

Orthographic Influences on Phonology: Preliminary Results from an Auditory Rhyme Judgement Task in French

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Many studies in the past few years have suggested that orthography influenced the results in different implicit phonological tasks such as phoneme detection [1] or spoken word recognition [2]. However, phonological tasks can also be explicit, requiring participants to make conscious judgments about phonology. To determine whether orthographic influences on phonology also emerge in explicit tasks, we designed a rhyme judgment task. To assess the impact of orthography, we focused on two common linguistic phenomena in French rimes: double consonants and silent 'e'. In both cases, a single phonological representation may correspond to multiple orthographic forms (e.g., the VC-rime /aʁ/ can be written <ar> in *bazar*, <are> in *cigare* or <arre> in *démarre*). The main objective was to examine whether, when the same phonological rime is associated with different orthographic representations, this variation affects participants' responses as well as their response times. Native French speaking University students ($n=28$, mean age=19 years old, $SD=1.26$) were tested in an online experiment composed of two tasks: (1) an auditory rhyme judgment task, where participants had to determine whether two auditorily-presented words rhyme; (2) a writing task, where they had to write down each word to control for their orthographic competence. The stimuli consisted of 40 filler pairs requiring a "no" response (e.g. *aller-résoudre*, /alɛ/-/ʁezudʁ/) and 64 test-pairs requiring a "yes" response in 3 test conditions: *silent 'e'* (e.g. *scandale-canal*, /skɑ̃dal/-/kanal/) *double consonant* (*polyglotte-patriote*, /poliglɔt/-/patʁiɔt/), *control* (*bestiole-pétrole*, /bestjɔl/-/petʁɔl/). Stimuli were recorded by a native French speaker and were matched for test-pairs by part of speech and number of syllables, according to the Lexique.org database [3]. In task 1, data analysis comparing the three conditions showed no significant difference in the percentage of incorrect responses, nor in the response times (Table 1). In task 2, data analysis on rimes orthography showed that the *double consonant* condition is the one in which the most errors occur, compared to *silent 'e'* ($\chi^2=47.2$, $p<.0001$) and control conditions ($\chi^2=66.4$, $p<.0001$). However, no significant correlation between response times and orthography scores were found for *double consonant* ($R=-0.28$, $p=.15$) and *silent 'e'* conditions ($R=-0.0098$, $p=.96$). In contrast to previous studies, we did not observe any orthographic effect on phonological task. This absence of effect may depend on the nature of the task and on its procedure. Indeed, the literature has reported orthographic influences on other types of explicit phonological tasks, such as phonological awareness tasks [4, 5, 6] or in the same kind of task but using a different procedure [7, 8]. Moreover, this is only a preliminary study, and data collection is ongoing to further analyse these initial findings.

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Figures and Tables

Table 1: Summary of data in tasks 1 and 2

Condition	Task 1		Task 2
	Incorrect responses (%)	Average response times in ms (SD)	Incorrect rime orthography (%)
<i>Control</i>	72 (10.7)	1493 (375)	225 (16.7)
<i>Double consonant</i>	68 (12.1)	1521 (388)	343 (30.6)**
<i>Silent e</i>	52 (9.3)	1475 (389)	199 (19.5)

** $p < .001$

Supplemental information about some of the stimuli

English translation and phonological transcription of the examples cited above:

- *Bazar* /bazaʁ/ (en. “mess”, “bazaar”)
- *Cigare* /sigaʁ/ (en. “cigar”)
- *Démarre* /demaʁ/ (en. “(I) start”)

- Examples of pairs in the “silent e” category: *scandale* /skãdal/ (en. “scandal”) - *canal* /kanal/ (en. “channel”)
- Examples of pairs in the “double consonant” category: *polyglotte* /poliglɔt/ (en. “polyglot”) - *patriote* /patʁiɔt/ (en. “patriot”)
- Examples of pairs in the “control” category: *bestiole* /bestjɔl/ (en. “bug”, “critter”) - *pétrole* /petʁɔl/ (en. “oil”)