Online Experiments for Language Scientists

Lecture 4: Self-paced reading

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Matter arising from the grammaticality judgments lab

- “How do I make the prompt appear **above** the buttons on an html-button-response trial?”

Enochson & Culbertson (2015)

Kelly Enochson
(formerly George Mason University)

Jenny Culbertson
(Edinburgh)

Enochson, K., & Culbertson, J. (2015). Collecting Psycholinguistic Response Time Data Using Amazon Mechanical Turk. *PLoS ONE, 10,* e0116946.

Three self-paced reading experiments on MTurk

- Do small but meaningful RT differences seen in lab studies replicate online, despite reduced experimental control and increased variability in e.g. participant hardware?

Self-paced reading

Demo with this week’s lab code

Sample size, study duration etc

- Self-reported native speakers of English
- N=34 (Exp 1), 82 (Exp 2), 60 (Exp 3)
- 96-120 items per experiment (mainly fillers)
- 20 minutes, **$1**

Test items and predicted effects (Experiment 1)

Filler-gap (in all sentences)

- ***Which antique*** *was the maid polishing* ___ *in the study?*

Full DP vs pronoun

- *Which antique was* ***the maid*** *polishing in the study?*
- *Which antique was* ***she*** *polishing in the* ***upstairs*** *study?*

Agreement attraction

Which antique *was the maid polishing in the study?*

Which antiques *was the maid polishing in the study?*

Residual reading times

You would expect e.g. word length and frequency to influence reading time

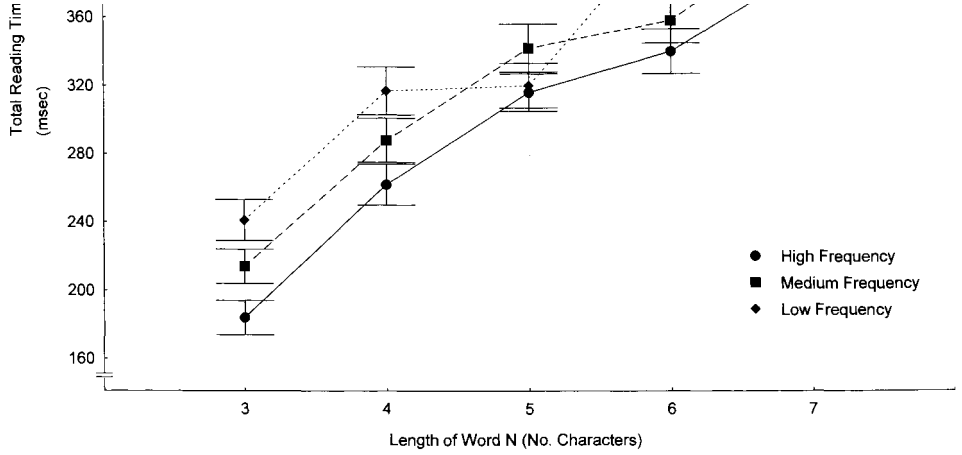


Fig. 1. Effects of length and frequency on word *N* reading time.

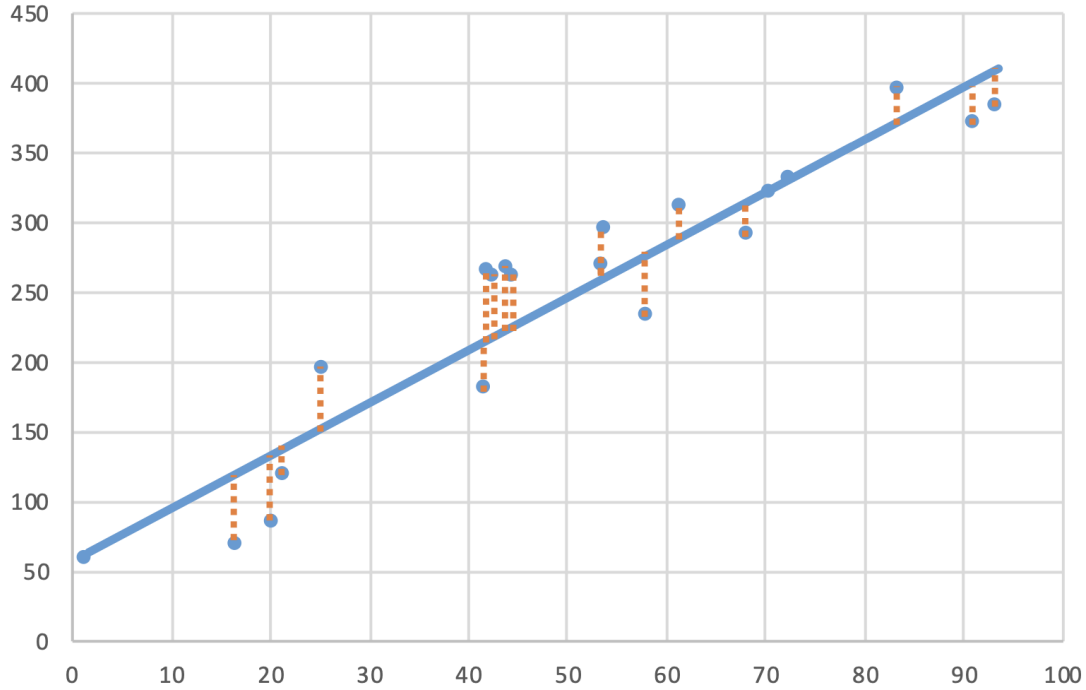
Target word (n) reading times: effects of length and frequency

