Understanding
READING
COMPREHENSION
Processes and Practices

WAYNE TENNENT

Understanding
READING
COMPREHENSION
Processes and Practices

Education at SAGE

SAGE is a leading international publisher of journals, books, and electronic media for academic, educational, and professional markets.

Our education publishing includes:

- accessible and comprehensive texts for aspiring education professionals and practitioners looking to further their careers through continuing professional development

- inspirational advice and guidance for the classroom

- authoritative state of the art reference from the leading authors in the field.

Find out more at: **www.sagepub.co.uk/education**

Understanding
READING
COMPREHENSION
Processes and Practices

WAYNE TENNENT

SAGE

Los Angeles | London | New Delhi
Singapore | Washington DC

FSC MIX
Paper from responsible sources
FSC® C016779

For George

CONTENTS

ABOUT THE AUTHOR

Wayne Tennent is a Senior Lecturer in Education at the University of East London. He worked for a number of years as a class teacher in London. He also spent some time working away from the UK, teaching in Greece, Brunei and New Zealand. He has completed a PhD that investigated ways to develop children's comprehension in group reading contexts.

ACKNOWLEDGEMENTS

LOCATING READING

Chapter Overview

This chapter aims to locate reading comprehension within the wider construct of 'reading'. It argues that any conception of what comprehension is, or might be, will relate to a wider conception of reading. The simple view of reading (Gough and Tunmer, 1986) has become a prominent conceptual framework for the teaching of reading. The manner in which this view conceives reading is examined. Research findings related to the simple view that inform the teacher of reading are presented. Following this, a number of issues are raised that are perhaps not made obvious by the simple view, including how it might be interpreted and the fact that comprehension itself is comprised of component parts. It is suggested that to support children's comprehension of text, other perspectives on reading need to be considered.

CAN BABOONS READ?

To consider what is meant by 'reading comprehension' it is useful to consider what is meant by reading in the first place. An interesting article appeared in *The Independent* newspaper in 2012 under the headline:

'Literate' baboons can tell genuine words from nonsense

In the article, John Von Radowitz outlined a research study conducted by French scientists that investigated the ability of baboons to discriminate between real words and nonsense words. These baboons were presented with 'dozens' of genuine

English words and more than 7,000 nonwords. The baboons were able to recognise the real words with an accuracy rate of nearly 75% (Von Radowitz, 2012).

This study raises a number of questions. For example, why on earth would anyone fund such a study? Also, the baboons had to engage with in excess of 7,000 words: is this a good use of their time? What could they possibly have learnt from this? Actually, these are not flippant questions, though they may appear so.

Reading is not a natural act

One point to consider relates to the fact that we are not 'hard-wired' to read; and by read in this context we mean to decode and interpret *writing systems* (whether they are alphabetic and map sounds to letters, or logographic and map syllables to symbols, as in Chinese). As a species we have adapted our visual and aural perceptions which once would have kept us clear of predators and helped us track prey, to the task of developing writing systems, and then learning how to read them (Wolf, 2008). The word 'learn' is used advisedly. Our early evolutionary ancestor would have had to learn to 'read' the tracks of a possible predator to see if they were fresh, and to listen to see if the predator was still in the vicinity. They would perhaps have used some sort of language to communicate this information to nearby fellow humans. Clearly, they didn't think, 'Oh look! Those are the tracks of our most dangerous predator', and then just stand there. If they had, they might possibly have been eaten and the species would have died out. Instead, our ancestors would have had to comprehend the situation from the given 'text' (the footprints). They would have had to analyse, evaluate and respond – probably by running away. Wolf (2008) notes how through neuroscience we know that the same parts of the brain that deal with visual and aural information are centrally active when we have to decode written text, and that other parts of the brain that deal with understanding and interpreting are also activated as we try to make sense of it. Indeed, there is no part of the brain that is designed specifically to deal with written text.

