Journal of Experimental Child Psychology 150 (2016) 330–345

Contents lists available at ScienceDirect

Journal of Experimental Child Psychology

journal homepage: www.elsevier.com/locate/jecp

Evidence for semantic involvement in regular and exception word reading in emergent readers of English

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ARTICLE INFO

Article history:
Received 19 January 2015
Revised 17 May 2016

Keywords:
Semantic
Word reading
Context
Vocabulary
Lexical phonology
Mixed-effects models

ABSTRACT

We investigated the relationship between semantic knowledge and word reading. A sample of 27 6-year-old children read words both in isolation and in context. Lexical knowledge was assessed using general and item-specific tasks. General semantic knowledge was measured using standardized tasks in which children defined words and made judgments about the relationships between words. Item-specific knowledge of to-be-read words was assessed using auditory lexical decision (lexical phonology) and definitions (semantic) tasks. Regressions and mixed-effects models indicated a close relationship between semantic knowledge (but not lexical phonology) and both regular and exception word reading. Thus, during the early stages of learning to read, semantic knowledge may support word reading irrespective of regularity. Contextual support particularly benefitted reading of exception words. We found evidence that lexical–semantic knowledge and context make separable contributions to word reading.

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http://dx.doi.org/10.1016/j.jecp.2016.05.013
0022-0965/

Introduction

Knowledge of the meaning of words and phrases (semantic knowledge) has an important role to play in reading. Logically, a child needs to understand the meaning of the words and phrases contained within a text in order to fully understand it. The simple view of reading (e.g., Gough & Tunmer, 1986), an influential framework for understanding reading comprehension, posits that successful reading comprehension is underpinned by oral language comprehension (including semantic knowledge) as well as word reading abilities. Indeed, studies adopting longitudinal and experimental (randomized controlled trial) designs (e.g., Clarke, Snowling, Truelove, & Hulme, 2010; Nation & Snowling, 2004) have yielded convincing evidence that semantic knowledge is causally related to reading comprehension ability.

There is also evidence that oral language ability contributes to the development of word reading in children, with influences from both phonology and semantics (e.g., Duff & Hulme, 2012; Nation & Cocksey, 2009; Nation & Snowling, 2004; Ouellette & Beers, 2010; Ricketts, Nation, & Bishop, 2007). We concentrated here on semantic influences. Nation and Snowling (2004) showed that semantic knowledge at age 8 years predicted later word reading at age 13 years after accounting for decoding ability, phonological skills, and the autoregressor (word reading at age 8 years). In an extension of this research, Ricketts and colleagues (2007) demonstrated a more specific relationship—that oral vocabulary knowledge was more closely associated with exception word reading than with regular word reading. Exception words are words with unusual mappings between spelling and sound (e.g., <yacht>, <pint>), whereas regular words contain only predictable spelling–sound mappings. Importantly, regular words can be readily decoded using knowledge of the usual relationships between spelling patterns (graphemes) and sounds (phonemes), whereas exception (or irregular) words cannot (e.g., using such a strategy would result in <yacht> being pronounced to rhyme with "matched" rather than "cot"). Regular words are usually read more accurately than exception words by typically developing children (e.g., Nation & Cocksey, 2009).

In the literature outlined above, receptive and/or expressive oral vocabulary measures have typically been used to assess semantic knowledge. It is worth noting that the acquisition of oral vocabulary or lexical–semantic knowledge is incremental rather than an all-or-nothing process, with individuals adding to existing lexical–semantic representations, as well as acquiring new representations, throughout the lifespan. Studies conducted by Ouellette and colleagues (e.g., Ouellette, 2006; Ouellette & Beers, 2010) have acknowledged this by making a distinction between breadth (number of words known) and depth (what is known) in vocabulary knowledge. Ouellette and Beers (2010) found that for children aged 5 to 7 years a depth measure was a significant predictor of exception word reading, whereas a breadth measure was not; the reverse pattern was observed for older readers (11–12 years).

Oral vocabulary is an important part of semantic knowledge. However, semantic knowledge also encompasses an understanding of the meaning-based relationships between words, the meaning of phrases, and so on. As far as we have ascertained, the study by Nation and Snowling (2004) is unique in investigating the relationship between semantic knowledge and word reading by using not only the usual measure of oral vocabulary (in this case an expressive measure) but also a measure that goes beyond such lexical–semantic knowledge—a composite of "semantic skills" comprising semantic fluency and synonym judgment. In regression analyses, Nation and Snowling found that their two measures of semantic knowledge made equivalent contributions to explaining variance in word reading, as measured concurrently and longitudinally by a well-established standardized test. However, their analysis of exception word reading, more specifically, showed that oral vocabulary at age 8 years was a significant predictor of exception word reading 4 years later, whereas the semantic composite was not.

A number of mechanistic accounts for the relationship between semantic knowledge and word reading have been proposed. Walley, Metsala, and Garlock (2003) suggested that the relationship between semantic knowledge and word reading is indirect. According to their lexical restructuring hypothesis, oral vocabulary development serves to specify phonological representations, which in turn are critical for word reading development (e.g., Bishop & Snowling, 2004; Brady & Shankweiler, 1991;