

Language as Influence(d)

Lillian Lee

Cornell University

<http://www.cs.cornell.edu/home/llee>

Language and influence: two projects

The rise of social media offers even greater opportunities for language analysis to interact with the social sciences.

What effect does language have on people?

What ways of expressing an opinion have the most effect?

What effect do people have on language?

How do people adjust their language use with respect to other participants?

On presentation style [or, the influence of my advisor]

“The goal ... is not to convince the reader that you are brilliant (or addle-headed for that matter) but that *your solution is trivial*.

It takes a certain strength of character to take that as one's goal.

But the advantage of the reader thinking your solution is trivial or obvious is that it necessarily comes along with the notion that *you are correct*.”

--- Stuart Shieber

New analysis

Social psychology

Large scale settings

What opinions are regarded most highly? A case study on Amazon

Back to social psychology

[Practical applications]

Cristian Danescu-Niculescu-Mizil, Gueorgi Kossinets, Jon Kleinberg, and Lillian Lee
WWW 2009

What kind of opinions are influential?

→ proxy question: which Amazon reviews are rated helpful?

1,296 of 1,358 people found the following review helpful:

☆☆☆☆☆ **Sloppy.**, July 27, 2005

By **B. MCGROARTY** (United States) - [See all my reviews](#)

REAL NAME


This review is from: A Million Random Digits with 100,000 Normal Deviates (Paperback)

The book is a promising reference concept, but the execution is somewhat sloppy. Whatever algorithm they used was not fully tested. The bulk of each page seems random enough. However at the lower left and lower right of alternate pages, the number is found to increment directly.

Help other customers find the most helpful reviews

Was this review helpful to you?

[Report abuse](#) | [Permalink](#)

 [Comments \(15\)](#)

To a first approximation, if a review didn't seem helpful to you, then you are unlikely to be affected by its arguments.

→ specific question: what *biases* the helpfulness ratings?

So, we are not trying to predict helpfulness ratings from text.

[cf. Kim et al. '06, Zhang and Varadarajan '06, Ghose and Ipeirotis '07, Jindal and B. Liu '07, J. Liu et al '07, etc.; Otterbacher '09, Lu et al. '10; the latter also look at non-textual features]

Socially-based biases

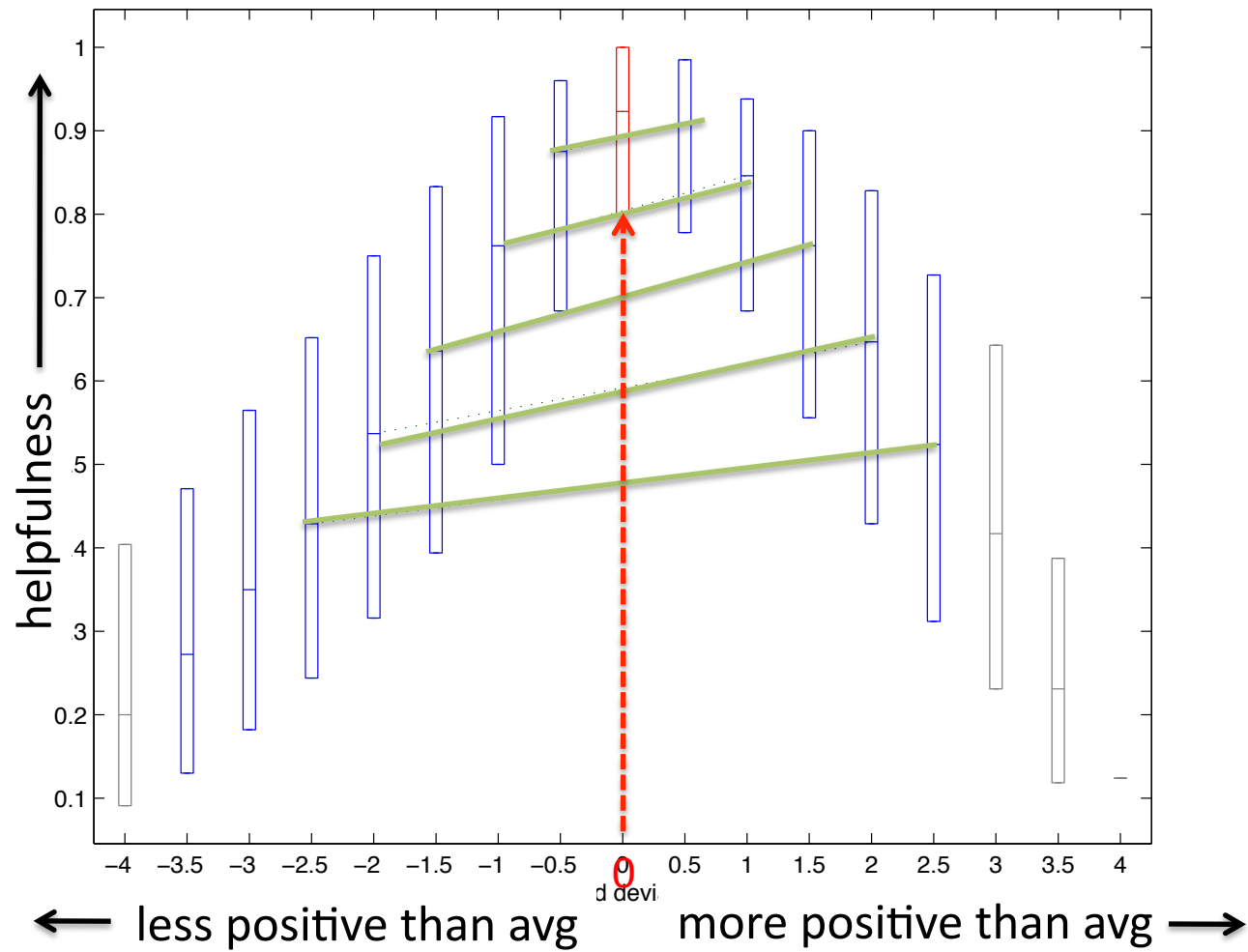
Identity factors that boost helpfulness scores include the reviewer...

