

## Phonology and literacy in French language acquisition of re-syllabified sequences

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Segmentation of French speech is a difficult task because of three phonological phenomena which set a gap between lexical and syllabic edges : liaison (word1 *les* [le], *the* + word2 *ours* [uʁs], *bears* → *les[z]ours* [le.zuʁs], *the bears*), elision (word1 *la* [la], *the* + *ours* [uʁs], word2 *bear* → *l'ours* [luʁs], *the bear*) and enchainement (word1 *une* [yn], *a* + word2 *autruche* [ot.ʁyʃ], *ostrich* → *une austruche* [y.not.ʁy], en. *an ostrich*). Even though in these re-syllabified sequences word1+word2 are perceived blended, in writing they appear separated by graphic markers, as blanks (*les ours*, *une austruche*) or apostrophes (*l'ours*).

To attempt segmentation, French monolinguals from 2 to 5 years of age produce some approximate sequences such as replacements (*le(s)[n]éléphants* [le.ne.le.fã] for *les[z]éléphants* [le.ze.le.fã], *the elephants*) and non-realizations (*u(n)[Ø]avion* [ɛ̃ a.vjõ] for *un[n]avion* [ɛ̃.na.vjõ], *a plane*), profusely documented in the literature ((Chevrot et al., 2005; Chevrot et al. 2009; Chevrot & Fayol, 2001; Nardy & Dugua, 2011; Wauquier-Gravelines & Braud, 2005; Wauquier & Shoemaker, 2013; Wauquier, 2009; Wauquier, 2010). In case of non-realizations, children produce words in respecting of the lexical and graphic boundaries, suggesting to evaluate the role of literacy.

In this follow-up study, we're going to investigate if literacy influences speech segmentation and promotes the isolation of word boundaries, keeping oral non-realizations intact. This idea has its bases on many studies on different languages which promotes the mutual support of orthographic and phonological competences in childhood (Goswami et al., 2000; Nation & Charles, 2011; Ziegler & Ferrand, 1998; Ziegler & Mouneaux, 2007) and in adulthood (Ehri & Wilce 1980; 1982; Landerl et al., 1996; Morais et al. 1979; Perre et al. 2009; Ziegler et al. 2002).

**METHOD.** We compare the performances of 37 participants (24 girls and 13 boys) in a pre-reading stage (Mean age 6;4, SD=4,71), where they are pre-readers (PRs), in an early stage of literacy acquisition (Mean age 7;0, SD=4,69) where they are beginning readers (BRs) and in a literate stage (Mean age 7;6, SD=4,69), where they're almost readers (Rs). By a picture naming task, in all the stages children are driven to produce liaisons (*les[z]ours* [le.zuʁs], *the bears*), elisions (*l'ours* [luʁs], *the bear*) and enchainements (*la petit orange* [la pə.ti.t.ɔ.ʁãʒ], en. *the small orange*). To evaluate the literacy competences we propose a writing and reading tasks in BR and R where children have to write or read re-syllabified sequences.

**RESULTS AND DISCUSSION.** Picture naming task results show that Rs and BRs better performed than PRs ( $\chi^2$  (2, N=37)=24,143,  $p<.001$ ). Looking at the non-realizations ([leØuʁs] for [le.zuʁs], [ləØuʁs] for [luʁs], [la pə.ti.t.ɔ.ʁãʒ] for [la pə.ti.t.ɔ.ʁãʒ]), Rs produce less non-realizations compared to BRs ( $\chi^2$  (2, N=37)=4,33,  $p<.05$ ) but no improvement is recorded between PRs and BRs ( $\chi^2$  (2, N=37)=2,08,  $p=0,14$ ). Reading and writing results show that literacy skills improve between BR and R ( $\chi^2$  (2, N=37)=2060,196,  $p<.001$ ).

Through PRAAT we analyze phonetically the acoustic space between word1 and word2 in Rs' non-realizations. We notice that in most of the non-realizations (63%), children put a pause between word1 and word2 (liaison [le uʁs], elision [lə uʁs], enchainements [la pə.ti.t.ɔ.ʁãʒ]). Looking at phonetics we can suppose that non-realizations are made stable by the acquisition of written boundaries within literacy; the acoustic pause can be related to the graphic markers between word1 and word2 in French orthography. A cross-task comparison between oral task and literacy tasks in R confirms that non-realizations are correlated with literacy skills ( $r(36)=0,546$   $p<.001$ ). The direction of the correlation is not the expected one: non-realizations decrease in number according to the increase of written knowledge of word boundaries. So we can conclude that literacy helps to solve non-realizations and to correct produce re-syllabified sequences. As a consequence literacy not only helps to fix lexical word boundaries but also to understand the phonological representations of re-syllabified phenomena.