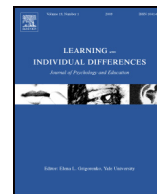




Contents lists available at ScienceDirect

## Learning and Individual Differences

journal homepage: [www.elsevier.com/locate/lindif](http://www.elsevier.com/locate/lindif)

## Individual differences in the vocabulary skills of children with poor reading comprehension

Danielle Colenbrander\*, Saskia Kohnen, Karen Smith-Lock, Lyndsey Nickels

Department of Cognitive Science and ARC Centre of Excellence in Cognition and its Disorders (CCD), 16 University Avenue, Macquarie University, 2109, Australia

### ARTICLE INFO

#### Article history:

Received 17 June 2015

Received in revised form 19 June 2016

Accepted 30 July 2016

Available online xxx

#### Keywords:

Vocabulary

Reading comprehension

Individual differences

Oral language

Irregular word reading

### ABSTRACT

As a group, poor comprehenders (children who have poor reading comprehension despite age-appropriate decoding abilities) have often been shown to have vocabulary difficulties. However, vocabulary knowledge is complex and could affect reading comprehension in more than one way. We explored this complexity by assessing the vocabulary and oral language skills of poor comprehenders at the individual level. All poor comprehenders displayed some degree of oral language deficit in the context of intact nonword and irregular word reading skills, but patterns of oral language deficit differed across participants. The majority had weak vocabulary skills which took the form of semantic weaknesses, while a minority had age-appropriate vocabulary skills but poor syntactic or listening comprehension skills. Our results support the Simple View of Reading and demonstrate the importance of considering individual variation when developing theories of, and treatments for, poor reading comprehension.

© 2016 Elsevier Inc. All rights reserved.

### 1. Introduction

The Simple View of Reading (Gough & Tunmer, 1986; Hoover & Gough, 1990) posits that successful reading comprehension requires intact decoding abilities (the ability to sound out or recognize written words) and listening comprehension (or oral language) abilities. Consistent with this, there is a group of children with age-appropriate decoding abilities, but poor reading comprehension due to weak oral language skills (Nation & Snowling, 1997; Yuill & Oakhill, 1991). These children are known as poor comprehenders.

Poor comprehenders have been shown to have a variety of oral language weaknesses, but there is a particularly large body of research exploring the relationship between poor oral vocabulary skills and reading comprehension difficulties (e.g. Catts, Adlof, & Weismer, 2006; Clarke, Snowling, Truelove, & Hulme, 2010; Nation, Clarke, Marshall, & Durand, 2004; Nation & Snowling, 1998, 1999). In fact, longitudinal and intervention research suggests that vocabulary difficulties are likely to play a part in causing poor reading comprehension (e.g., Clarke, Henderson, & Truelove, 2010; Elwer, Keenan, Olson, Byrne, & Samuelsson, 2013).

However, vocabulary is a complex construct. According to the Lexical Quality Hypothesis (Perfetti, 2007; Perfetti & Hart, 2002), word knowledge is comprised of three main constituents – phonological knowledge

(the way a word sounds), orthographic knowledge (a word's written form), and semantic knowledge (what a word means). There is some evidence that poor comprehenders have relative strengths in the phonological and orthographic aspects of word knowledge: As a group, they perform as well as controls on phonological awareness and nonword repetition tasks, and can learn new orthographic forms without difficulty (Catts et al., 2006; Nation et al., 2004; Ricketts, Bishop, & Nation, 2008). This is consistent with their age-appropriate decoding abilities.

In contrast, studies have demonstrated that, as a group, poor comprehenders have weaknesses on a variety of semantic tasks, such as spoken-word picture matching or verbal definition tasks (e.g. Catts et al., 2006; Nation et al., 2004). Thus, their reading comprehension may be poor because they have difficulty understanding the words that they read.