What the baboon study does, and as Von Radowitz outlines in his article, is provide some evidence to suggest that the ability to adapt these skills may pre-date humankind. The study also suggests that the ability to adapt these 'hard-wired' skills to the task of recognising a writing system may not be unique to humans. Interesting perhaps, but what relevance does it have for you as a teacher of reading? The key point to note here is that this study reminds us that reading is not a 'natural' act; if it was we would all be able to do it effortlessly. It would be like breathing. But it is not. It needs to be taught.

Reading may mean different things to different people

A second point to consider relates to the description of the baboons as being 'literate'. Von Radowitz may have been using some journalistic licence, and not a little irony, to make the story appear more interesting, but it does make us examine what we consider 'literate' to mean. Barton (2007) has traced the etymology

of 'literate' and cites the *Oxford English Dictionary* as noting a reference to the word from 1432. At this time it meant to be educated and in holy orders. From 1924 the term came to be more clearly defined as being able to read and write. This definition would describe literacy as a set of reading and writing skills that simply need to be learnt; being 'literate' would mean that the task of learning these skills has been achieved. This view of being literate was dominant in education until about the 1980s (Pahl and Rowsell, 2011), although Au (2004) would argue that this definition is still the one that is generally accepted.

Reflecting upon these definitions, you may wonder whether 'literate' is the correct term to use when applied to our baboons. The 1432 definition requires us to consider the term 'holy orders'; and also to consider what it means to be educated. In Western Europe at this pre-industrial time, reading would largely have taken place in monasteries and entailed the study of holy texts. This type of study would have been conducted by monks who were likely to have been born into wealthy families (Beare, 2000). Clearly this part of the definition would not apply to our baboons. But are they educated? In all likelihood the response to this would be 'no'. One rationale for this response would probably state that though they might have been able to differentiate between (some) words and nonwords, they have no *understanding* of what these words mean. Turning to the 1924 definition, a similar point might be made. We could say that they have developed some literacy skill in that they are able to recognise (some) words. However, it might be argued that because they are unable to *comprehend* the word, they cannot be described as literate. The point for you as a teacher of reading is to consider what actually constitutes reading.

Dialogue Point

Defining terms

Through dialogue with colleagues, consider the following questions:

- What does it mean to be educated?
- What does it mean to be literate?
- What is reading?

At this stage, taking a line of argument that considers the relationship between the recognition of words and the ability to understand them is a pertinent one. In the course of studying the teaching of reading it is likely that the term 'reading wars' (Stanovich and Stanovich, 1999) will be encountered. This refers to a time (apparently) when there was a polarised debate as to how reading – particularly early reading – should be taught; whether there should be an exclusive focus on developing a knowledge of letters and sounds (phonetic knowledge) before engaging with the meaning of texts, or whether children should

be immersed in the meaning of texts at all times without necessarily focusing on phonetic knowledge. As Levy (2011) points out, very few educators assumed these polarised positions; and indeed there is general agreement that for children to become skilled readers they need to develop a phonetic knowledge of written texts as well as the ability to make meaning of (or comprehend) them (Snow et al., 1998).

It is perhaps not surprising then that the conceptual framework for reading described as the 'The simple view of reading' (Gough and Tunmer, 1986) has come to prominence, as it defines reading in relation to these two components specifically.

THE SIMPLE VIEW OF READING

The simple view of reading is a psychologically-based framework which suggests that, in its simplest form, reading is composed of two key over-arching components: word recognition and linguistic comprehension.

Gough et al. (1996) capture this in the following hypothetical 'formula':

Reading = decoding x comprehension

By decoding, Gough and colleagues mean context-free word recognition; the ability to recognise written text effortlessly. It does not relate to any kind of understanding of what that written text might mean. This relates to the spoken language comprehension part of the equation, by which the authors mean the interpretation of words, sentences and discourse.

The description of this as a *hypothetical* 'formula' is apt. A formula of this nature suggests numbers can be used to represent decoding and spoken language comprehension, which in turn will provide an overall score for reading. This is not the case here. This is emphasised by the use of the multiplication symbol to describe the relationship between decoding and comprehension. A reader may be unable to decode a text, but may have some level of language comprehension. They would score a *hypothetical* 'zero' for decoding and score positively for comprehension:

Reading = decoding x comprehension

            0 x 1

If these two scores were added together, the reader would achieve a positive score for reading, when clearly they have read nothing. A multiplicative relationship means a zero score for decoding would mean a zero score for reading overall.

