Reading Comprehension: Nature, Assessment and Teaching

The goal of reading is understanding. In order to understand print, a child must be able to decode the words on the page and to extract meaning. A large body of research focuses on how children learn to decode text and how best to foster children's decoding skills. In contrast, we know much less about the process of reading comprehension in children. In this booklet we first consider what is required in order to 'read for meaning'. We then move on to discuss children who have difficulties with reading comprehension. Our aim is to enable teachers to assess individual differences in reading and to foster the comprehension strategies that characterize fluent reading.

The Simple View of Reading

The introduction of the National Literacy Strategy in English schools in 1998 recommended that schools deliver a structured teaching programme of literacy through a daily literacy hour. Subsequently in 2006, the Independent Review of the Teaching of Early Reading chaired by Sir Jim Rose, recommended that the teaching of systematic phonics should be mandatory within a 'broad and rich language curriculum'. It is this broad and rich language curriculum that is fundamental to the development of good reading comprehension. The implementation of this review used as a framework the Simple View of Reading, depicted in Figure 1.

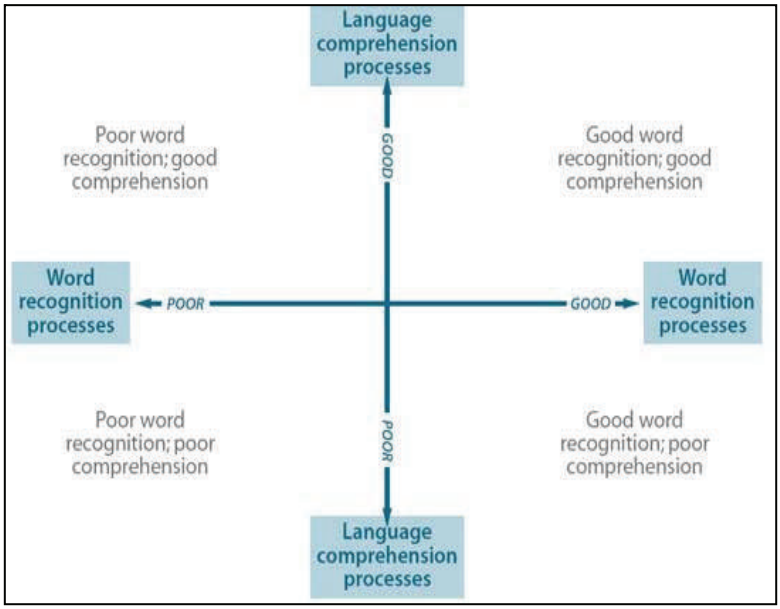

Figure 1: The Simple View of Reading

The Simple View of Reading makes clear that two relatively separate skills underlie variations in reading development: word recognition skills (depicted on the horizontal axis) and language comprehension processes (depicted on the vertical axis).

As Figure 1 shows, a person's reading competence depends upon both of these skills: typical fluent readers are shown in the upper right quadrant with good word recognition and comprehension skills, while children with dyslexia are shown in the upper left quadrant (poor word recognition, and good comprehension).

Children with comprehension difficulties fall in the lower half of the figure. Poor reading comprehension can occur either in combination with poor word recognition or when word recognition skills are well developed. If a young child cannot decode a word accurately, s/he cannot comprehend that word. Consider the difference in meaning between *'He thought the girl was very pretty'* and *'He thought the girl was very petty'*, two sentences that differ by only a single letter. Accurate decoding of words is necessary for access to meaning.

However, it is children who can decode well but still have comprehension difficulties (lower right quadrant) that are the focus of this booklet. Such children often go unnoticed in the classroom because their difficulties are 'hidden' behind their seemingly 'fluent' reading. We refer to these children as 'poor comprehenders'.

What is comprehension?

Comprehension is the goal of both reading and listening. Successful comprehension enables readers (or listeners) to acquire information, to experience and be aware of other worlds (including fictional ones), to communicate successfully, and to achieve academic success.

