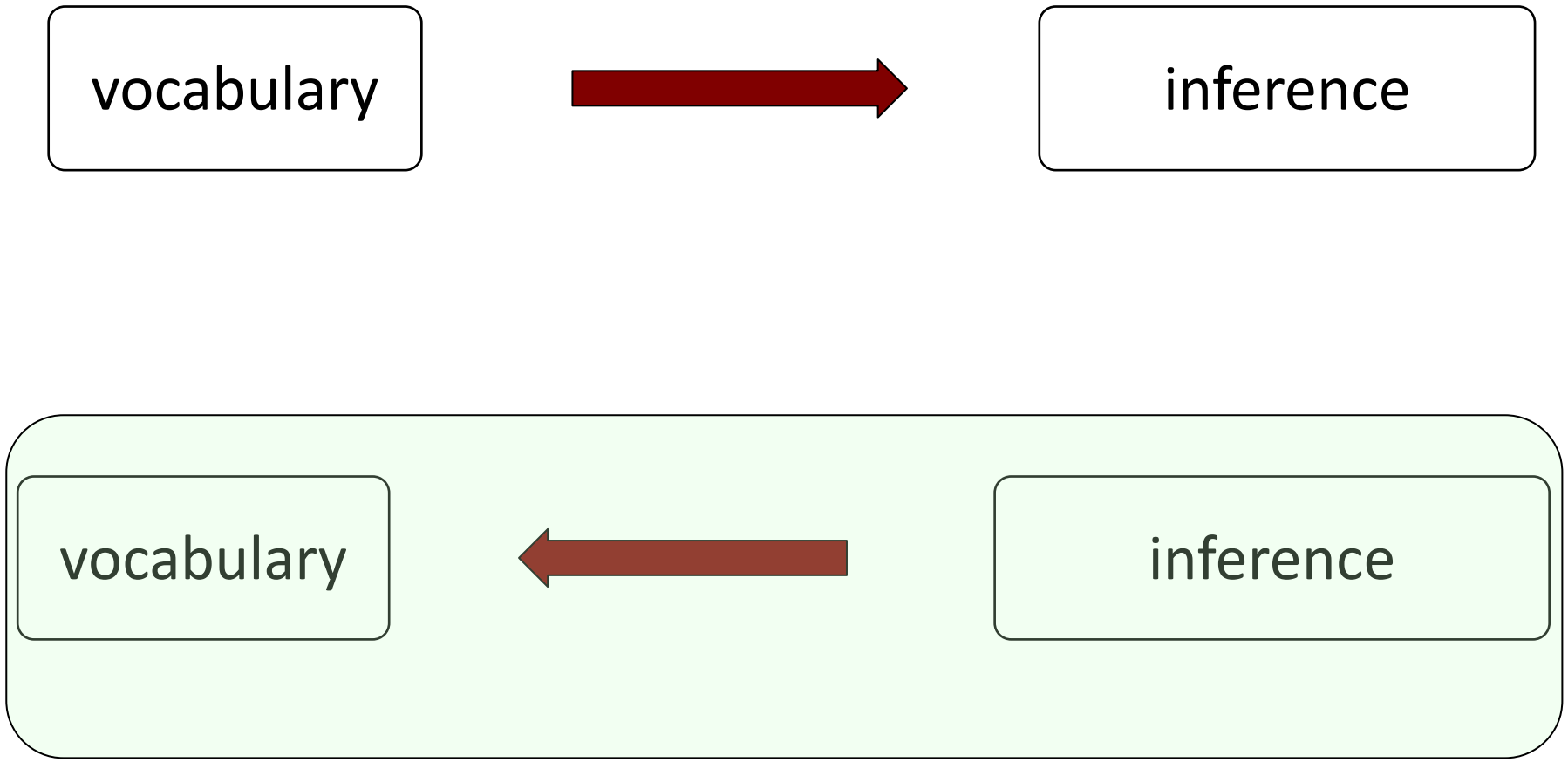
Vocabulary and inference: reciprocal relations

Tim had a new ***pet*** called Sparky. Sparky was soft, furry, and very playful. At first, Sparky slept indoors in a cardboard box with a nice soft blanket. Sparky soon grew very big. Tim decided to build a kennel and a tall wooden fence around the back yard. Tim went to the store. He already had a hammer and a saw, but he needed some wood and some nails…

Background knowledge (link with BK to establish theme)

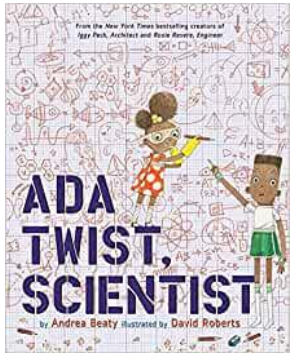
Q: What sort of animal was Sparky?