The same is true if the situation is reversed. It may be possible to decode the text, but if the reader has no comprehension of the language then the score for reading would also be zero.

Reading = decoding x comprehension

1 x 0

The rationale for presenting this as a formula is to show that if we want to say someone is reading, they need to be able to demonstrate *both* decoding ability and a comprehension of the text.

📁 **The simple view of reading: both decoding ability and comprehension are required**

A worked example

1. I don't know the code but I can use my spoken language comprehension

The following text is an actual English sentence; it uses the exact spellings of English words but it uses the font Wingdings 3.
   See if you can work out what the sentence says. (To begin with, can you work out what the first word says?):

∧↑⇨   →⇕⇨↙↗⇨⇨▲⇨△   ▲▶↔⇨↑⇨⇦   ◀↑⇨   ⇦⇨↙↙.

In trying to make sense of this you probably used a number of strategies. You applied your knowledge of English sentence structure and probably decided that the first word is 'The'. Without probably even thinking about it, you decided that the second word is a noun and that the third word is a verb. You were probably hoping that the fourth word is also 'the', but it appears to have different orthography (or letter pattern) from the first word in the sentence (but remember, capital letters have a different shape to lower case letters). You might have also noted the spelling pattern in the last word, which ends in a double letter.
   Throughout this activity you are certainly trying to discern some sort of alphabetic principle. However, because you do not recognise the orthography of the letters it is very difficult to make sense of it. It is also very time-consuming.
   A visual image might help, however. State in one sentence what is happening here, in the picture on the right:

© isitsharp/istockphoto

Providing a visual image means that the need to decode the written text has been removed. Wyse et al. (2013: 135) would describe this as using 'visual image interpretation', and you can probably make a statement that shows your comprehension of the picture.

And indeed,

∧↑⇨ →↕⇨↙↗⇨⇨▲⇨△ ▲▶↔⇨↑⇨⇦ ◀↑⇨ ⇦⇨↙↙

does translate into

The   goalkeeper   punched   the   ball.

You comprehended the visual image by applying what you know about football. The player allowed to use their hands (or fists) is called a goalkeeper and sometimes they might punch the ball rather than catch it. So you were probably able to state something that approximates in meaning to the 'Wingdings 3' sentence. Of course, approximating is not actually good enough because while the reader may get the gist of the text this may not reflect the exact wording. This still leaves room for a misconception.

The key point here is that you were able to apply your spoken language comprehension in relation to the visual image and make sense of what was happening. It is highly unlikely that you were able to access the written text. As such, according to the simple view, you were not reading.

The simple view of reading notes that readers need to know 'the code' of the language to be able to read written text.

2. I know the code but I can't apply my spoken language comprehension

But what if you do know 'the code'? Does this mean reading has taken place? See if you can decode the following text and work out its meaning:

Ron im illy bashtruf. Ini vasby ti desh pinskehmough.

Ini vasby ti poosh football.

In common with our friends the baboons (perhaps), you probably recognised two of the words in these sentences: Ron (probably someone's name) and football. You were probably able to decode every word (although you may have been uncertain as to the pronunciation of 'pinskehmough': 'ow' as in 'plough'; 'o' as in 'though'; 'uff' as in 'tough'; 'ock' as in 'lough', 'off' as in 'cough' …?), but your reading rate probably slowed down to ensure the accurate decoding of unknown

spelling patterns. Again you probably attempted to apply your knowledge of grammar to mark such things as nouns and verbs. In this situation you were applying your knowledge of the alphabetic principle, but because you did not recognise the words you could not assign meaning to the text (and perhaps you did not even try). In effect you were 'barking' at the text. By this we mean being able to decode written text with ease and fluency while making no attempt to understand it.

Again, this is not reading, and decoding without comprehension is not enough.