Good reading comprehension involves reading the words on the page, accessing their meanings, computing the sense of each sentence and much else as well. To understand text in a meaningful way, readers need to integrate the meanings of successive sentences and to establish *local coherence*. Readers also need to establish how the information fits together as a whole, that is, *global coherence*. For both local and global coherence, readers need to incorporate background knowledge and ideas (retrieved from long-term memory) to make sense of details that are only implicit (see Box 1).

Box 1 : Local and Global Coherence

The importance of local and global coherence and the role of background knowledge are well illustrated in by this short text, modified from Trabasso and Suh (1993):

> Betty wanted to give her mother a present (1).
> She went to the department store (2).
> She found that everything was too expensive (3).
> Betty decided to knit a sweater (4).

One way to establish local coherence is through *pronoun resolution*. In the above text, the pronoun "she" in sentences 2 and 3 refers back to the protagonist "Betty", who was introduced in the first sentence. The pronoun links the two sentences and enables their meanings to be integrated. Local coherence alone is often not sufficient to understand the overall meaning of the text. Why did Betty decide to knit a jumper? This sentence is anomalous unless the reader makes the *causal inference* that the jumper will be the present that Betty gives to her mother. The role of general knowledge in successful comprehension is demonstrated by sentences 2 and 3: general knowledge about the conventions of buying and selling and where to purchase presents is needed to make sense of these two sentences.

Thus, the product of successful comprehension is a representation of the state of affairs described in the text. This representation includes causal relations between the events, the goals of the characters (protagonists), and spatial and temporal information that is relevant to the story line. Models of skilled comprehension refer to this representation as a mental model or situation model. These meaning-based representations are not unique to reading comprehension: they are the product of successful comprehension of spoken discourse as well.

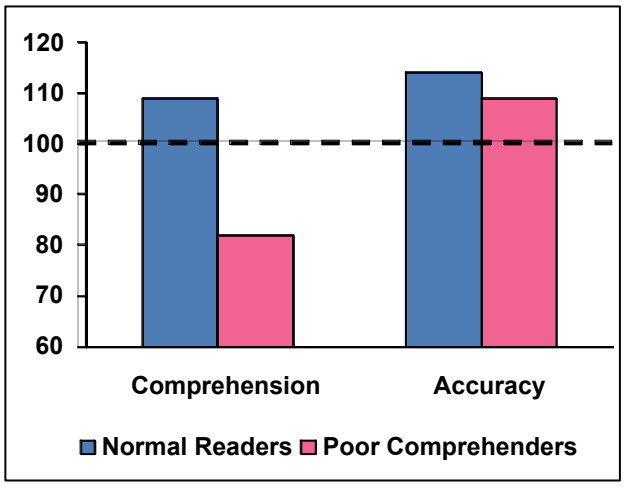

Figure 2: Reading profiles of poor comprehenders and normal readers. Dotted line represents average performance.

Characteristics of poor comprehenders

Poor comprehenders comprise up to 10% of 7 to 11-year-olds in UK schools. Children with a similar profile of reading ability (see Figure 2) are the subject of international studies and it is noteworthy that the 'poor comprehender' profile is observed not only in English but also in more regular languages that are 'easier' to decode (such as Italian).

Listening comprehension is an important foundation for reading comprehension: children use many of the same processes when reading text as they do to understand stories read aloud to them. It follows that the comprehension difficulties experienced by poor comprehenders extend beyond the written word: their comprehension of spoken texts and their ability to produce coherent narratives is poor.

In contrast to children with dyslexia-related difficulties, poor comprehenders do not show difficulties on tests of phonological awareness or in the speed and automaticity with which they can decode single words or nonwords. Some studies have demonstrated that poor comprehenders use sentence context less when reading than good comprehenders, and they have some subtle difficulties reading unfamiliar exception words (e.g. *month* and *mould*). However, none of these word-level problems account for their comprehension difficulties.