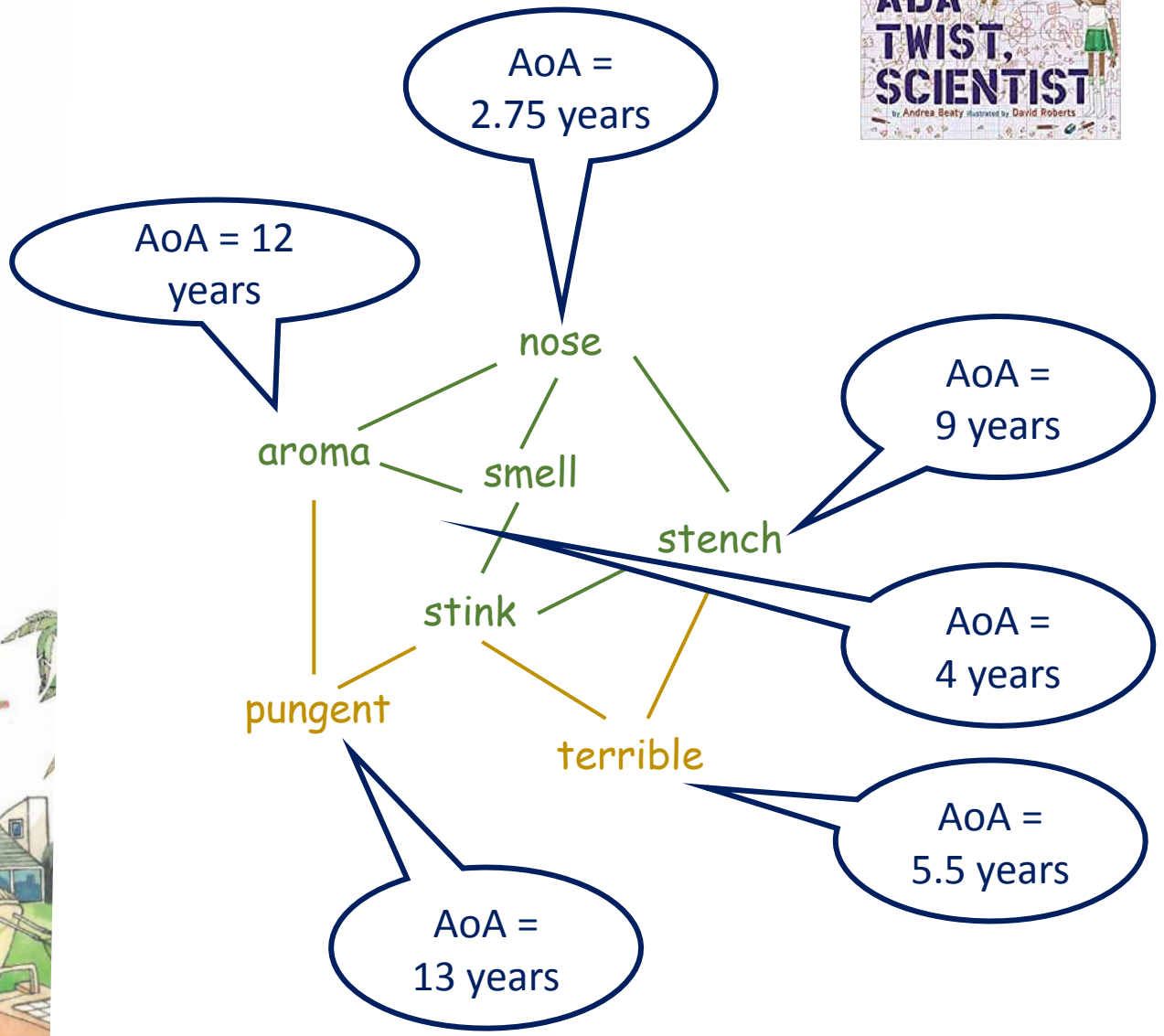
Reciprocal relations



Ada was busy that first day of spring,
testing the sounds that make mockingbirds sing,
when a horrible stench whacked her right in the nose—
a pungent aroma that curled up her toes.
"Zowie!" said Ada, which got her to thinking:
"What is the source of that terrible stinking?"
"How does a nose know there's something to smell?"
"And does it still stink if there's no nose to tell?"
She rattled off questions and tapped on her chin.
She'd start at the start, where she ought to begin.
A mystery! A riddle! A puzzle! A quest!
This was the moment that Ada loved best.

