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Introduction

Contrary to first language (L1) learning, second language (L2) learning in a school context is characterized by the predominance of the written modality – over the oral modality. Therefore, one might expect a modality effect on word recognition, with written words being more accurately recognized than spoken ones, among low to moderate proficiency late L2 learners [10]. Furthermore, we would like to explore the links between written and oral forms of words, and thus highlight a possible transfer of one modality to the other. This kind of transfer would result in a better recognition of words in one modality (either written or oral) if they have been recognized beforehand in the other.

Objective A

To highlight a modality effect in L2 word recognition and a possible transfer from one modality to the other

A second objective of this experiment is to ask whether modality effect and transfer are typical of schooling in general (characterised by a continual exposure to the written modality), and so also appear in L1, especially with rare words, more often encountered in printed documents than in spoken language.

Objective B

To determine if modality effect and transfer could also appear in L1

Individual differences in language ability

In the context of globalization, L2 mastery is of major significance for the individual in terms of socio-professional integration. However, there is a close relationship between L1 mastery and L2 learning, which raises important questions about how developmental dyslexia affects the learning process.

Given that the processing of written information presents particular difficulties for students with dyslexia [13], a comparison of dyslexic and typical control performance will be incorporated in our two objectives.



Method

N = 32

French native speakers, secondary school students, who learned English as L2 in a school context

Dyslexic students

N = 16
 Mean age: 177 months

Control students

N = 16
 Mean age: 175 months

BACKGROUND MEASURES:

- On-line questionnaire (4,7) → Reading habits, Experience with different languages, Schooling, Socio-economic level
- English-language proficiency test (Dialang) [5]
- Reading-related tasks [2,8]: ECLA16+ : phonological, reading and spelling skills
 EVALEC : pseudoword reading
- Neuropsychological tests [6]: Non Verbal Intelligence Test

STATISTICAL ANALYSES:

Linear Mixed-effect Modelling, using glmer function from lme4 package with R Software

KEY EXPERIMENT:

Lexical decision tasks in each modality

Written Task: THING QUING

Oral Task: /bɒn/ /kwɪŋ/

Counterbalanced order of presentation of modalities

Same lists of stimuli in each modality

Objective A: 40 infrequent English words and 40 pseudowords [3], strictly matched [1,9,11]
 Objective B: 31 very rare French words and 31 pseudowords, strictly matched

Hypotheses

Objective A:
Hypothesis 1: Modality effect → Written words (THING) more accurately recognized than Spoken words (/bɒn/)
Hypothesis 2: Transfer from one modality to the other → 4 possible kind of influence:



We expected a unilateral transfer from the written to oral modality, linked with the importance of written material, among control students.

We also expected dyslexic students to have reading difficulties, preventing them from benefiting from such a transfer.

Objective B: Exploratory experiment for control students: Modality effect? Existing transfer? But, we expected a modality effect among dyslexic students, with spoken words better recognized than written ones, preventing the existence of a transfer, linked with their reading difficulties.

Results

Objective A Discrimination rates (d')

	Written - Oral	Oral - Written
DYSLEXIC STUDENTS	Written: 0.74 Oral: 0.74	0.66 -0.10
CONTROL STUDENTS	Written: 1.67 Oral: 1.67	1.44 -0.02

Controls > Dyslexics

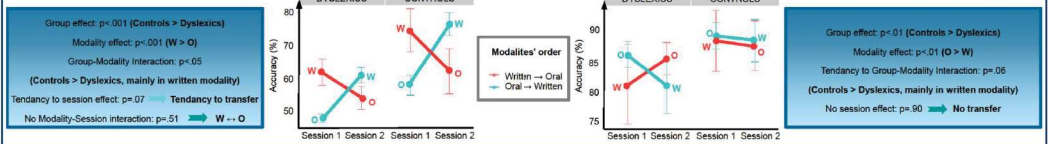
Written > Oral
 Tendency to interaction

Objective B Discrimination rates (d')

	Written - Oral	Oral - Written
DYSLEXIC STUDENTS	Written: 1.79 Oral: 1.95	1.59 -0.24
CONTROL STUDENTS	Written: 2.35 Oral: 2.15	2.74 0.26

Controls > Dyslexics

Written = Oral
 Tendency to interaction



DISCUSSION

As expected, control students presented a modality effect in L2, written words being more accurately recognized than spoken ones.

This is due to the predominance of written materials during L2 learning in a school context?