Poor comprehenders experience a range of difficulties both in the metacognitive skills and control processes that aid the construction of a mental representation of text and in some of the oral language processes that underpin these; many poor comprehenders also have limited working memory capacity (see Box 2). In addition, it is thought that poor comprehenders adopt a lower *standard of coherence*, that is, they are more likely to accept a lack of consistency within a text than those who comprehend well. Indeed it is likely that a number of different cognitive profiles are associated with the behavioural manifestations of 'poor reading comprehension'.

Oral Language Skills	Vocabulary; Grammar / Syntax; Oral expression
Higher-level Language Skills	Narrative skills; Figurative Language; Discourse processes
Metacognitive Strategies	Integration and inference making; Use of cohesive devices and context; Knowledge of Story Conventions and Structures; Comprehension monitoring
Executive Processes	Verbal working memory; Suppression/inhibition

Box 2: Common areas of difficulty for poor comprehenders (for a fuller account see Cain & Oakhill (2007) and Nation (2005)).

Assessing Reading Comprehension

A large number of reading comprehension assessments are available. We offer some general principles regarding the assessment of comprehension skills.

1. Reading comprehension is not a unitary construct but a complex skill dependent on a number of cognitive processes. To understand written text, a child needs to decode printed words and to access their meanings; relevant background knowledge needs to be activated, and inferences have to be generated as information is integrated during the course of reading. In addition, control processes monitor both ongoing comprehension and the internal consistency of text, allowing the reader to initiate repair strategies if comprehension breakdown is detected (at the simplest level, re-reading a section of the text). The complexity of reading comprehension presents challenges for assessment, especially as many of the cognitive processes that contribute to reading comprehension are covert and therefore cannot be directly observed or measured.

2. The Simple Model shows that children may be at risk of reading comprehension failure because of difficulties with word-level decoding accuracy and fluency, with linguistic comprehension, or with both. A thorough assessment should include tests designed to measure both decoding and comprehension. Decoding is much simpler to assess than comprehension and certainly unless they have a reasonable level of decoding skill, a child will struggle to comprehend text. However, it is important always to remember that successful decoding is no guarantee that successful comprehension will follow; in the extreme case of '*hyperlexia*' a child's decoding far outstrips their comprehension and such children have been said to 'bark at print'.

3. Tests of reading comprehension vary in terms of the nature of text that the child reads, and the response format via which comprehension is measured (see Box 3). Some texts are as short as a single sentence whereas others contain extended passages comprising a number of paragraphs. Some texts are read silently whereas others are read aloud. Of those that are read aloud, some allow for reading errors to be corrected by the tester. Different response formats include multiple-choice, true-false judgements, sentence completion, open question-answer and story-retell. Across all response formats, the nature of the question varies substantially with some items being more or less dependent on decoding, specific vocabulary, background knowledge and the particular type of inference needed. Tests also vary with respect to the load they place on cognitive resources such as working memory.

	Neale Analysis of Reading Ability (NARA-II): NFER-Nelson	**York Assessment of Reading for Comprehension (YARC) Primary: GL Assessment**	**Suffolk Reading Scale: NFER-Nelson**	**Group Reading Test (GRT 2): NFER-Nelson**
Age Range	Age 6-12 yrs	Age 4 to 11yrs	Age 6-14;11 yrs	Age 6-14 yrs
Administration				
Group			x	x
Individual	x	x		
Reading				
Silent			x	x
Aloud (feedback)	x	x		
Text				
Simple sentence			x	x
Short passage	x	x		x
Extended passage	x	x		
Response Format				
Cloze			x	x
Multiple-choice				x
Short answer	x	x		
Measures	Accuracy Comprehension Reading Rate	Accuracy Comprehension Reading Rate	Reading Comprehension	Reading Comprehension
Strengths	Assesses sentence level and text-level comprehension. Taps memory for literal information and inferencing skills.	Assesses word, sentence - and text-level comprehension. Taps a range of different types of inference.		
Limitations	Pupil receives feedback to bootstrap decoding. Some questions can be answered verbatim with reference to text. Reading rate confounded with accuracy.	Pupil receives feedback to bootstrap decoding. Reading rate confounded with accuracy.	Substantial load on decoding skill. Does not assess text-level comprehension strategies.	Substantial load on decoding skill. Focus is on sentence-level comprehension strategies (local coherence)