RESEARCH BASED ON THE SIMPLE VIEW OF READING: SOME FINDINGS

A number of research studies have investigated the relationship between decoding and spoken language comprehension and these have uncovered findings that have relevance to you as a teacher of reading.

Decoding text is more difficult for younger children

Gough et al. (1996) investigated the relationship between word recognition, reading comprehension and listening comprehension. They did this by way of a meta-analysis. A meta-analysis involves sifting through completed studies that fit the criteria being investigated (in this case, studies that have focused on the relationship between word recognition, reading comprehension and listening comprehension), noting the findings in the data and then reanalysing them to find common trends. In all, they looked at seventeen studies that focused on monolingual speakers and separated their analysis into four age-related groups: Grades 1/2 (6–8-year-olds), Grades 3/4 (8–10-year-olds), Grades 5/6 (10–12-year-olds), and college age. They found a strong correlation existed between word recognition and reading comprehension in younger children. This correlation became less strong the older the children were. This means that for younger children the ability to comprehend written text is more dependent on word recognition ability than for older children.

Catts et al. (2005) had similar findings. In a longitudinal study they tracked 604 children in their second (7–8-year-olds), fourth (9–10-year-olds) and eighth (13–14-year-olds) grades of schooling to test their language reading and cognitive abilities. Using a number of tests (which again included word recognition, listening comprehension and reading comprehension), they found that difficulties with reading comprehension could be explained by word recognition difficulties for

a number of the younger children. Word recognition issues were less likely to explain comprehension difficulties for older children.

   This probably comes as no surprise. For younger readers, particularly beginning readers, decoding is a more effortful task because they are still learning that each letter (or cluster of letters) relates to a particular sound (grapheme–phoneme correspondence). Perfetti et al. (1996) describe this as a 'decoding bottleneck' (see Box below) because the task of attending to the words in text consumes the majority of the child's processing capacity. As they encounter the words more regularly in text this skill becomes more automatic and takes less effort. Frith (1985) describes this as moving from the alphabetic stage, where children develop an awareness of letter/sound relationships and begin to segment words into syllables and sounds, as with *c – at* or *c – a – t*, to the orthographic stage, where they no longer need to sound out words on a regular basis, and are able to recognise a large number of words instantly and automatically. The majority of children get better and quicker at decoding text as they get older and therefore have more cognitive resources to spend on making sense of it. So teachers should be aware of the importance of getting the words off the page.

📁 **Perfetti et al.'s (1996) 'decoding bottleneck'**

When children (and adults as well) attempt to read written text they do so with limited processing capacity. This means that we all have limited cognitive resources we can apply to the task.

   This can be demonstrated by looking at the bottles in shown below. Imagine these bottles show all the space two people have in their head when they are reading a written text, and that the water in the bottle shows how much of their limited processing capacity they have to spend on *decoding* the text.

For the first person it takes a lot of effort to decode the text and as a result they have less 'space' (or processing capacity) to spend on trying to make sense of it. This is what Perfetti et al. mean by a 'decoding bottleneck'. For the second person, decoding the text has been a relatively easy task and they have more available resources to comprehend it.

There are specific processes required to comprehend written text, which are different from those required for decoding

An inter-dependent relationship clearly exists between the two processes of decoding and comprehension because they are both necessary for reading. The simple view provides an understanding that both these linguistic processes need to be applied fluently and efficiently (Snowling and Hume, 2005) for written text to be understood. The worked examples above highlight the fact that the complete absence of either one of these two components means that reading cannot take place.

Gough et al. (1996), however, suggest these components can be also disassociated. This probably comes as no surprise. The worked example above showed that both decoding and comprehension were needed to read and are thus inter-dependent; but it also showed that the two can be separated. You comprehended the picture that supported the undecodable text and you decoded the nonsense text without making any sense of it.

