

The Effect of Foreshadowing Metaphors in a Crime Story by Ian Fleming

Titus von der Malsburg¹, Holly Joseph², Emily Troscianko³, Karin Kukkonen⁴ & Kate Nation³

¹ UC San Diego, ² Oxford Brookes University, ³ University of Oxford, ⁴ University of Turku

Goals

- ▶ Measures of reading time have taught us a lot about the processing of single sentences and made-up text fragments.
- ▶ Can we adapt methods from this research to study the processing of authentic literary texts?
- ▶ Specific research question: How do foreshadowing metaphors influence the processing of text further downstream.
- ▶ Two experiments to establish a first proof-of-concept.

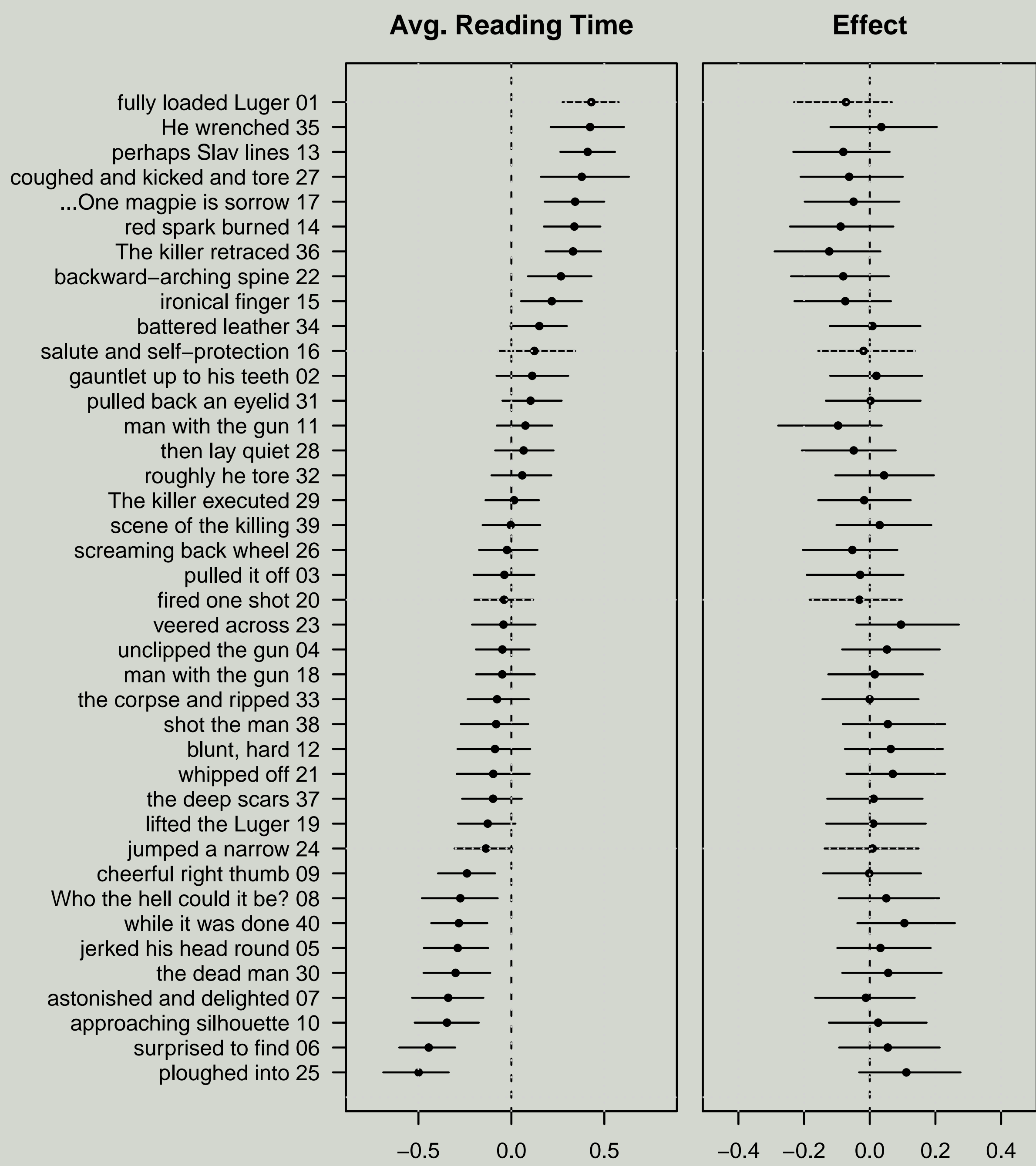
Data analysis

- ▶ Total reading times in 40 more or less arbitrary target regions in the passages leading up and including the murder scene.
- ▶ Regions cannot be controlled as in more standard studies because the stimulus is given. ⇒ Regions may show different effects, which would manifest itself in the random effects.
- ▶ Bayesian linear mixed-effects models with maximal random effects structures and region length as a covariate.
- ▶ Bayesian LMMs allow us to make inferences about random effects and their correlations.

Experiment 1: Eye tracking

- ▶ 40 participants recruited at the University of Oxford
- ▶ Text was presented on pages containing 4–8 sentences.
- ▶ Previous pages could not be revisited.

Experiment 1: Results



- ▶ No main effect of neutralizing metaphors
- ▶ Significant variation in the degree and direction of the effect on individual target regions ($p < 0.05$)
- ▶ Marginally significant negative correlation of random intercepts (left column) and random slopes (right column, $p < 0.1$)

Experiment 1: Discussion

- ▶ The manipulation led to speed-ups in some regions and slow-downs in others.
- ▶ Regions that were read slowly (after accounting for length) were read even slower when metaphors foreshadowed the murder and fast regions were read faster.

Material

Opening paragraphs of Ian Fleming’s crime story “From a view to a kill” in which James Bond investigates the murder of a motorcycle dispatch-rider and the theft of his top-secret documents by a motorcycle-riding assassin. Metaphors in the opening paragraph foreshadow the murder.

Procedure

- ▶ Participants were told to read as if for pleasure.
