

Reading-while-listening and Reading-Only in a Second Language at Different Language Proficiencies: An Eye-Tracking Study

Yingjia Wan, University of Cambridge

Empirical evidence has demonstrated that reading-while-listening (R/L) can have a facilitation effect on second language (L2) reading comprehension performance, word learning rate, and perceived reading fluency after longitudinal R/L trainings, based on post-reading question answering and self-reports (e.g., Lightbown, 1992; Brown et al., 2008; Chang, 2009; Webb & Chang, 2014). However, most of the evidence provides limited insight into how such simultaneous presentation of auditory input affects the online language processing patterns during reading. When R/L was examined using eye movement approaches, a hindrance effect has been reported for online reading behavior in L1 readers, and its facilitation effect on comprehension disappears for advanced-level L2 readers without training treatments (Conklin et al., 2020). To study the effect of R/L on less adept L2 learners, this study compared the comprehension accuracy and eye movements of intermediate and elementary-level L2 readers of English in reading-only (R/O) and R/L modes. 22 university students in Macao completed a standard language proficiency test and two reading comprehension tasks, one in the silent reading mode and the other in the reading-while-listening mode. Participants were assigned to either an intermediate-level group ($n = 11$) or an elementary-level group ($n = 11$) based on their proficiency test performances. Both groups completed the same reading comprehension tasks, and their eye movements were captured using the Tobii Pro TX300 eye tracker. Results showed there was no significant difference between R/L and R/O mode in comprehension scores from both participant groups. Eye movement results via mixed model analyses of variance (Table 1) revealed significant main effects of reading mode (R/L or R/O) in total fixation durations and total visit durations which are longer in R/O than in R/L, suggesting that the accompanying audio facilitated processing of the text in both levels of participants. Significant interactions between the reading mode and participants' language level showed that the facilitation was significantly greater for elementary-level L2 readers. Based on this result, we preliminarily proposed and established the first spectrum model that summarizes the differing effect of auditory input on readers across language proficiency levels (Figure 1). The study makes an important distinction between previous longitudinal studies of R/L with repeated trainings and recent eye-tracking studies using R/L only for group conditioning, and provides practical

implications for language teachers in more strategically and efficiently employing R/L as a traditional reading-facilitation tool.

Keywords: reading-while-listening, reading cognition, eye-tracking, second language processing, second language acquisition

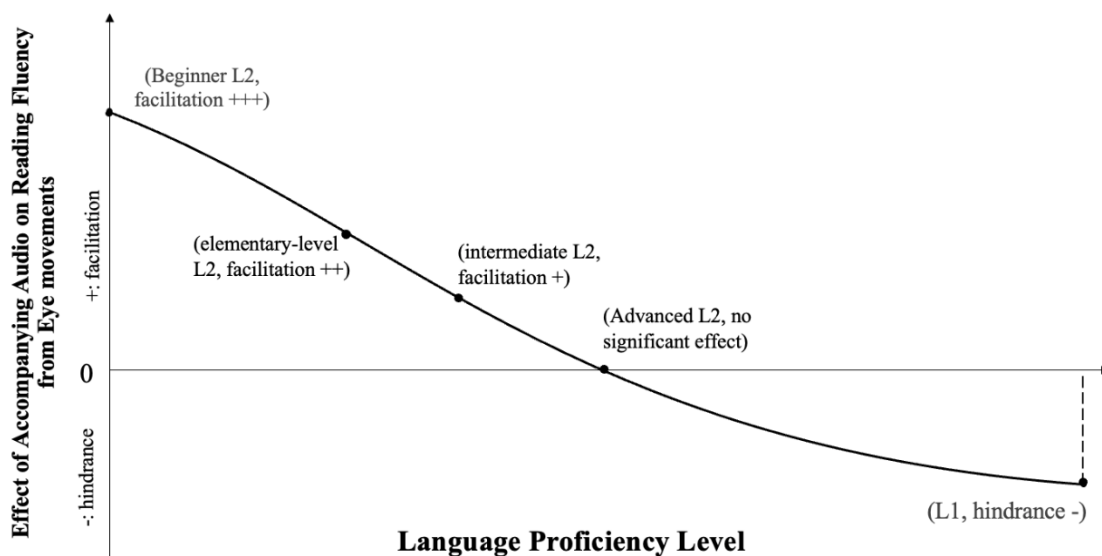
Appendix

Table 1. Main effects and interactions for reading mode and proficiency level for all seven eye-tracking measures in 2 x 2 mixed ANOVA analysis

	Main effect (shown in <i>F</i> values)		interaction: mode*level
	reading mode	language level	
Time to First Fixation	4.497 *	0.495	0.553
First Fixation Duration	3.390	13.792 **	0.136
Total Fixation Duration	13.022 ***	10.077 **	10.206 **
Total Visit Duration	13.450 ***	11.218 ***	11.295 ***
Fixation Count	4.580 *	6.629 **	4.155
Visit Count	5.941 *	1.886	2.902

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.005$; $df_{\text{between}} = 1$, $df_{\text{within}} = 16$.

Figure 1. Hypothesized spectrum model of the differing effect of R/L on readers across language proficiency levels in terms of reading fluency



References

- Brown R, Waring R, and Donkaewbua S (2008) Incidental vocabulary acquisition from reading, reading-while-listening, and listening to stories. *Reading in a Foreign Language* 20: 136–63.
- Chang A (2009) Gains to L2 listeners from reading while listening only in comprehending short stories. *System* 37: 652–63.
- Conklin, K., Alotaibi, S., Pellicer-Sánchez, A., & Vilkaitė-Lozdienė, L. (2020). What eye-tracking tells us about reading-only and reading-while-listening in a first and second language. *Second Language Research*, 36(3), 257–276.
<https://doi.org/10.1177/0267658320921496>
- Lightbown PM (1992) Can they do it themselves? A comprehension-based ESL course for young children. In: Courch[^]ene R, St John J, Therrien C, and Glidden J (eds) *Comprehension-based second language teaching: Current trends*. Ottawa, ON: University of Ottawa Press, pp. 353–370.
- Chang A and Millett S (2014) The effect of extensive listening on developing L2 listening fluency: Some hard evidence. *ELT Journal* 68: 31–40.