The mean total reading time for the target word (*n*) as a function of its length and

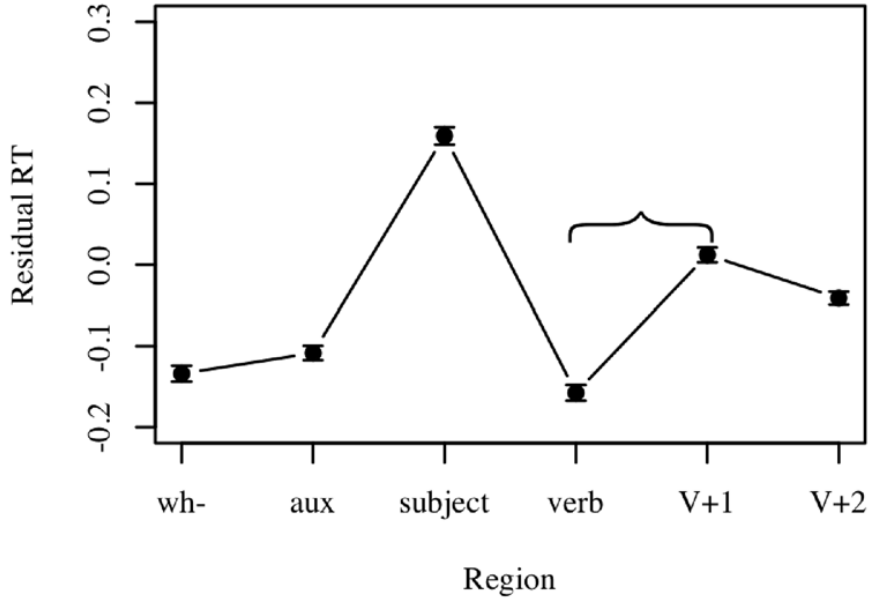
From Underwood, G., Binns, A., & Walker, S. (2000). Attentional Demands on the Processing of Neighbouring Words. In l. Kennedy, R. Radach, D. Heller, & J. Pynte (Eds.), *Reading as a Perceptual Process* (pp 247-268). Amsterdam: North-Holland.

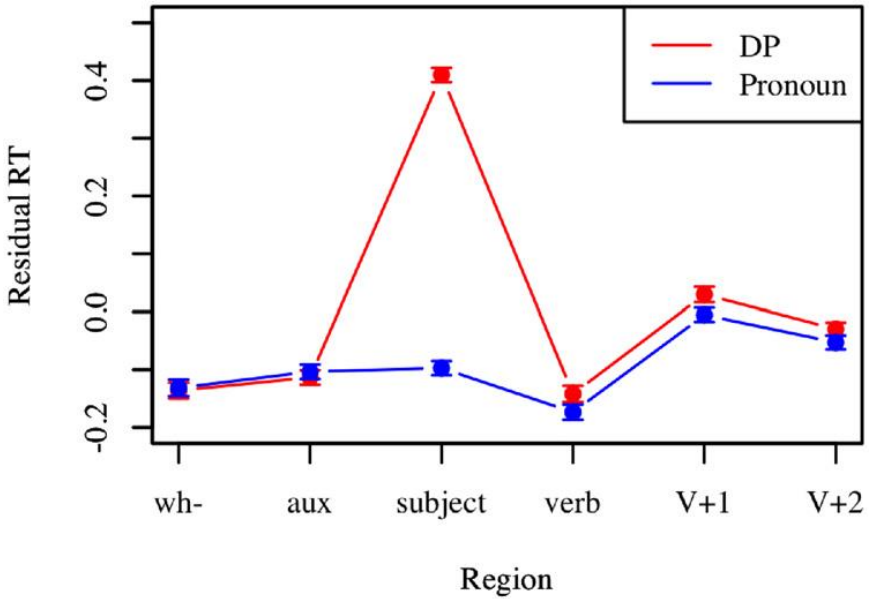
Residual reading times

Regression line – line of best fit, **minimising residuals**



Exp 1 results





Test items and predicted effects (Exps 2-3)

