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## Children benefit from morphological relatedness independently of orthographic relatedness when they learn to spell new words



Sébastien Pacton<sup>a,\*</sup>, Amandine Afonso Jaco<sup>a</sup>, Marion Nys<sup>a</sup>, Jean Noël Foulin<sup>b</sup>,  
Rebecca Treiman<sup>c</sup>, Ronald Peereman<sup>d,e</sup>

<sup>a</sup> Department of Psychology, Université Paris Descartes, 92100 Boulogne Billancourt, France

<sup>b</sup> Department of Psychology, Université Bordeaux Segalen, 33000 Bordeaux, France

<sup>c</sup> Department of Psychological and Brain Sciences, Washington University in St. Louis, St. Louis, MO 63130, USA

<sup>d</sup> Department of Psychology, Université Grenoble Alpes, 38000 Grenoble, France

<sup>e</sup> Department of Psychology, Université de Genève, 1211 Genève 4, Switzerland

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### ABSTRACT

We examined whether French children in Grades 3 and 5 (aged ~ 8–11 years) benefit from morphological relatedness beyond orthographic relatedness in the implicit learning of new spellings. Children silently read stories that included two target nonwords. One nonword was in an opaque condition in that nothing in the story could justify the spelling of its final sound. The other nonword was in either a morphological condition (for children in the morphological group) or an orthographic condition (for children in the orthographic group). In the morphological condition, the final spelling of the target nonword was justified by two morphologically related nonwords. For example, *coirardage*, obtained by adding the suffix *age* to *coirard*, designates the *coirard's* song and justifies the final silent *d* of *coirard*. The orthographic condition included two nonwords that were orthographically but not morphologically related to the target. For example, the *coirard's* song was *coirardume*, obtained by adding *ume*, which is not a suffix, to *coirard*. Then, 30 min after reading the stories, children were asked to choose the correct spelling of each nonword from among three phonologically plausible alternatives (e.g., *coirard*, *coirars*, *coirar*). In the morphological group, both third and fifth graders more often selected the correct spellings for items presented in the morphological condition than for items presented in the

\* Corresponding author.

E-mail address: [sebastien.pacton@parisdescartes.fr](mailto:sebastien.pacton@parisdescartes.fr) (S. Pacton).

opaque condition. In the orthographic group, the results were very similar in the opaque and orthographic conditions. The findings show that the benefit of morphological relatedness in the implicit learning of new spellings cannot be reduced to orthographic relatedness.

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## Introduction

Writing systems such as English and French represent information about both phonemes, the minimal units of sound in language, and morphemes, the minimal units of meaning. The alphabetic basis of these systems explains why the ability to apply phoneme–grapheme correspondences is important in learning to spell (e.g., Sprenger-Charolles, Siegel, Béchennec, & Serniclaes, 2003). However, the use of simple phoneme–grapheme correspondences does not allow people to correctly spell the many words that include silent letters or sounds that can be spelled in more than one way (Hanna, Hanna, Hodges, & Rudorf, 1966, for English; Peereman, Lété, & Sprenger-Charolles, 2007; Sénéchal, Gingras, & L'Heureux, 2016, for French). In some of these cases, the use of morphological relationships between words could help people to spell words correctly. In French, for example, knowing that /ɛt/ is written as *ette* rather than as *aite*, *ête*, or *ête* when it represents the diminutive suffix can help with the spelling of such words as *fillette* 'little girl' and *maisonnette* 'little house' (Pacton, Fayol, & Perruchet, 2005).

There is increasing evidence that children use morphology to help their spelling from an early age (e.g., Casalis, Deacon & Pacton, 2011; Pacton & Deacon, 2008; Sénéchal & Kearnan, 2007; Treiman & Cassar, 1996; Treiman & Cassar, 1997; Treiman & Kessler, 2014). For example, Kemp (2006) examined how 7-year-old English speakers spelled the middle /z/ of one-morpheme words such as *busy* and two-morpheme words such as *noisy*, which is derived from *noise*. Children were more accurate in their rendition of /z/ in two-morpheme words than one-morpheme words, suggesting that they used morphologically related words to help spell the sound. As another example, Sénéchal (2000) asked 7- and 9-year-old Francophone Canadian children to spell words whose derived forms point to the presence of a word-final silent consonant. For example, *grand* (/grɑ̃/ 'tall') and *camp* (/kɑ̃/ 'camp') end in a silent consonant that is pronounced in related forms such as *grandir* (/grɑ̃dir/ 'to grow') and *camper* (/kɑ̃pe/ 'to camp'). Children performed better on these words than on words such as *jument* (/ʒymɑ̃/ 'mare'), which also include a silent letter but have no such related word (see also Sénéchal, Basque, & Leclaire, 2006).

The above-mentioned studies show that elementary school-age children benefit from morphology when spelling words they have presumably seen many times. To determine whether the use of morphology emerges only slowly with experience, when children have presumably seen words many times, or whether this strategy shows itself even in children's initial encounters with a word, it is important to examine whether children benefit from morphological information after just a few exposures to a word. To address this issue, one can expose children to novel words, controlling for the amount of exposure, and then assess their learning of the spellings. As we discuss below, only two studies have looked at whether children benefit from morphological relatedness when they learn to spell new words, one reporting that they do and the other reporting that they do not. The main aim of the current study was to address this conflict. A secondary aim was to examine whether the benefit from morphological and orthographic relatedness differs among children of different ages when given the same amount of exposure to new words.

Tucker, Castles, Laroche, and Deacon (2016) examined the degree to which children benefit from morphological relations among words in an explicit learning situation where children's attention was directed toward invented words. English-speaking third and fifth graders were shown a picture of a man who likes to invent things and give them new names. Children were given information about the features and function of an invention but were not told its name. Before they discovered its name

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