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Orthographic learning via self-teaching in children learning to read English: Effects of exposure, durability, and context

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Abstract

This experiment investigated orthographic learning via self-teaching in 8- and 9-year-olds learning to read English. Children were exposed to novel words, and following a 1- or 7-day delay interval, orthographic learning was assessed by asking children to select previously seen novel words from an array of visually and phonologically similar foils. Novel words were exposed either in meaningful text or in isolation, and number of exposures was manipulated with each novel word appearing once, twice, or four times. Learning increased as a function of number of exposures, although some evidence of durable one-trial learning was observed. Context played no role, suggesting that orthographic learning is not dependent on meaning-based information. In general, these findings offer support for the central aspects of Share's self-teaching hypothesis. However, although we observed a general relation between phonological decoding and orthographic learning, the relation did not hold at an item-by-item level of analysis, suggesting that a strong version of Share's item-based account is not correct.
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Keywords: Reading development; Self-teaching; Orthographic learning; Phonological decoding; Visual word recognition

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Introduction

The self-teaching hypothesis, first described by Share (1995), consists of two basic principles. First, letter–sound knowledge and rudimentary decoding skills provide young children with a means of translating a printed word into its spoken form. Second, this successful (but potentially fairly laborious) decoding experience provides an opportunity to acquire word-specific orthographic information of the nature needed to support fast and efficient word recognition. Central to this hypothesis is the view that phonological decoding provides the essential and fundamental basis for reading development; as Share (1995) described it, phonological decoding is the sine qua non of reading acquisition.

A number of studies have investigated orthographic learning via self-teaching (e.g., Bowey & Muller, 2005; Cunningham, Perry, Stanovich, & Share, 2002; Kyte & Johnson, 2006; Share, 1999, 2004). Most studies have used a variation of the paradigm developed by Share (1999) in which children are asked to read novel words embedded in stories (e.g., *yait*, introduced in a story context as the name of the coldest city in the world). Following a number of repetitions and decoding attempts, children are asked to choose the novel word from a number of alternatives, including a homophone foil (e.g., *yate*). If relying on alphabetic decoding skills alone, children should be as likely to choose *yate* as to choose *yait*. However, children as young as second graders show evidence of orthographic learning, both in Hebrew (Share, 1999) and in English (Cunningham et al., 2002). The fact that orthographic learning is attenuated when opportunities for phonological recoding are limited (Kyte & Johnson, 2006; Share, 1999) supports the view that phonological recoding is intimately involved in orthographic learning.

In this study, we investigated four questions regarding orthographic learning via self-teaching in children learning to read English. First, does orthographic learning vary according to the number of times children have seen a word? Second, is orthographic knowledge learned via self-teaching retained over time? Third, is orthographic learning via self-teaching easier when words are read in a meaningful context? Finally, does the relation between phonological decoding success and orthographic learning hold at an item level?

The first two questions were explored by Share (2004, Experiment 1) in third graders learning to read Hebrew. Children saw target nonwords embedded in a story either once, twice, or four times. Orthographic learning was assessed following a 3-, 7-, or 30-day interval. Reliable learning was found in all conditions, but it was not moderated by number of exposures or length of delay. Remarkably, Share found that a single exposure to an orthographic form was enough to induce orthographic learning of that item and that this learning was maintained following a 30-day interval. This observation of rapid single-trial learning led Share to propose that the first exposure to a word is critical, with subsequent exposures producing progressively diminishing returns.

However, it is not clear whether this observation can be generalized to English. In Share's (2004) experiment, nonword targets were transcribed using pointed Hebrew. This provides a near perfect one-to-one correspondence between graphemes and phonemes; accordingly, levels of initial decoding were very high, with more than 93% of nonwords being read correctly when presented in text. This is not the case for children learning to read a deep orthography such as English; therefore, the question arises as to whether orthographic learning via self-teaching is as rapid and robust in English as it is in Hebrew.

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