Indeed, studies have actively attempted to separate the components of word recognition and comprehension. The Catts et al. (2005) study is one. Another is the Aaron et al. (1999) study that analysed the performance of 139 children in Grades 3 (8–9-year-olds), 4 (9–10-year-olds) and 6 (11–12-year-olds) on a range of tests including reading comprehension, listening comprehension, nonword and irregular word reading, vocabulary and tests of word reading speed. Sixteen children were noted to have some kind of reading difficulty. For most of these children the source of the difficulty tended to be specific to *either* word recognition ability or comprehension, not both.

This finding suggests that for effective reading to occur there must be processes taking place that are specific to either word recognition or comprehension. Comprehension is different from word recognition and will therefore require different teaching approaches.

Specific reading difficulties can be located

Disassociating the two components also provides the opportunity to locate where children might be having specific difficulties with reading. Again, in the Aaron et al. (1999) study the authors investigated whether there were identifiable subgroups of poor readers within the group of 16 children they had identified. They described this subgroup of children as having some kind of reading disability. They found that two of these children had reading profiles that showed a deficiency in decoding skill alone, and a further two were deficient in listening comprehension alone. Three children showed weaknesses in all areas, suggesting a third subgroup with a mixed reading disorder. Thus, they were also able to identify specific areas of reading deficit.

In this way, the simple view may help to provide a clearer outline of children's reading profiles. For example, a child with good spoken language comprehension but poor word recognition might be considered dyslexic. Proponents of

the simple view would suggest this informs the teacher as to types of teaching strategies they might use.

There is a link between reading comprehension and listening comprehension

One further finding of interest suggests there is a link between reading comprehension and listening comprehension. In the same meta-analysis, Gough et al. (1996) found a general trend in their data which suggested that the older the subjects, the stronger the relationship between reading comprehension and listening comprehension. Once again, this is supported by Catts et al. (2005), who found that older children who were having reading comprehension difficulties were likely to have listening comprehension difficulties too, rather than any associated difficulty with word recognition.

Gough et al. explain this link by noting that reading and listening comprehension require access to similar linguistic processes; the only difference is the point of access. Written text is accessed via the eye; listening requires access via the ear. As Cain (2010) notes, listening comprehension and reading comprehension are not exactly the same thing. Nonetheless, the link between the two has implications for us as teachers; if we want to support children's reading comprehension then there might be a call also to support their listening skills.

INTERPRETING THE SIMPLE VIEW – READING AS A LINEAR PROGRESSION

The simple view of reading has had a significant impact – whether implicitly or explicitly – on how reading is taught in many parts of the world, including the United States (Davis, 2006), Australia and New Zealand (Wilkinson et al., 2000) and Ireland (Concannon-Gibney and Murphy, 2010). In England, the *Independent Review of the Teaching of Early Reading: Final Report* (Rose, 2006) recommended that the simple view of reading should be adopted as the conceptual framework for the teaching of reading in all state primary schools in England (pupils aged 4–11 years).

Yet what is interesting here is the manner in which this simple view has been interpreted. We have already noted by analysing the 'formula' that for reading to take place both decoding and comprehension are required. Alongside this, it was also noted that various studies have disassociated the components of word recognition and comprehension and treated them as separate entities. While this has clarified the fact that these components make different, discrete demands upon readers, it might be argued that this separation has led to the simple view being interpreted (explicitly in some contexts, less so in others) in a linear manner; that the decoding aspects of reading need to be addressed first before comprehension can be looked at.

Indeed, advocates of the simple view do seem to support this. Gough et al. (1996) state that for beginning readers the texts they read by themselves in these

earliest stages will for the most part not be particularly challenging to their language comprehension system: the problem that early readers have is to gain access to this system from the print. They argue that for 'reading' to take place in these early years the emphasis will have to be on developing decoding skills – children need most at this point to develop visual word recognition processes. As children get older they will develop a mastery of decoding skills. The emphasis will then begin to switch away from decoding and the focus of reading will turn towards comprehension. This suggests that as reading skill develops, the associated language processes become more important than the ability to decode.