However, semantic skills could also influence reading comprehension through the process of reading aloud. The Triangle model of reading (Plaut, McClelland, Seidenberg, & Patterson, 1996) posits that reading aloud is achieved by a network of distributed phonological, orthographic and semantic codes. Under this model, semantics is always involved in reading aloud to some degree, but contributions from semantics are particularly important for irregular word reading, because irregular words have inconsistent mappings from orthography to phonology. This model predicts that if poor comprehenders have semantic deficits, they are also likely to have irregular word reading deficits. This prediction has been supported by a number of studies (e.g. Nation & Snowling, 1998; Ricketts, Nation, & Bishop, 2007).

The suggestion that the two aspects of successful reading comprehension (decoding and oral language) are in fact closely intertwined is

\* Corresponding author at: School of Experimental Psychology, 12a Priory Road, University of Bristol, BS8 1TU, United Kingdom.

E-mail addresses: [d.colenbrander@bristol.ac.uk](mailto:d.colenbrander@bristol.ac.uk) (D. Colenbrander),

[saskia.kohnen@mq.edu.au](mailto:saskia.kohnen@mq.edu.au) (S. Kohnen), [karen.smith-lock@mq.edu.au](mailto:karen.smith-lock@mq.edu.au) (K. Smith-Lock),

[lyndsey.nickels@mq.edu.au](mailto:lyndsey.nickels@mq.edu.au) (L. Nickels).

problematic for the Simple View. Indeed, studies with samples of poor and typically developing readers have shown that semantic skills contribute to both decoding and oral language aspects of reading comprehension (e.g. Betjemann & Keenan, 2008; Protopapas, Mouzaki, Sideridis, Kotsoloukou & Simos, 2013).

Nonetheless, it may be the case that semantic skills are not always linked to decoding abilities, even in the case of irregular word reading. Studies have shown that successful irregular word reading is possible even when individuals have semantic impairments (Blazely, Coltheart, & Casey, 2005; Castles, Crichton, & Prior, 2010). These findings have been interpreted within another model of reading, the Dual Route model (Coltheart, Curtis, Atkins, & Haller, 1993; Coltheart, Rastle, Perry, Langdon, & Ziegler, 2001). In this model, reading is accomplished via a sublexical route which converts letters into sounds using grapheme-phoneme correspondence rules, and a lexical route whereby stored lexical representations are accessed. Irregular words can only be read aloud correctly via the lexical route, and stored lexical representations can be accessed either directly from the word's orthographic form, or indirectly via semantics. According to this model, it is possible that there are poor comprehenders who have semantic difficulties, but intact irregular word reading abilities. If such children exist, this supports the Simple View prediction that oral language and decoding abilities can be separately impaired. However, no studies have yet attempted to identify such children.

Furthermore, while many studies show that poor comprehenders have semantic difficulties at the group level, evidence at the individual level demonstrates that some poor comprehenders can perform at an age-appropriate level on tasks of semantics (Cain & Oakhill, 2006; Nation et al., 2004). In fact, the poor comprehender population is heterogeneous and individual poor comprehenders may have very different profiles of oral language skill (Cain & Oakhill, 2006; Nation et al., 2004). However, the vast majority of studies on poor comprehenders are carried out at the group level, obscuring individual differences in oral language skills.

Therefore, this study aimed to address the following questions:

- 1) What are the patterns of vocabulary and oral language skill in individual poor comprehenders? Do all poor comprehenders have weak vocabulary skills?
- 2) Are poor comprehenders' low vocabulary scores generally associated with poor semantic skills?
- 3) If so, are these poor semantic skills generally associated with weak irregular word reading abilities?

To answer these questions, we administered multiple assessments of vocabulary and semantics, because a child's performance on vocabulary tasks is likely to vary according to task demands. For example, tasks such as word-picture matching, definition production and picture naming differ in the depth of semantic knowledge required and the extent of reliance on expressive language and reasoning abilities (Anderson & Freebody, 1981; Ouellette, 2006). The use of multiple vocabulary assessments enabled us to examine whether the nature of vocabulary difficulties was the same across our sample. Our study is the first to explore the vocabulary skills of individual poor comprehenders at this level of detail.

Our study is also unique in that we used a method of statistical analysis from the cognitive neuropsychological literature to compare individual poor comprehender's test scores to a carefully selected control group. Using this method, we explored patterns of strength and weakness on a detailed battery of standardised and bespoke assessments, selected to tap specific areas of oral language skill.