Reading age 5 to 7 years



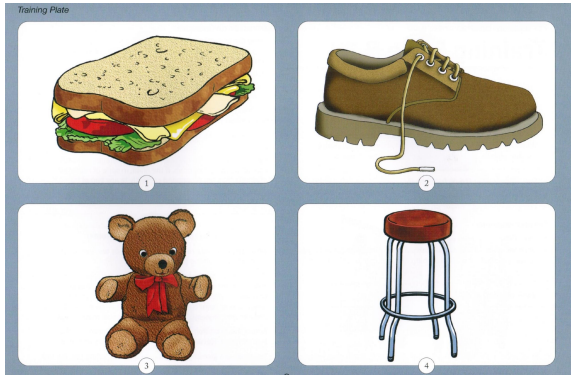


Vocabulary and inference: reciprocal relations

Participants

- US children in PK (4-5 years) followed to grade 3 (8-9 years)

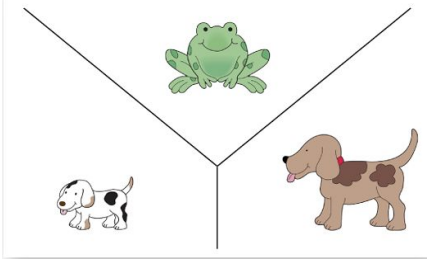
shoe



Measures

- *Vocabulary breadth* – number of words known (receptive & expressive single word tests)
- *Vocabulary depth* – what is known about those words (definitions, semantic relations)
- *Inference* from spoken narrative texts

which go best together and why?



Vocabulary and inference: reciprocal relations

Tim had a new *pet* called Sparky. Sparky was soft, furry, and very playful. At first, Sparky slept indoors in a cardboard box with a nice soft blanket. Sparky soon grew very big. Tim decided to build a kennel and a tall wooden fence around the back yard. Tim went to the store. He already had a hammer and a saw, but he needed some wood and some nails…

Background knowledge (link with BK to establish theme)

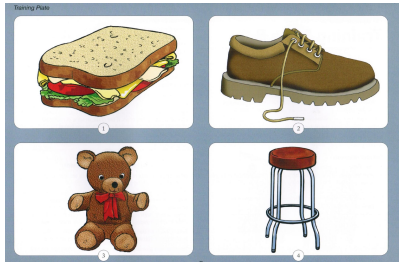
Q: What sort of animal was Sparky?