- using their “real name”
- being from New Jersey (for science books)
- not being from Guam

Much less obvious: effect of positional factors --- what is the best way to situate an opinion with respect to those of others’?

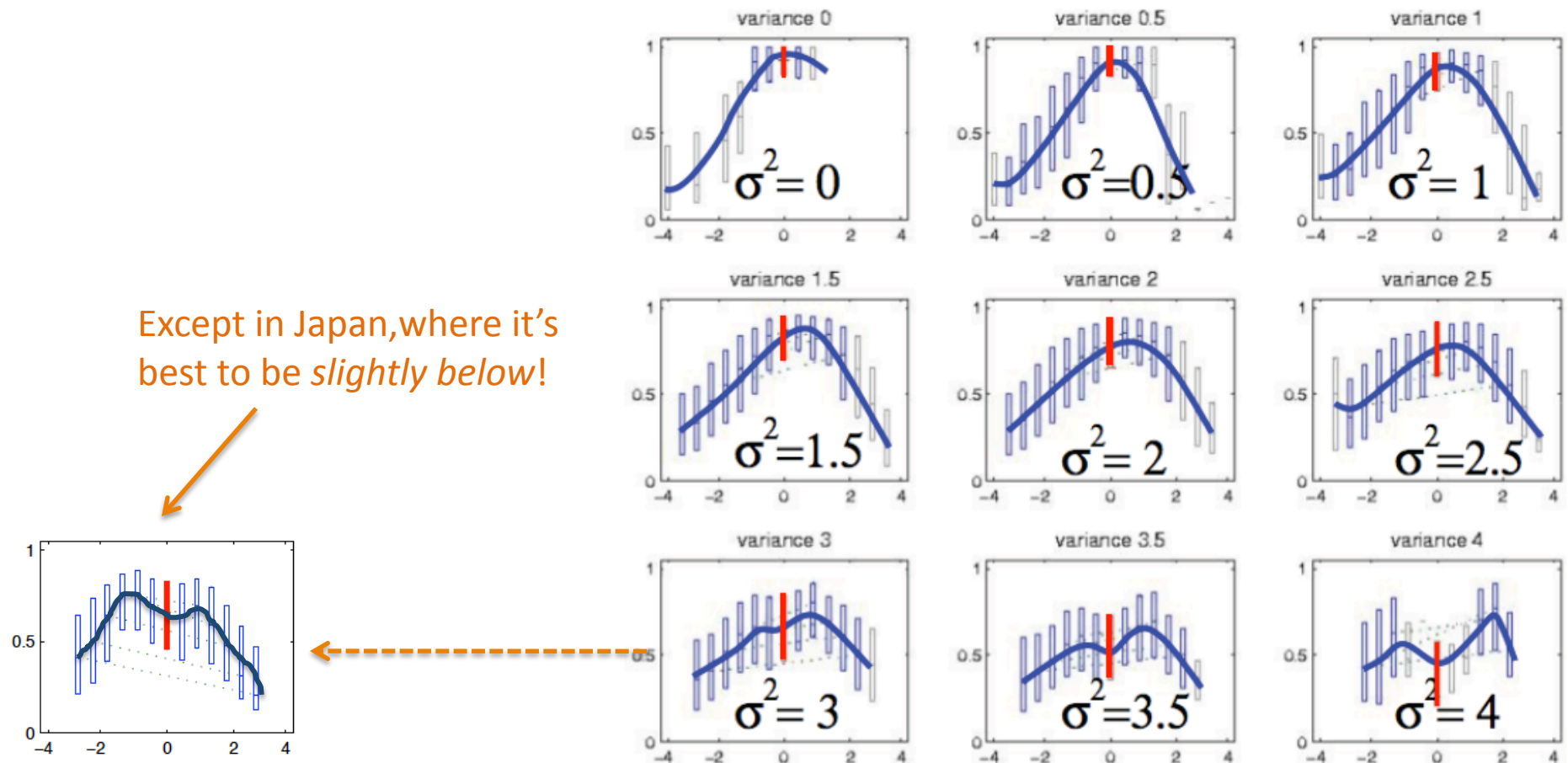
- conformity [Bond and Smith ‘96]: make your opinion reflect the average opinion [see also Riggs & Wilensky ‘01]
- “brilliant but cruel” [Amabile ‘83] [see also Sen & Lerman ‘07]
- *not* brilliant but cruel [Furnham ‘97]