## 2. Materials and methods

### 2.1. Recruitment and screening

An initial sample was recruited from a primary school in a middle-class area of Sydney. Teachers of classes in Grades 3 to 5 (4th to 6th

year of schooling) were asked to nominate children with average word reading abilities for their age and average or below average reading comprehension skills. Consent forms were distributed to parents. Sixty-five children who returned consent forms and gave verbal consent participated in screening assessment.

Screening revealed 13 participants who fit the criteria for specific reading comprehension difficulties, and nine who met criteria for controls (see below). We recruited further controls through a club for children and parents interested in participating in cognitive research (the Neuronauts Brain Science Club) at Macquarie University, Sydney. Members received a newsletter advertising various research participation options. Parents contacted the first author directly if interested in participating in the study. Of 30 children screened, 11 met control criteria and could be matched to poor comprehender participants in terms of age and grade level at the time of language and cognitive assessment (see below).

Our final sample consisted of 13 (11 female) poor comprehenders and 20 (9 female) reading-accuracy matched controls. Children were aged between 9 and 11. All participants had been attending school in Australia since Kindergarten and spoke English as their primary language.<sup>1</sup> There had been no previous concerns noted about reading or oral language for any of the children.

Participants were screened for reading comprehension using Form 1 of the Neale Analysis of Reading Ability (NARA; Neale, 1999). During administration of the NARA, participants read a series of passages aloud and are asked open-ended questions about the passages. The number of passages read is determined by a child's passage reading accuracy.

Reading comprehension was also screened on Form A of the York Assessment of Reading for Comprehension Passage Reading Australian Edition (YARC; Snowling et al., 2012). The YARC also requires children to read passages aloud and answer open-ended questions. On the YARC, children read aloud and answer questions on two passages. Passage levels are determined by the child's age, reading ability and comprehension ability.

The Castles and Coltheart Reading Test 2 (CC2; Castles et al., 2009) was used to screen single word and nonword reading accuracy. We presented 40 nonwords and 40 irregular words interspersed, in order of increasing difficulty. Children read the words or nonwords aloud from cards. A stopping rule of five consecutive errors applied to each item type.

At screening, children were also assessed on the Test of Word Reading Efficiency (TOWRE; Torgesen, Wagner, & Rashotte, 1999), a test of word reading fluency. This was not used as a diagnostic measure, but rather to explore whether there were any differences in fluency skills between the two groups. The TOWRE contains two subtests, a Sight Word Efficiency subtest (children read lists of words as fast as possible), and a Phonemic Decoding Efficiency subtest (children read lists of nonsense words as fast as possible). The child's score is the number of items they read correctly within 45 s. Because US-based TOWRE norms have been shown to overestimate the performance of Australian children, Australian norms (Marinus, Kohnen & McArthur, 2013) were used.

Criteria for group membership were as follows<sup>2</sup>:

- a) Poor comprehenders: reading accuracy scores on both CC2 subtests (irregular words and nonwords) within the average range (standard scores between 85 and 115, z-scores between 1 and -1), and a reading comprehension standard score of <85 on either the NARA,

<sup>1</sup> Note that two of the poor comprehenders spoke a language other than English at home, and this may have had an influence on their language scores. For the purposes of this paper, we were interested in whether low oral language scores co-occurred with reading comprehension deficits, and make no claims about the initial causes of these poor scores. Nonetheless, it would be interesting for future studies to explore whether the language skills of monolingual poor comprehenders differ from those from multilingual language backgrounds.

<sup>2</sup> Studies of poor comprehenders use a variety of different selection criteria. We chose to utilise cut-off scores as these are commonly used (e.g. see Adlof & Catts, 2015; Keenan & Meenan, 2014; Pimperton & Nation, 2014) and therefore allow comparability to other studies. However, see Li and Kirby (2014) and Tong, Deacon, Kirby, Cain, and Parrilla (2011) for examples of an alternative method of group selection.

Download English Version:

<https://daneshyari.com/en/article/6844612>

Download Persian Version:

<https://daneshyari.com/article/6844612>

[Daneshyari.com](https://daneshyari.com)