POLYSEMY PATTERNS
in Human Judgements and Contextualised Language Models

TL;DR   There can be **significant differences** in the similarity of different interpretations of a polyseme. In some cases, these differences form **consistent patterns** accross polysemes of the same type. Contextualised language models —and especially BERT Large— correlate quite well with human annotations.

POLYSEMES are words that allow

for different **distinct but related** interpretations:

The *school* is on fire.
The *school* banned light-up trainers.
The *school* called Tom's parents.

Previous research suggests an under-specified representation in the **mental lexicon** —but more recent work highlights the need for some kind of **clustering or hierarchy**.

We collected close to 20.000 human judgements of graded word sense similarity to investigate the notion of **measurable distances** between word senses.

We specifically investigate regular, metonymic polysemes, so we can look at multiple words that allow for the **same set of sense interpretations**.

RESULTS In some cases, two different

senses of a polyseme are rated to be significantly different. Similarity ratings for polysemes fill the **entire spectrum** between homonymy (same word but unrelated meaning) and identity of sense.
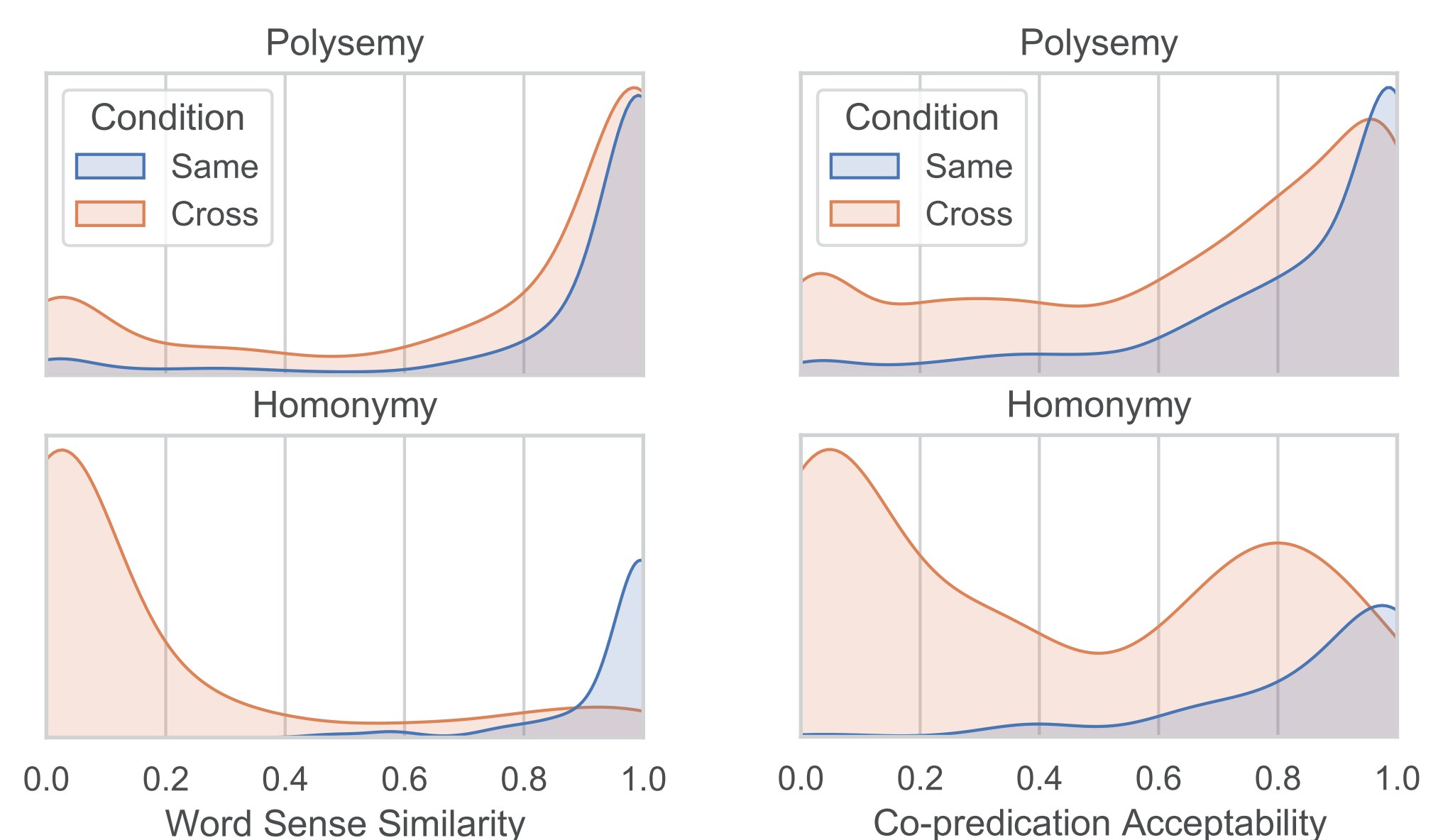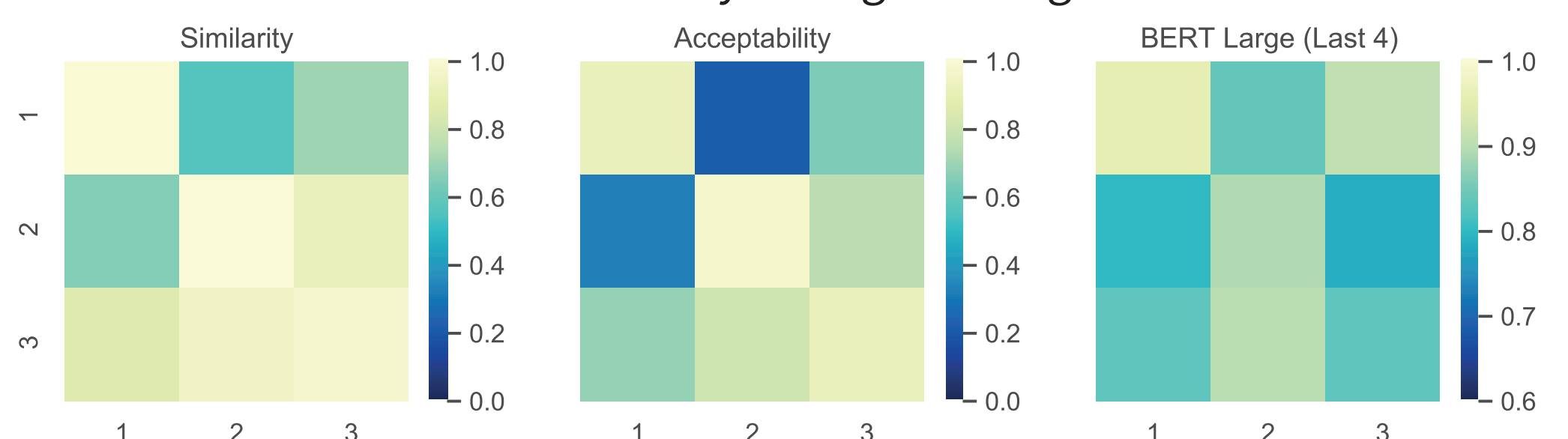

