

Lexical and inflectional spelling abilities in French : Same or different ?

Florence BINAMÉ & Martine PONCELET

Department of Psychology : Cognition and Behavior, University of Liège, Belgium

INTRODUCTION

Inflectional spelling abilities have been less extensively studied than lexical spelling abilities and the relationship between these two types of spelling abilities is poorly understood.

The written production of an orthographically inconsistent word requires access to the orthographic word form representation stored in memory. Furthermore, the orthographic representations used in reading and spelling are supposed to be the same (Holmes & Davis, 2002) and the development of these representations relies, for an important part, on the phonological recoding mechanism (Share, 1995).

On the other hand, the written production of inflected words with silent inflection (nominal and verbal plural in French) requires the implementation of grammatical rules through a controlled algorithm of agreement which is resource-consuming (Totereau & al., 1997).

AIM OF THE STUDY

To test the hypothesis that performance on inflectional spelling tasks, contrary to performance on lexical spelling tasks

- is influenced by cognitive load
- is not related to phonological recoding abilities

METHOD

Participants

95 French-speaking sixth graders (mean age of 12.0 years).

Material and procedure

1. Three texts for writing-to-dictation

Each text containing

- for lexical spelling : 24 inconsistent words
- for inflectional spelling :
 - 6 number-noun agreements ("-s" mark)
 - 4 number-verb agreements ("-nt" mark)

Matching of the three texts

- on length
- on syntactic structure
- on psycholinguistic properties of target words

Each child has to write-to-dictation the sentences containing orthographically inconsistent words as well as inflected words in three different cognitive load conditions:

Minimum load condition

- No time constraint
- No secondary task

Medium load condition

- With a time constraint : to write the sentences as quickly as possible

Maximum load condition

- With a time constraint
- With a secondary task: to give an oral response to simple additions

Order of texts inside each condition and order of conditions are counterbalanced

The number of spelling errors for orthographically inconsistent words and inflected words is calculated for each condition.

2. Sixty nonwords printed on cardboards

Each child has to read aloud the 60 nonwords as quickly and as accurately as possible.