Experiment 2

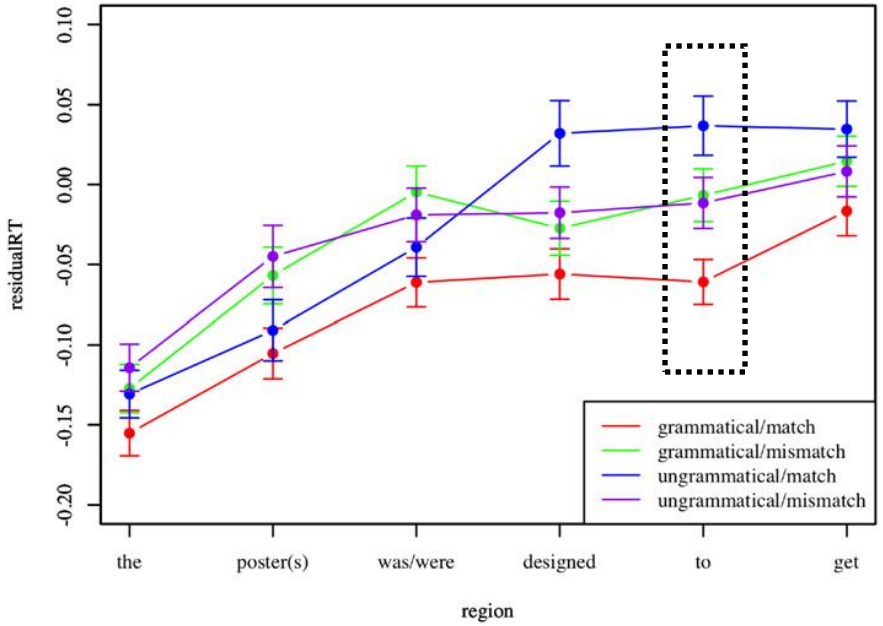
- *The slogan on the **poster** was designed to get attention*
- *The slogan on the **posters** was designed to get attention*
- **The slogan on the **poster** were designed to get attention*
- **The slogan on the **posters** were designed to get attention*

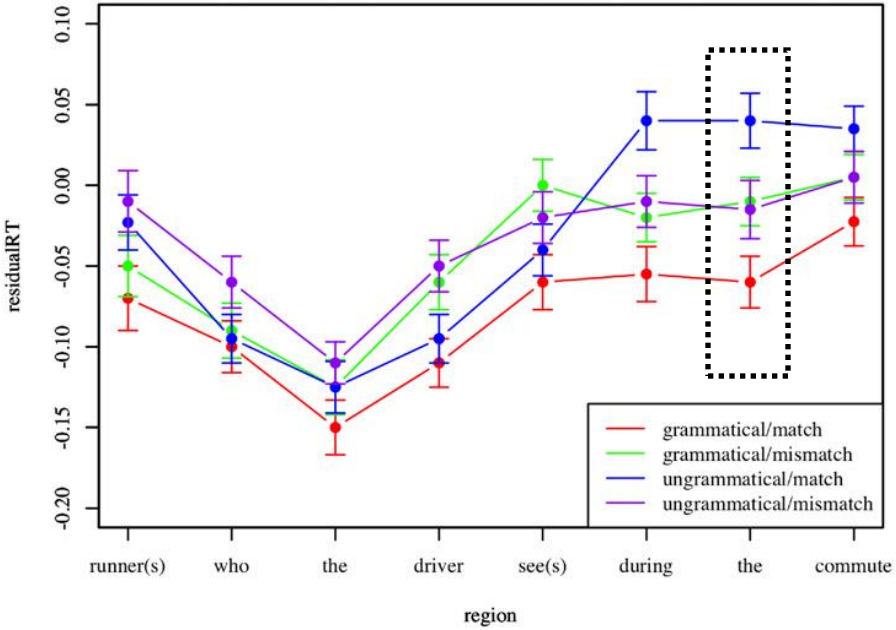
Experiment 3

- *The runner who the driver sees during the commute…*
- *The runners who the driver sees during the commute…*
- ***The runner** who the driver see during the commute…*
- ***The runners** who the driver see during the commute…*

The slogan on the poster was designed to get attention
The slogan on the posters was designed to get attention
**The slogan on the poster were designed to get attention*
**The slogan on the posters were designed to get attention*

The runner who the driver sees during the commute…
The runners who the driver sees during the commute…
**The runner who the driver see during the commute…*
**The runners who the driver see during the commute…*





Enochson & Culbertson's conclusions

MTurk is suitable for collecting reading-time data in self-paced reading tasks

- Similar patterns of results to those seen in lab tasks
- (Paper also includes lab replication of Exp 1)

They also make some suggestions re. Masters qualifications and batch sizes that I don't necessarily agree with – see my reading notes!

Time for Q&A/discussion on this week’s reading

Next up

Thursday lab

- Our second proper experiment: self-paced reading
- If you are behind, do your best to get caught up before the lab

Next week:

- Probability matching / regularization