Best to conform ...?



New observation: the effect of variance

As variance increases, be *slightly above* the mean.



Couldn't it just be the text's quality?

We would like to control for the actual quality of a review's text. (Maybe NJ people really do write better reviews?)

How should we determine the "real" helpfulness, in order to control for it?

- manual annotation? Tedious, subjective.
- automatic classification? Need unrealistically high accuracy guarantees.

1% of Amazon reviews are plagiarized! (see also David and Pinch ['06]).

Example of “plagiarized” reviews

7 of 11 people found the following review helpful:

★★★★★ **Migraine Headache at No Extra Charge**, May 28, 2004

By **A Customer**

If you enjoy a thumping, skull splitting migraine headache, then the Sing N Learn series is for you.

As a longtime language instructor, I agree with the effort that this series makes, but it is the execution that ultimately weakens Sing N Learn series. To be sure, there are much, much better ways to learn a foreign language. In fact, I would recommend this title only as a last resort and after you've thoroughly exhausted traditional ways to learn Korean.

26 of 30 people found the following review helpful:

★★★★★ **Skull-splitting headache guaranteed!!**, June 16, 2004

By **A Customer**

If you enjoy a thumping, skull splitting migraine headache, then Sing N Learn is for you.

As a longtime language instructor, I agree with the attempt and effort that this series makes, but it is the execution that ultimately weakens Sing N Learn Chinese.

To be sure, there are much, much better ways to learn Chinese. In fact, I would recommend this title only as a last resort and after you've thoroughly exhausted traditional ways to learn Chinese.