Box 3: Some commonly used measures of reading comprehension

4. Since tests of reading comprehension vary in task demands, it is important to be clear that the nature of the assessment influences which children may be identified – or fail to be identified – as having comprehension impairments. Some tests that are marketed as measures of reading comprehension are in fact very highly dependent on decoding. Hence, children can fail because they have decoding rather than specific comprehension difficulties or, on the other hand, some children may pass leaving their comprehension impairments undetected. Indeed, some children perform well on tests of reading comprehension that measure sentence-level comprehension yet have quite substantial comprehension impairments when reading extended discourse. Another common problem with many comprehension tests is that certain questions can be answered correctly using background knowledge (without the text having to be read). Thus, some children's reading comprehension difficulties may be masked because they can rely on general knowledge to answer the comprehension questions while conversely, children with low levels of background knowledge may be penalized.

5. Given the complexity of comprehension, it seems likely that children may fail to understand what they have read for a variety of different reasons. Thus, a comprehensive assessment should include measures of decoding accuracy and fluency, oral language, general cognitive resources and working memory as well as reading comprehension. In addition, every effort should be made to assess comprehension of extended text or discourse, not just word- or sentence-level comprehension.

Identifying Poor Comprehenders

The 'gold standard' for the identification of a poor comprehender (i.e. someone with specific reading comprehension difficulties) is the individual administration of a test of reading comprehension. When teachers are hearing children read, they should routinely ask them a few questions to probe their understanding; for example, *What do you think the main character felt like? Why do you think that happened? What do you think will happen next?* If a child who, despite being a good reader/speller, has difficulty in answering such questions, then it is recommended they use the Neale Analysis of Reading Ability (NARA-II), or the more recently standardized York Assessment of Reading and Comprehension (YARC) to provide a full assessment of such children's reading skills: their prose reading accuracy, fluency and comprehension. Observation of children's behaviour during the test will shed light upon their ability to monitor comprehension, and to self-correct, as well as their use of 'look-back' strategies during the questioning. Finally, a qualitative analysis of their responses can be helpful in providing insight into the nature of their difficulties, especially with inferences.

In the early phases of reading instruction, the emphasis is typically on phonics and the development of decoding skills. It is difficult at this stage to obtain reliable estimates of reading comprehension. However, it is wise to monitor the development of children's vocabulary and their listening skills early on, because slow development of these skills can signal likely future reading comprehension difficulties.

Developing Reading Comprehension Strategies

A meta-analysis conducted by the US National Reading Panel (2000) highlighted teaching techniques that have been shown to be effective in promoting reading comprehension:

- Comprehension monitoring
- Graphic/semantic organisers (diagrams) for learning new vocabulary
- Story structure training focusing on plots, characters and main events
- Question answering
- Question generation
- Summarisation (identifying and integrating details to create a coherent and succinct summary of a text)
- Multiple strategy teaching.

Box 4
Reciprocal Teaching (RT)

RT refers to an instructional activity that takes place in the form of a dialogue between teachers and students regarding segments of text

The teacher and students take turns assuming the role of the teacher in this dialogue

The dialogue is structured by the use of four strategies:

Clarifying

Question Generating

Summarising

Predicting

One approach that brings together many of these techniques is *Reciprocal Teaching*, which has been the basis of many of the later interventions. This form of multiple strategy teaching is based around discussion between children and a tutor. To begin with the activities are highly scaffolded; as skills develop the children take more of a lead and the input from the tutor is reduced (see Box 4).

Interventions for Poor Comprehenders

A number of small-scale training studies provide evidence that reading comprehension can be improved in poor comprehenders.