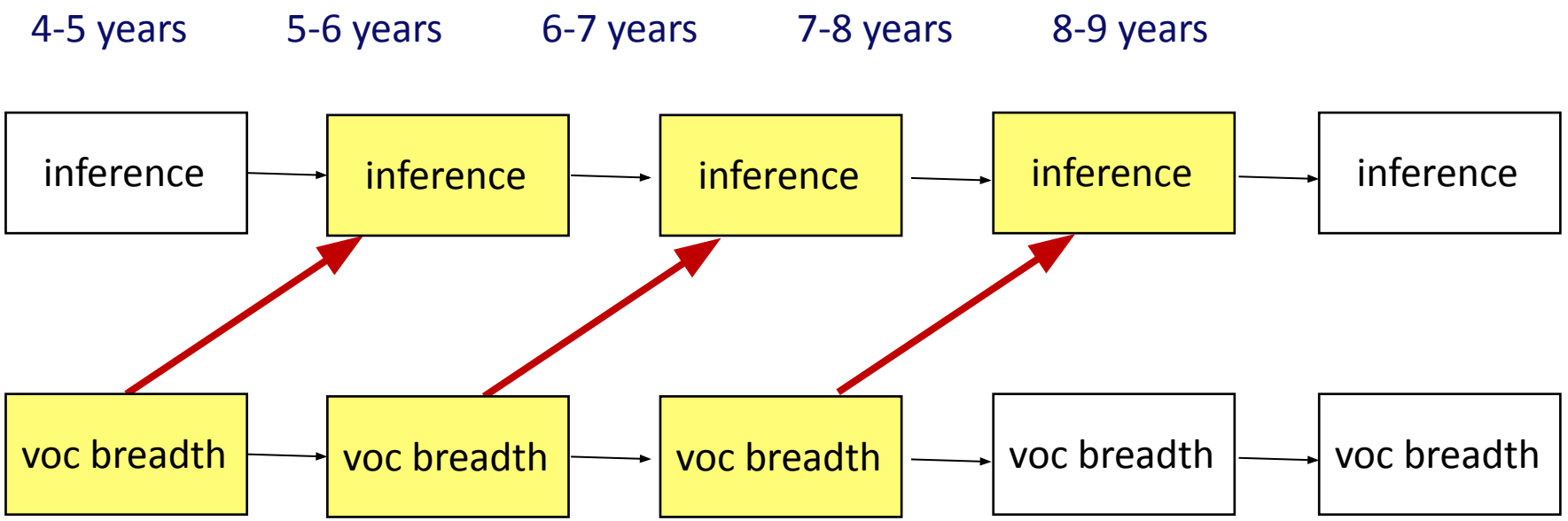
Integrative (connecting information within the text)

Q: What did Tim buy at the store?

LARRC et al (2019) *Journal of Educational Psychology*

Vocabulary breadth and inference: reciprocal relations





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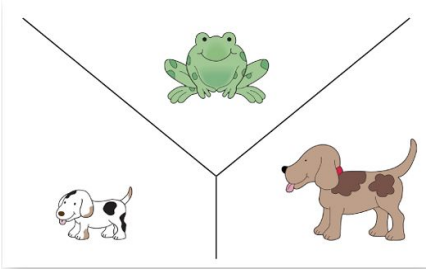
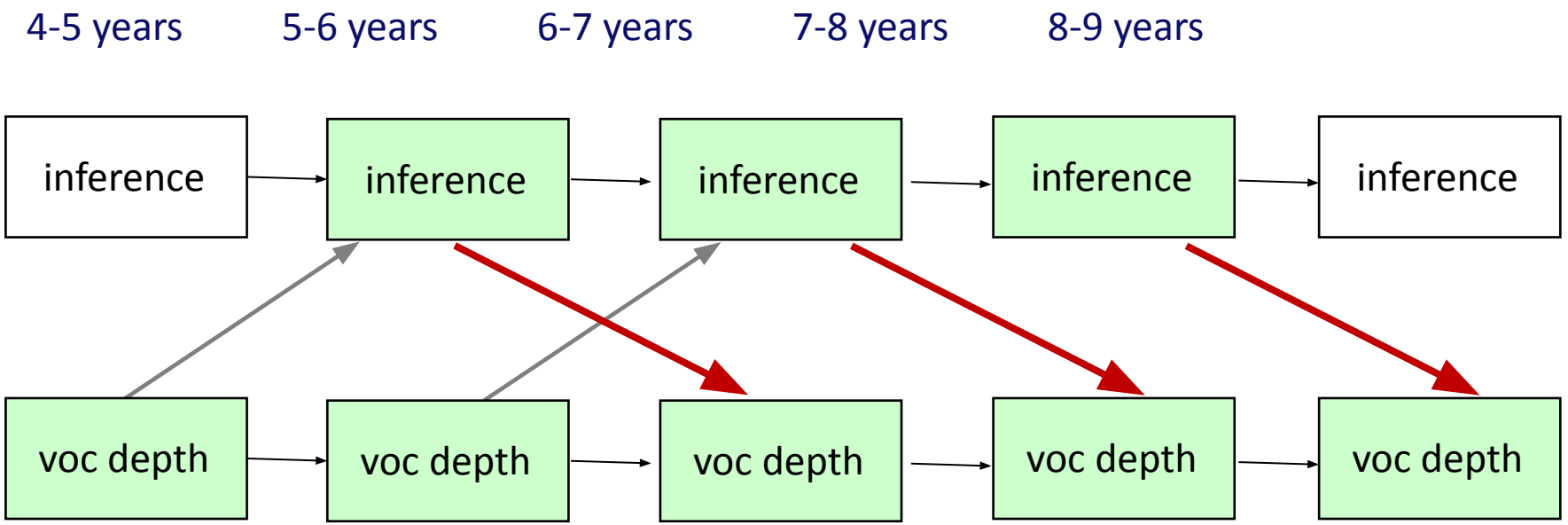
Vocabulary depth and inference: reciprocal relations