- ▶ Either the original version or a version with neutralized metaphors was presented:

Death-foreshadowing

*the eyes were cold as flint
in the howling speed-turmoil
hurtling flesh and metal
focus . . . of gun muzzles
the wind . . . wrenched the lips
big tombstone teeth
cheeks . . . blown out by the wind
hurtling face
crash helmet
black gauntlets
broken-wristed at the controls
looked like the attacking paws of
the dead straight road
aimed muzzles of the eyes*

Neutral metaphor

*the eyes were grey as slate
in the whistling speed-turmoil
racing leather and metal
focus . . . of camera lenses
the wind . . . moulded the lips
big tea-stained teeth
cheeks . . . puffed out by the wind
racing face
smooth helmet
black gloves
flexible-wristed at the controls
looked like the clunking paws of
the poker straight road
the focused lenses of the eyes*

Experiment 2: Self-paced reading on Mechanical Turk

Motivation: Eye tracking yields little data at high cost; every participant contributes only one measurement per region of interest.

- ▶ 250 participants recruited via Amazon Mechanical Turk
- ▶ Data heavily screened for quality
- ▶ Text was presented in chunks of 1 to 5 words using centered self-paced reading.

Experiment 2: Results

- ▶ Highly reliable main effect: shorter reading times in the condition with foreshadowing metaphors (839 vs. 963 ms, $p < 0.001$).
- ▶ No evidence for other effects.

Experiment 2: Discussion

- ▶ Self-paced reading also shows effects of foreshadowing metaphors.
- ▶ Slow-down in condition with neutral metaphors perhaps due to disengagement from the text.
- ▶ Difference between eye tracking and self-paced reading could be due to text presentation or subject populations.

Conclusions

- ▶ Foreshadowing metaphors in the opening paragraph showed effects further downstream in the text.
- ▶ However, the nature of the effects was different for eye tracking and self-paced reading. Perhaps unsurprising given the results shown on poster P51 (von der Malsburg, Vasisht, Levy: *The impact of reading modality on sentence comprehension*).
- ▶ Effects in eye tracking and self-paced reading are consistent with the idea that foreshadowing metaphors result in higher engagement with the text.

Our results suggest that studies targeting authentic texts are possible, which constitutes an important proof-of-concept.