Introduction

• This study explores the possibility that the influence of orthographic knowledge that has been extensively observed in speech processing tasks could also be generalized to other cognitive functions that involve language abilities such as Working Verbal Memory (WVM).

• The main aim of this study is to check whether orthographic dissimilarity (of rime spelling) helps to reduce the well-known deleterious effect of phonological similarity (PSE) in auditory word serial recall.

Method

Material

We compared immediate serial recall performance in four types of word lists:

1. Control condition (P_{O}O_{O}): words shared neither the phonological nor the orthographic rime \rightarrow fire, grade, logo, laule, coupe, blanche, moche.

2. P_{O}O_{sc} condition: words ended with the same consistent rime, thus shared BOTH phonological and orthographic rime \rightarrow stage, case, plage, rage, sage, page.

3. P_{O}O_{si} condition: words ended with the same inconsistent rime and shared BOTH phonological and orthographic rime \rightarrow classe, brasse, chasse, passe, masse, basse, casse.

4. P_{O}O_{sc} condition: words ended with the same inconsistent rime, but DID NOT always share their spelling \rightarrow sport, nord, chloré, bord, flore, corps, tor.

For each of the four conditions, ten lists of the 7 words were constructed. Within-list word order was random.

Results

Anova: condition (4) x word position (7)

![Figure 1: Recall performance (%RC) across conditions and positions](Image)

- The classic PSE: P_{O}O_{O} (58.7%CR) > P_{O}O_{sc} (47.6%CR), P_{O}O_{si} (45.4%CR) and P_{O}O_{sc} (50.5%CR)

![Figure 2: Amplitude of the phonological similarity effect across conditions and positions](Image)

- PSE was modulated by orthographic dissimilarity: P_{O}O_{O} > P_{O}O_{si}

- The orthographic dissimilarity effect (P_{O}O_{O} vs. P_{O}O_{sc}) was position dependent: restricted to P4, P5 and P6

- No significant effect of orthographic consistency (P_{O}O_{sc} vs. P_{O}O_{si})

Discussion

- Orthographic dissimilarity helps to reduce the PSE but the benefit of orthographic dissimilarity is restricted to the positions where performance was lower than 50% and where the PSE was the strongest except at P7. It seems therefore that the impact of orthographic dissimilarity interfered with a main phenomenon in serial order: the recency effect.

- The orthographic dissimilarity would be a potential within-list cue that becomes useful when phonological cues become confusable (notion of discrimination). The orthographic dissimilarity is perhaps not “necessary” at P7 because the last item is still present in WM or, the P7 position is already a salient temporal aspect of the sequence (“end marker”).

- The absence of the orthographic consistency effect suggests that the critical factor responsible for our findings was not a general knowledge that some phonological rimes can be spelled in different ways, but the very spelling of the presented items.

- Our findings suggest that the impact of literacy acquisition is not limited to speech processing tasks but also affects another cognitive domain, the Verbal Working Memory.

References


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