

Decomposing the focus effect: Evidence from reading
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Investigations of linguistic focus in reading have found mixed results. Some report a decrease in reading times on focused material [9, 4], while others report an increase [3, 2, 8, 12]; see Table 1. We show that these inconsistencies are clarified by a notion of focus that is more informed by formal semantics. While previous work explained slowdowns on foci by appealing to their newness, foci need not be new [11, 1], as in (1), where *article* is repeated but also focused in (1b).

- (1) a. Did Sarah read an article about penguins, or a book?
 b. Sarah only read an [ARTICLE]_F about penguins.

A focus particle like *only* in (1b) contributes to the meaning of its sentence by negating alternate versions of that sentence that differ solely in the focus, i.e., (1b) conveys that Sarah didn't read a book. Some theories take this further, analyzing every focus as negating *alternatives*, all those expressions that contrast with the focus [10]. No previous study on focus in reading explicitly manipulated alternatives as such, but Table 1 shows that only studies in which alternatives were mentioned in preceding contexts found speed-ups in reading times on foci. In addition, theories like [10]'s do not treat newness and focus as coextensive, and instead determine focus in question-answer pairs by whether a word alone completely answers a preceding question.

E1: Question-answer pairs manipulated whether a target word (*lawyer* in 2) was focused (\pm FOC) or newly mentioned (\pm NEW). In +FOC conditions, the target was in focus, because it was a complete answer to the preceding question, while in -FOC conditions, the target was not; in (2), the reader can also verify the presence/absence of accent on target *lawyer* in response to different questions. In -NEW conditions, the target was mentioned in the question, and in +NEW conditions, it was not.

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|--|-----------|-----------|
| | E1 | E2 |
| (2) Speaker A: "This company often makes bad decisions, but..." | | |
| a. ...did they hire a lawyer last fall, or an accountant?" | -NEW +FOC | -NEW +ALT |
| b. ...did they hire a lawyer last fall?" | -NEW -FOC | -NEW -ALT |
| c. ...did they hire an accountant last fall?" | +NEW +FOC | +NEW +ALT |
| d. ...what did they announce this time?" | +NEW -FOC | +NEW -ALT |

Speaker B: "I think they announced they hired { \emptyset | **only**} a lawyer last fall, but I'm not sure."

E2: Sentences in E2 were identical to E1, except the focus particle *only* was added to unambiguously focus the target in E2 in all conditions. Identical preceding questions manipulated whether the target was newly mentioned (\pm NEW) or a contextual alternative was present (\pm ALT). Questions in +ALT conditions mentioned an alternative (*accountant*); questions in -ALT conditions did not.

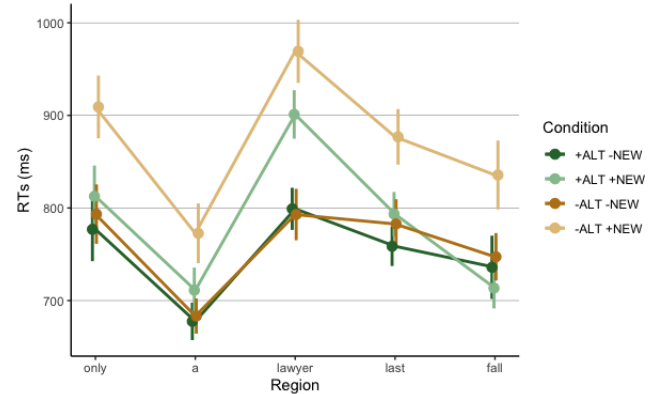
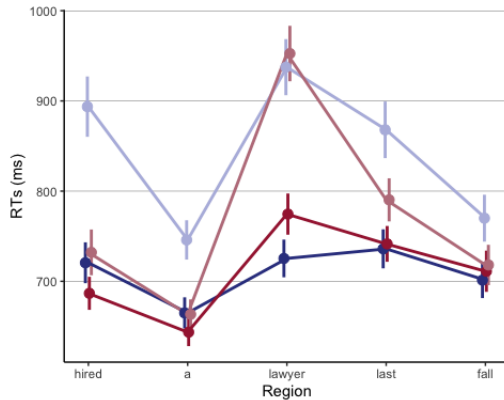
Method: For both E1/E2 ($n = 48$ each), 48 items like (2) were constructed, and target sentences were presented using the Maze task [5]. In this task, each word in the target sentence is shown alongside a foil and participants progress through the sentence by choosing correct continuations.

Results: Figs. 1 and 2 show RTs from E1 and E2. Mixed effects linear regressions with full random effects structure found a significant effect of \pm NEW on the target in both experiments, with longer RTs in +NEW conditions than -NEW conditions (E1: $t = 7.82$, E2: $t = 5.27$). In **E1** they revealed a significant main effect of \pm FOC, such that +FOC targets showed longer RTs than -FOC targets ($t = 3.23$), and in **E2**, a significant interaction between \pm NEW and the \pm ALT: RTs were longer in -ALT conditions than +ALT conditions only when the target was also +NEW ($t = 2.60$).

Conclusion: In line with [2, 8, 3, 12], we found an overall slowdown in RTs for foci compared to non-foci, suggesting a focus cost that does not reduce to newness. But this focus slowdown was modulated by context: RTs were longer on +NEW foci than on -NEW foci. When alternatives to foci were contextually mentioned, the slowdown on new foci was significantly reduced. This suggests that presenting information about alternatives aids reading of foci, thus providing converging evidence for the role of alternatives in focus processing [7, 6]. Controlling for newness versus focus and contextual mention of alternatives clarifies the earlier results summarized in Table 1: previous work only found a focus speed-up after contextual mention of alternatives with no newness contrast between foci and baselines, and only found a slowdown in the absence of alternatives.

		Inhibition		Facilitation		ALT	NEW	
		Early	Late	Early	Late		Focus	Baseline
Birch & Rayner (2010)		×	×	✓	✓	present	new	new
Morris & Folk (1998)		×	×	×	✓	present	new	new
Ward & Sturt (2007)		×	×	×	×	absent	new	new
Birch & Rayner (1997)	Exp 1	×	✓	×	×	absent	new	new
Lowder & Gordon (2015)		✓	✓	×	×	absent	new	new
Birch & Rayner (1997)	Exp2	✓	✓	×	×	absent	new	given
Benatar & Clifton (2014)	Exp 1 & 2	✓	✓	×	×	absent	new	given
Benatar & Clifton (2014)	Exp 3	✓	✓	×	×	absent	new	given
Sloggett et al. (2019)		✓	✓	×	×	absent	new	given

Table 1: Overview of context manipulations in previous work on focus in reading



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