Moreover, we failed to highlight a unilateral transfer as expected. In fact, we found a tendency to a reciprocal transfer between modalities.

This means: Better recognition of written words already recognized in oral modality

AND Better recognition of spoken words already recognized in written modality

Does it mean that English learners in France have to adapt their pedagogical strategies, mainly by presenting a new word in both modalities, in order to help their students to create a robust lexical representation of this word?

In a very interesting way, dyslexic students showed a similar pattern of results to control students, suggesting that even for those who have reading difficulties, the written modality in L2 is so dominant that spoken words are more difficult to process.

Interestingly, the results were completely different in L1, in both groups.

In L1, dyslexic students showed a modality effect, with spoken words better recognized than written ones, as expected, because of their specific difficulties, preventing them from taking advantage of reading for low frequency word recognition. In contrast, control students had similar results in both modalities.

No transfer between modalities was highlighted, regardless of the group.

Thus, what about:

- a different learning context (French expatriates in English-speaking country, learning English by immersion)?
- specific words (called cognate words [12], which share part of orthography between French and English)?
- or at a more advanced stage of L2 learning (with University students), thus a developmental aspect of L2 learning?

LIMITATIONS

These results are preliminary. We expect to reach a double sample size. The current small sample entails a lack of power to find effects, and thus limits to generalisability.

Stimuli are infrequent, very rare words, possible analysis only on Accuracy, in both languages.

→ No reading time analysis

CONCLUSION

In L2, the written modality is so dominant that spoken words are more difficult to process for all students, even those with reading difficulties.

In L1, students do not display modality effects, except when they suffer reading difficulties and show poor recognition of written low frequency words.

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Bibliography:
 (1) Ferrand, L., & Brybaert, M., Keuleers, E., Borin, P., Meert, A., & Pallier, C. (2010). The French Lexicon Project: Lexical decision data for 38,400 French words and 38,400 pseudowords. Behavior Research Methods, 42(2), 488-496. (2) Gola-Arnussen, C., Lequette, C., Pouget, G., Rouyer, C., & Zeman, M. (2011). ECLA-16+ : Evaluation des compétences de lecture chez l'adulte de plus de 16 ans. Grenoble: Université de Provence Aix-Marseille I-Cognosciences L2E Université Pierre Mendès ; (3) Keuleers, E., & Brybaert, M. (2010). Wuggy: A multilingual pseudoword generator. Behavior research methods, 42(3), 527-533. (4) Leff, D. L., & Pennington, B. F. (2005). Reliability and validity of the adult reading history questionnaire. Journal of Learning Disabilities, 37(3), 206-209. (5) https://dialang-uk.lancaster.ac.uk/; (6) Raven, J. C., John Hught Court, & Raven, J. (1998). Progressive matrices standard (PM38). Editions du centre de psychologie appliquée.; (7) Fisher, J. E., Warner, V., Johnson, J. G., & Dohrenvater, B. P. (2001). Inter-generational longitudinal study of social class and depression: a test of social causation and social selection models. Br J Psychiatry, 200(178 Suppl. 40), S84-S90. (8) Sprenger-Charolles, L., Collé, P., Béchennec, D., & Kipfer-Piquard, A. (2005). French normative data on reading and related skills from EVALEC: a new normed battery of tests (6th grade, 1 grade 2, grade 3, and grade 4). Revue européenne de psychologie appliquée/European Review of Applied Psychology, 55(3), 157-169. (9) Van Heuven, W. J., Mandera, P., Keuleers, E., & Brybaert, M. (2014). SUBTLEX-UK: A new and improved word frequency database for British English. The Quarterly Journal of Experimental Psychology, 67(6), 1176-1190. (10) Van O, (2010) Verbo C. (2017). Orthographe et mots peuplés chez les apprenants tardifs de L2 (These de doctorat inédite). University of Turku. (11) Yankov, T., Balota, D., & Yap, M. (2008). Moving beyond Coltheart's N: A new measure of orthographic similarity. Psychonomic Science & Review, 16(6), 971-979. (12) Lemhöfer, K., Digstra, T., Schlotz, H., Bäsjes, R. H., Grainger, J., & Zebelenkoff, P. (2008). Native language influences on word recognition in a second language: a negativity. Journal of Experimental Psychology: Learning, Memory, and Cognition, 34(1), 12. (13) Lyon, G. R., Shaywitz, D. E., & Shaywitz, B. A. (2003). A definition of dyslexia. Annals of dyslexia, 53(1), 1-14.