Strategies include training in:

- Inferencing and monitoring skills
- Lexical inference resolution, question generation and prediction
- Mental imagery encouraging children to make representational and transformational pictures in their minds
- Visualizing and Verbalising

A recent large scale randomized controlled trial, the '*READing for MEaning*' project http://www.york.ac.uk/res/crl/readme.html compared **three** different approaches to ameliorating the reading comprehension difficulties of poor comprehenders:

- Text Comprehension (TC) comprised work on inferencing, metacognition and *RT* to develop strategies to support text comprehension and production.

- Oral Language (OL) focused on training children's strategies for understanding and producing spoken language. It used a listening version of *RT* as a core technique, linking to activities that targeted key areas of oral language, namely vocabulary, figurative language and spoken narrative (see Figure 3 for example).

- Combined (COM) made explicit links between written and spoken language and highlighted strategies that could be used across both domains. It integrated all components from the other two approaches so that, for example, new vocabulary was introduced for use in both written and spoken contexts.

Each of these programmes, delivered by trained teaching assistants as part of a 20-week intervention was effective in bringing about significant gains in reading comprehension. Strikingly, one year after the intervention finished, the children who received the OL programme were ahead of the other groups not only maintaining their gains, but also increasing their comprehension skills further.

Gains in reading comprehension have positive effects not only on children's attainments but also on their enjoyment of reading and on their self-esteem. It is vitally important to be aware of individual differences in reading comprehension in children of all ages, to identify early children who are falling behind their peers and to put interventions in place.

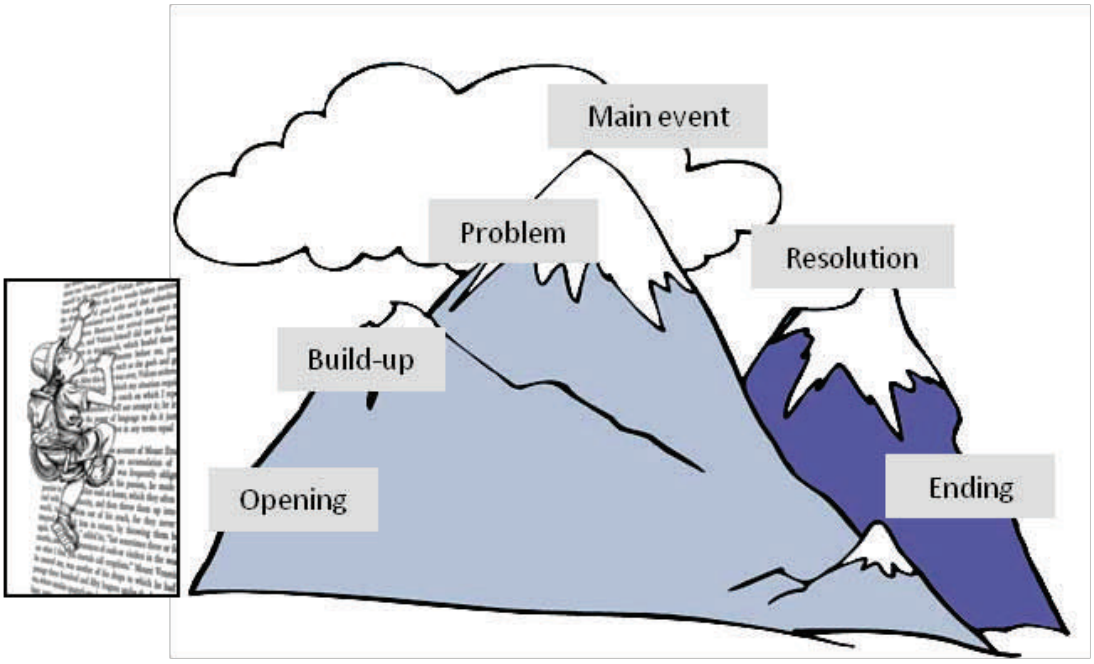

Figure 3: Example of an activity to support story structure (from the READMe project)

Further Reading

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