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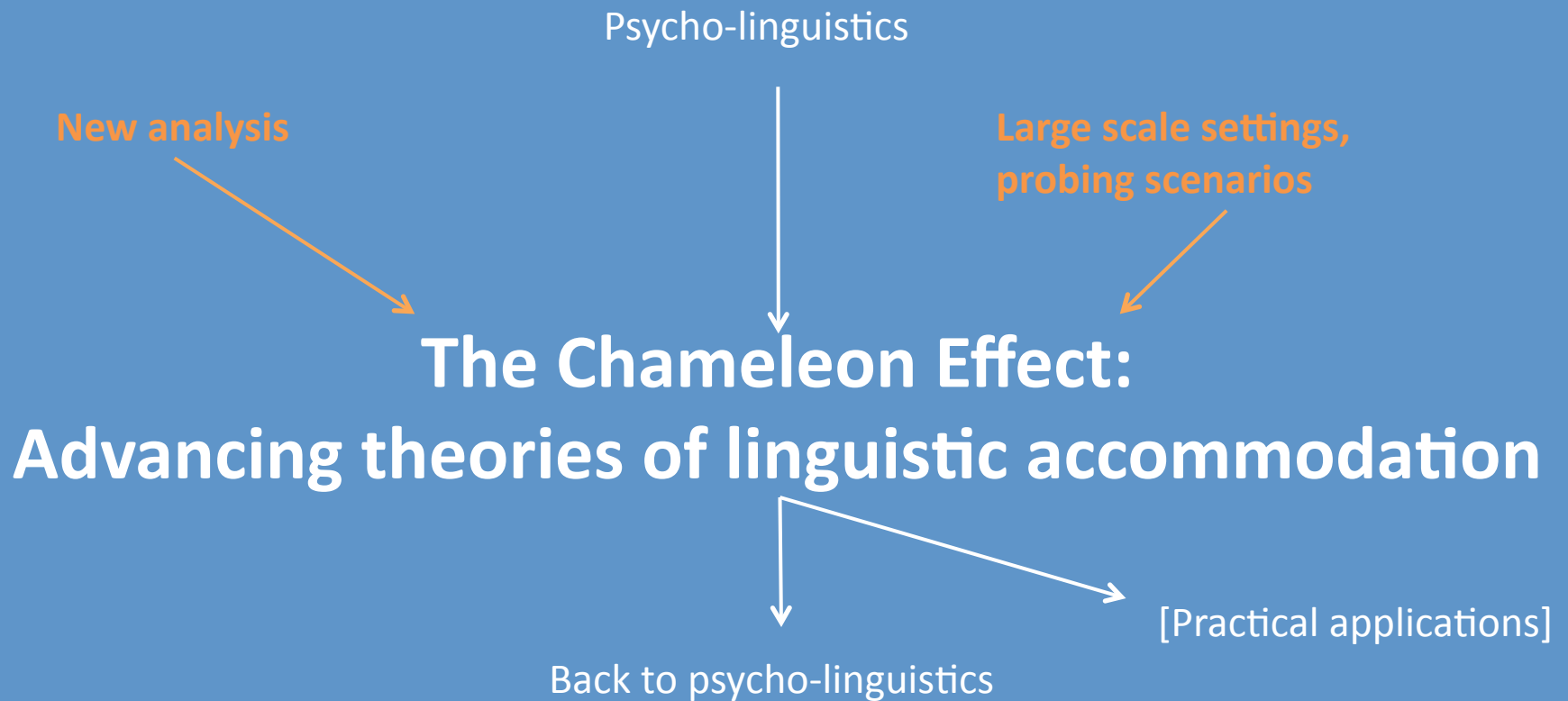
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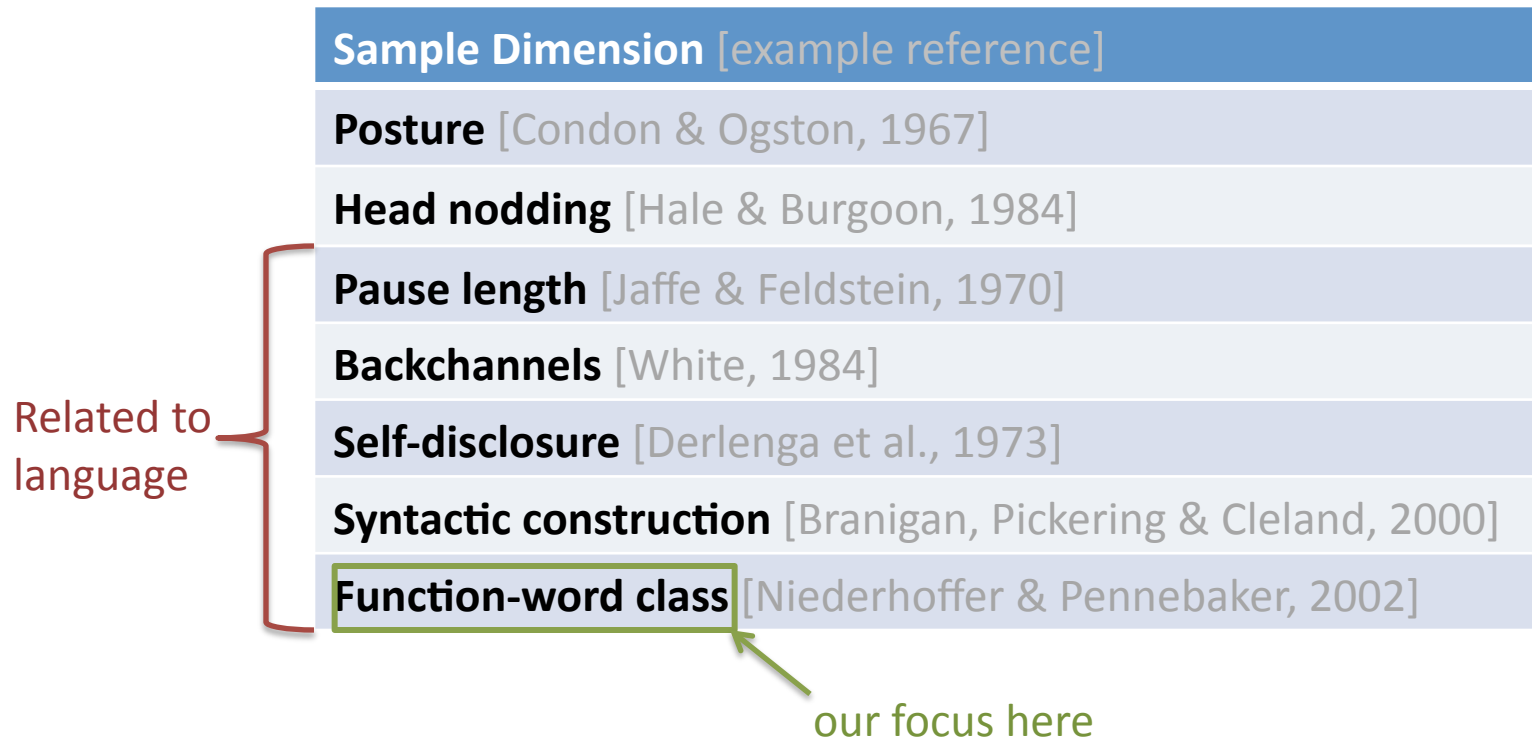
Our social-effects findings regarding relative position hold on plagiarized pairs, which by definition have the same textual quality.