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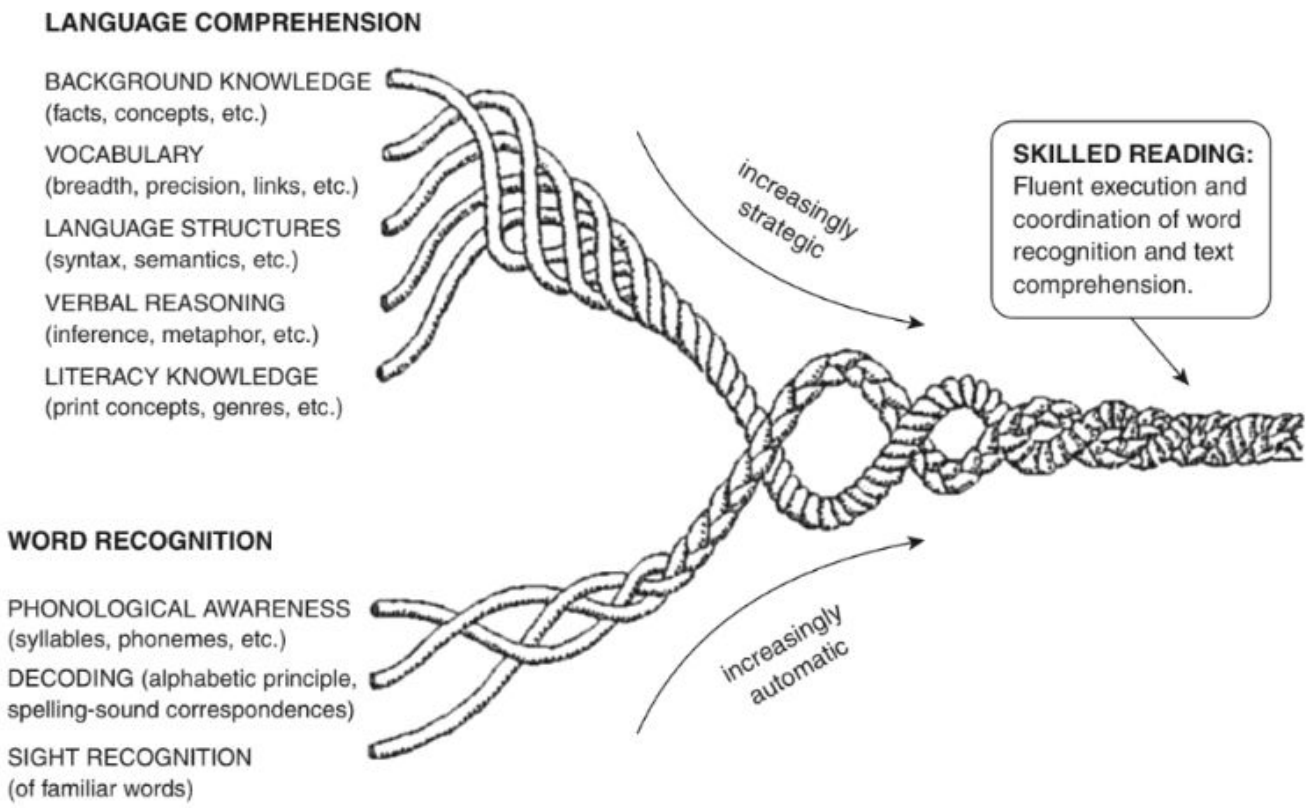
Take home message #3

Skills and knowledge support growth over time.

Inference supports vocabulary growth, and vocabulary knowledge supports later inference making.

The dynamics of development



Different strands – skills and knowledge -- work together to enable readers to learn from text and build their conceptual knowledge.

Overview and summary

Beyond decoding, a range of language skills support reading for meaning:

- Word-, sentence-, and text-level skills and knowledge each make unique contributions across the range of reading comprehension scores.