RESULTS

1. Effect of cognitive load and type of spelling on spelling performance (see Fig. 1)

Main effect of load : $F(2,188) = 15,824, p < .001$

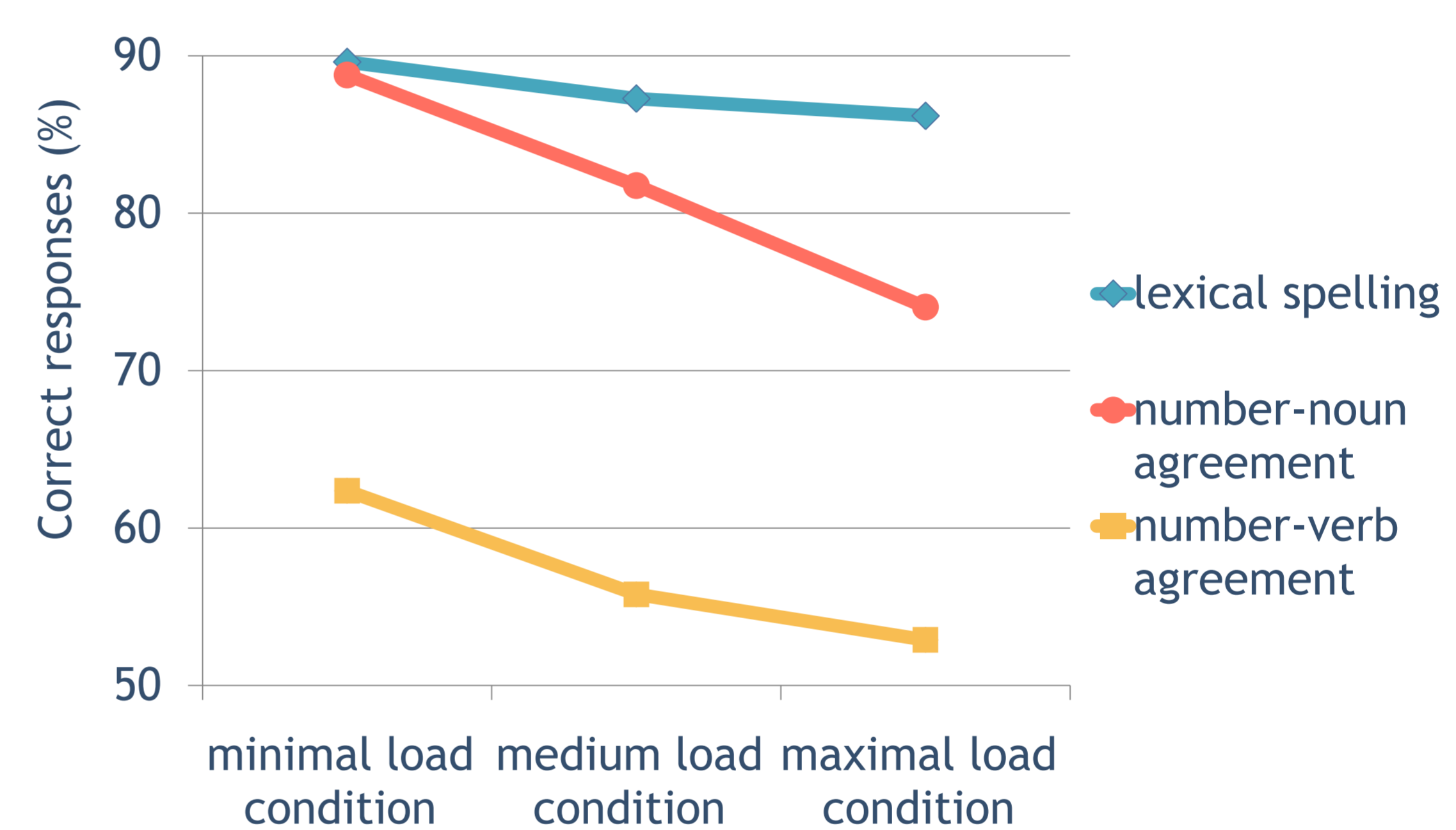
Main effect of type of spelling : $F(2,188) = 112,453, p < .001$

Interaction : $F(4,376) = 2,784, p < .05$

Planned comparisons :

- No significant difference between the different load conditions } for lexical spelling performance
- Significant decrease of performance between the minimal and the maximal load conditions } for the number-noun agreement for the number-verb agreement

Figure 1 : Mean percentages of correct responses as a function of the type of spelling and the load condition



2. Correlations between nonword reading score and spelling performance

- Significant correlation with lexical spelling performance (after control of inflectional spelling) : $r = .41 (p < .001)$
- No correlation with inflectional spelling performance (after control of lexical spelling) : $r = .12 (p = .225)$

DISCUSSION

- Lexical spelling performance is not impacted by the cognitive load condition.
- On the contrary, spelling performance for inflected words (nouns and verbs) decreases significantly when a cognitive load is added to the writing to dictation task.
=> these results suggest that inflectional spelling abilities are different from the lexical spelling abilities, the first ones being less proceduralized, and relying to a greater extent on cognitive control processes.
- Furthermore, the specific relationship found between lexical spelling performance and nonword reading scores highlights that the development of lexical spelling abilities depends on the phonological recoding mechanism.

REFERENCES :

- Holmes, V.M., & Davis C.W. (2002). Orthographic representation and spelling knowledge. *Language and cognitive processes*, 17 (4), 345-370.
- Share, D. (1995). Phonological recoding and self-teaching: Sine qua non of reading acquisition. *Cognition*, 55, 151-218.
- Totereau, C., Thevenin, M. G., & Fayol, M. (1997). The development of the understanding of number morphology in written French. In C. Perfetti, L. Rieben, & M. Fayol (Eds.), *Learning to spell: Research, theory and practice across languages* (pp. 97-114). Hillsdale, N.J.: LEA.

CONTACT :

Binamé Florence
University of Liège - Department of Psychology : Cognition and Behavior
Boulevard du Rectorat, B33, 4000 Liège, BELGIUM
E-mail: Florence.Biname@ulg.ac.be