Perfetti et al. (2005) also argue that the need to establish appropriate word recognition skills should take priority over the development of metacognitive skills. Indeed, they suggest that attempting to develop metacognitive skills alongside word recognition skills is detrimental to the latter. Presumably they are referring to the 'decoding bottleneck' outlined earlier in this chapter, where limited processing capacity means that the greater amount of cognitive resources spent on decoding text leaves less cognitive resources available to spend on comprehending the text.

The linear view manifested in classroom practice: addressing the decoding component

How this has become manifested in classrooms is perhaps best captured in the phrase 'learning to read, reading to learn'. This phrase (which has become a mantra in some circles) surfaced in an article by Chall et al. (1990) which proposed that from Kindergarten to Grade 3 (4–8-year-olds) the focus of reading should be on 'learning to read', by which they mean decoding – getting the words off the page. Following this, from Grade 4 onwards the focus should then shift to 'reading to learn', by which they mean comprehension broadly. This equates to what van den Broek et al. (2005) describe as the 'the commonly-held view' of teaching reading, and is based on the premise that once decoding ability is in place, comprehension should more easily follow.

A consequence of this is that there has been a foregrounding on the word recognition component, most clearly evidenced by the movement towards the implementation of phonics instruction across the English-speaking world. Strauss and Altwerger (2007) note that The Elementary and Secondary Education Act (2001) – otherwise known as 'No Child Left Behind' – has made phonics the only legal approach to the teaching of early reading in the United States. In Australia, the *National Inquiry into the Teaching of Literacy: Teaching Reading* (Department of Education, Science and Training, 2005) stated that 'an early and systematic emphasis on the explicit teaching of phonics' (p. 9) was a feature of successful reading instruction, and this is now embedded in the Australian Curriculum (2011). In New Zealand, phonics has not been incorporated into policy – possibly because of a strong historical link to the whole language approach (Soler and Openshaw, 2007). However, Blaiklock and Haddow (2007) outline a study where a systematic phonics programme was implemented successfully alongside the whole language

approach, leading the authors to call for its wider adoption – something Patel (2010) also calls for. In England the *Independent Review of the Teaching of Early Reading: Final Report* (Rose, 2006) stated that reading accuracy is most effectively supported through the systematic (planned and regular) teaching of phonics and cites the meta-analyses completed by Torgerson et al. (2006) in support of this. Rose advocated the exclusive use of synthetic phonics, which emphasises relating phonemes to graphemes and blending them together to make words, rather than analytic phonics where children are taught to recognise phonemes in whole words and segment them. Wyse and Styles (2007) note that Torgerson et al. (2006) did not comment on the specific type of phonics instruction; they only stated that the instruction should be systematic. Regardless, as a result of this review, synthetic phonics programmes have become an everyday feature in English primary classrooms and the pre-eminence of synthetic phonics is enshrined in the new curriculum (Department for Education (DfE), 2014).

So the impact of the simple view on the word-recognition aspect of reading has been substantial in terms of *what* should be taught, and in some instances also *how* it should be taught.

TURNING TOWARDS COMPREHENSION

The ability of children to comprehend text is proving to be an issue internationally. Here are some examples to show this:

- In England, it is estimated that one in every ten children is likely to have a specific reading comprehension difficulty that will cause them to perform below expected levels (Nation and Snowling, 1997).

- In the United States, Kamil et al. (2008) analysed the results of the National Assessment of Educational Progress (NAEP) in Reading (2007) report, and found that 69% of Eighth Graders (13–14-year-olds) were unable to comprehend text to a level appropriate to their grade.

- In Australia, Woolley (2007) states that Year 3 (8–9-year-olds) is a recognised point at which comprehension difficulties are likely to surface for a significant number of Australian children, which leads to a stagnation in reading development.

In the previous section we saw how attempts to address the decoding component described in the simple view of reading led to a focus on phonics. Given these three scenarios it would make sense to look to the research relating to the comprehension component. And at this point things start to become more complex.

It was noted earlier that one of the findings from research suggested that the process of comprehension was different from that of decoding. Evidence from the Aaron et al. (1999) study was cited to support this. However, what is not made clear in the Aaron et al. study is what exactly the process of comprehension