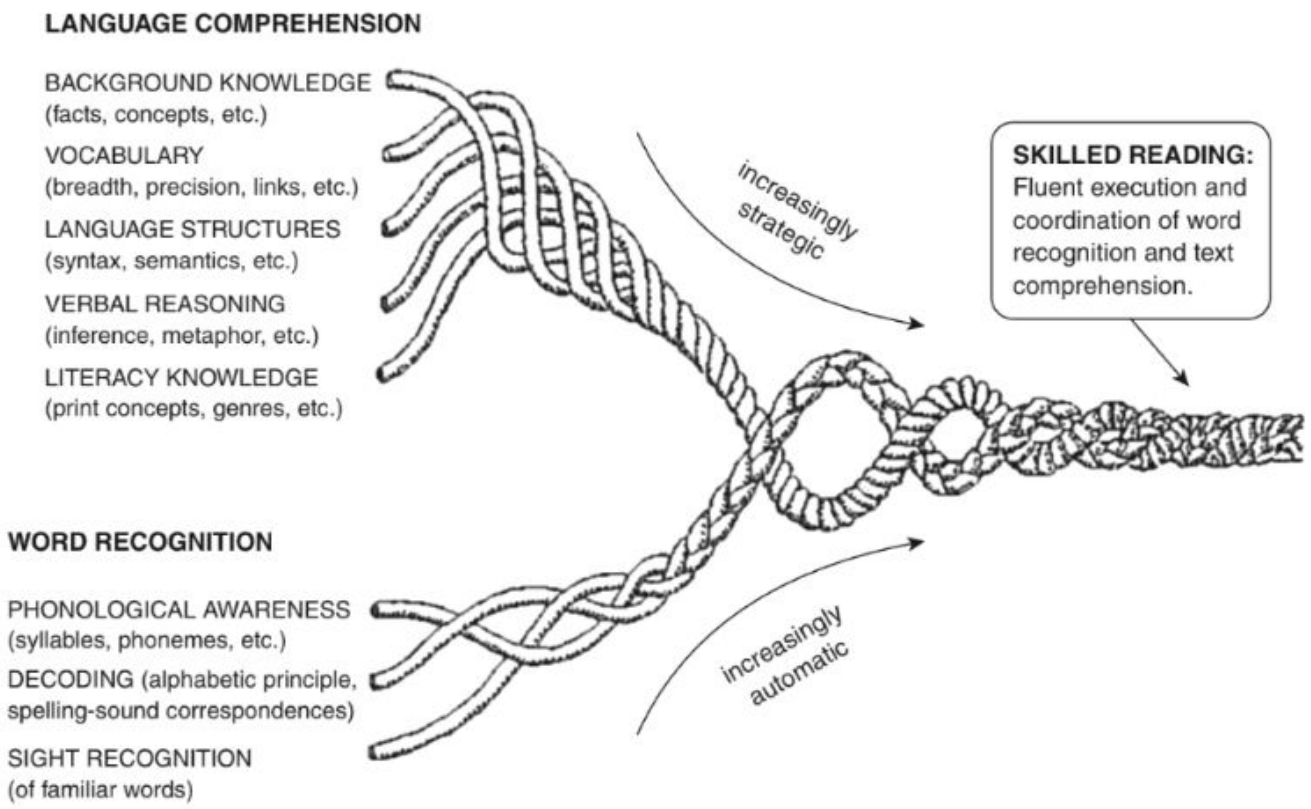
Reading for meaning is a dynamic process:

- Skills and knowledge do not operate in isolation; they must be coordinated to guide meaning selection and to update mental model of the text, as it unfolds.

The skills that support reading for meaning enhance each other over time:

- Vocabulary and inference share reciprocal relations and, as a result, skill and

The Rope Model (Scarborough, 2001)



Recognizes two components of reading: language comprehension and word recognition.

Details many of the separate strands - skills and processes - involved in each.

Highlights the interaction between these strands, within and across development.

Conclusions

The complex componential view of reading

- A range of language skills, knowledge, and processes make unique or independent contributions to reading comprehension.

The dynamic componential view of reading

- Theoretical basis and empirical evidence that skilled readers draw on all of these simultaneously to construct meaning from text.
- Processing/meaning selection can have a downstream effect on the accuracy and completeness of the reader's mental model, as well as knowledge growth over time.

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Lancaster University

Thank you for your attention

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