Out of the box, **BERT Large contextualised embedding** cosine similarities correlate with human judgements at a Pearson's *r* of 0.7.

PATTERNS The similarity ratings for some types of alternation form consistent patterns.

Sense Similarity Ratings for Newspaper
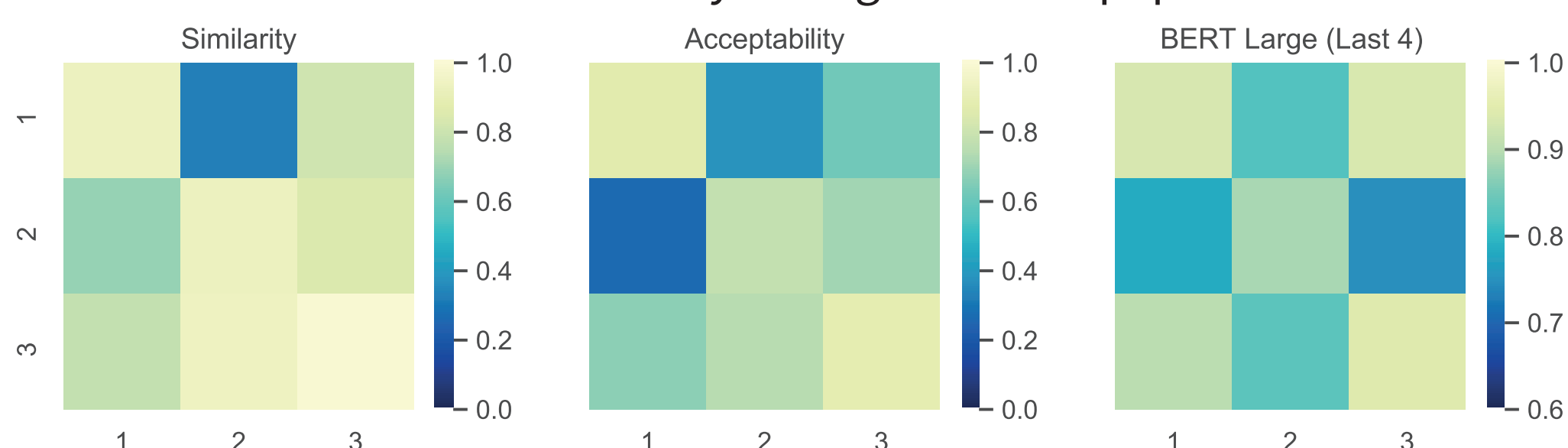
Sense Similarity Ratings for Magazine

Janosch Haber
j.haber@qmul.ac.uk
janoschhaber.com

Patterns of Lexical Ambiguity in Contextualised Language Models
Findings of EMNLP 2021. Paper and Data on github: