

### Stress matters revisited: A boundary change experiment

Mara Breen (Mount Holyoke College) & Charles Clifton, Jr. (University of Massachusetts, Amherst)  
mbreen@mtholyoke.edu

Implicit prosody; Metrical stress; Eye-tracking; Reading; English

Breen and Clifton (2011) presented evidence that readers' eye movements are influenced by the stress patterns of words. In particular, eye movements were disrupted in items like (1) more than in items like (2). Both kinds of items were disrupted compared to (3) and (4), reflecting readers' initial preference to assign a noun reading to the critical word (abstract or report) and the need to revise when later material forced a verb reading. However, they reported an interaction such that disruption was greater when the shift of part of speech also required a stress shift from the strong-weak pattern of the noun to the weak-strong pattern of the verb, as is the case for abstract but not for report. However, the data contained a puzzle: The disruption appeared on the critical word (abstract) itself, although the material that forced the part of speech change did not appear until the next region. Breen and Clifton argued that parafoveal preview of the disambiguating material triggered the revision, and that the eyes did not move on until a fully-specified lexical representation of the critical word was achieved. Their evidence for this claim came from the observation that disruption on the stress-shifting critical word appeared only when the disambiguating region was skipped, which presumably indicates that the region was processed parafoveally.

The present experiment was designed to address the claim that readers resolved the ambiguity of the critical word using parafoveal preview. Specifically, we recorded eye movements of participants reading a superset of items taken from Breen and Clifton. Parafoveal preview of the disambiguating region was prevented by use of a boundary change paradigm (Rayner, 1975) in which the first few words following the critical word were replaced by random letters, but changed to the actual words when the eye crossed an invisible boundary immediately after the critical word.

The data supported the original claim that having to change the stress pattern of a word disrupted reading. Go-past time was increased in Regions 3 and 4 (indicated by / marks in (1)-(4)) in both conditions that required a change from noun to verb, but the cost of this change was greater for stress-shifting items like abstract than non-shifting items like report. This extra cost was apparent (and significant, using a linear mixed model with random slopes) in Region 4, and a similar significant cost was seen in the percentages of regressions out of the region. This pattern of results supports Breen and Clifton's claim that readers form an implicit metrical representation of text during silent reading. However, in contrast to the very early effect Breen and Clifton observed, the effect of metrical revision in the current experiment appeared only on a region following the disambiguating region, and only in a measure (go-past) that is arguably sensitive to late processes. It may be that the lack of parafoveal preview of the disambiguating region slowed its processing (as Rayner, 1975, demonstrated) enough to delay full recovery of the correct lexical form of the target word.

(1) Verb, stress alter: The brilliant/1 abstract/2 the best ideas/3 from the things they read./4

(2) Verb, non-alter: The brilliant/ report/ the best ideas/ from the things they read./

(3) Noun, stress alter: The brilliant/ abstract/ was accepted/ at the prestigious conference./

(4) Noun, non-alter: The brilliant/ report/ was accepted/ at the prestigious conference./

**Table 1: Go-past Times**

	Reg 1	Reg 2	Reg 3	Reg 4
(1) Verb, stress alter	270	433	918	1369
(2) Verb, non-alter	280	415	862	1234
(3) Noun, stress alter	285	413	655	862
(4) Noun, non-alter	282	378	626	987