Cristian Danescu-Niculescu-Mizil, Michael Gamon, and Sue Dumais
“Mark my words! Linguistic style coordination in social media”
WWW 2011

Cristian Danescu-Niculescu-Mizil and Lillian Lee
Work in progress

Conversational participants are unconsciously influenced by each other's behaviors.



Sample Dimension [example reference]	
Posture	[Condon & Ogston, 1967]
Head nodding	[Hale & Burgoon, 1984]
Pause length	[Jaffe & Feldstein, 1970]
Backchannels	[White, 1984]
Self-disclosure	[Derlenga et al., 1973]
Syntactic construction	[Branigan, Pickering & Cleland, 2000]
Function-word class	[Niederhoffer & Pennebaker, 2002]

Conversations are thus unconsciously “patterned and coordinated, like a dance” [Niederhoffer & Pennebaker, 2002]

Example: function-word class

[From the movie “The Getaway”]

Doc: At least you were outside.

quantifier matching

It doesn't make much difference where you are [...]

option 1

Carol:

option 2

It doesn't really matter where you are [...]

When asked to mimic another person's style, people *do not change their rates of function-word usage* [Ireland & Pennebaker, 2010]

The chameleon effect: accommodation

Conversational participants are unconsciously influenced by each other's behaviors.

This work is related to the large body of work on:
adaptation, alignment, entrainment, priming, etc.

Chartrand & Bargh's term indicates unconscious blending in, unlike "aping"

Giles et al.'s theory centers on (mostly unconscious) **social motivations**

What's new: how far does the effect extend? Combination of:

- beyond small-scale, in-the-lab studies
- beyond classic interactions: what are possible interferences?
- beyond echoing the same words/structure
- immediate effect of utterance on response
- lexical focus => can apply beyond audio transcripts
- focus on function words => least likely to reflect conscious effort or processing

Twitter

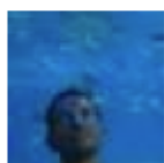


dret Erik Wilde

next up in "Information Spread" at [#www2011](#): "Mark My Words! Linguistic Style Accommodation in Social Media"

<http://bit.ly/g8BVAM>

1 Apr



dret Erik Wilde

"when people converse, they behavior becomes pattern coordinated like in a dance." nice metaphor! [#www2011](#)

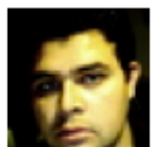
1 Apr



dret Erik Wilde

nooooooooooooo! not another twitter paper, please! it started out so nicely just about communications and conversations. [#www2011](#)

1 Apr



DanielMRomero Daniel Romero

People complain about too many "Twitter papers" but those seem to be the ones that generate most interest/questions from audience [#WWW2011](#)

1 Apr

Twitter conversations: a new opportunity / challenge

- Large scale and naturally occurring
 - sample: 215,000 conversations between 2200 user pairs, no retweets, avg of 100 conversations/pair held over an avg of 270 days
 - ~37% of all tweets are conversational [Kelly, 2009]
- Exemplify new scenarios
 - not face-to-face and real-time
 - 140-character restriction
 - wide spectrum of stages of relationship stages
[vs. “just-met” status in many in lab studies]

Is the phenomenon robust enough to emerge under these constraints?

Measuring the effect

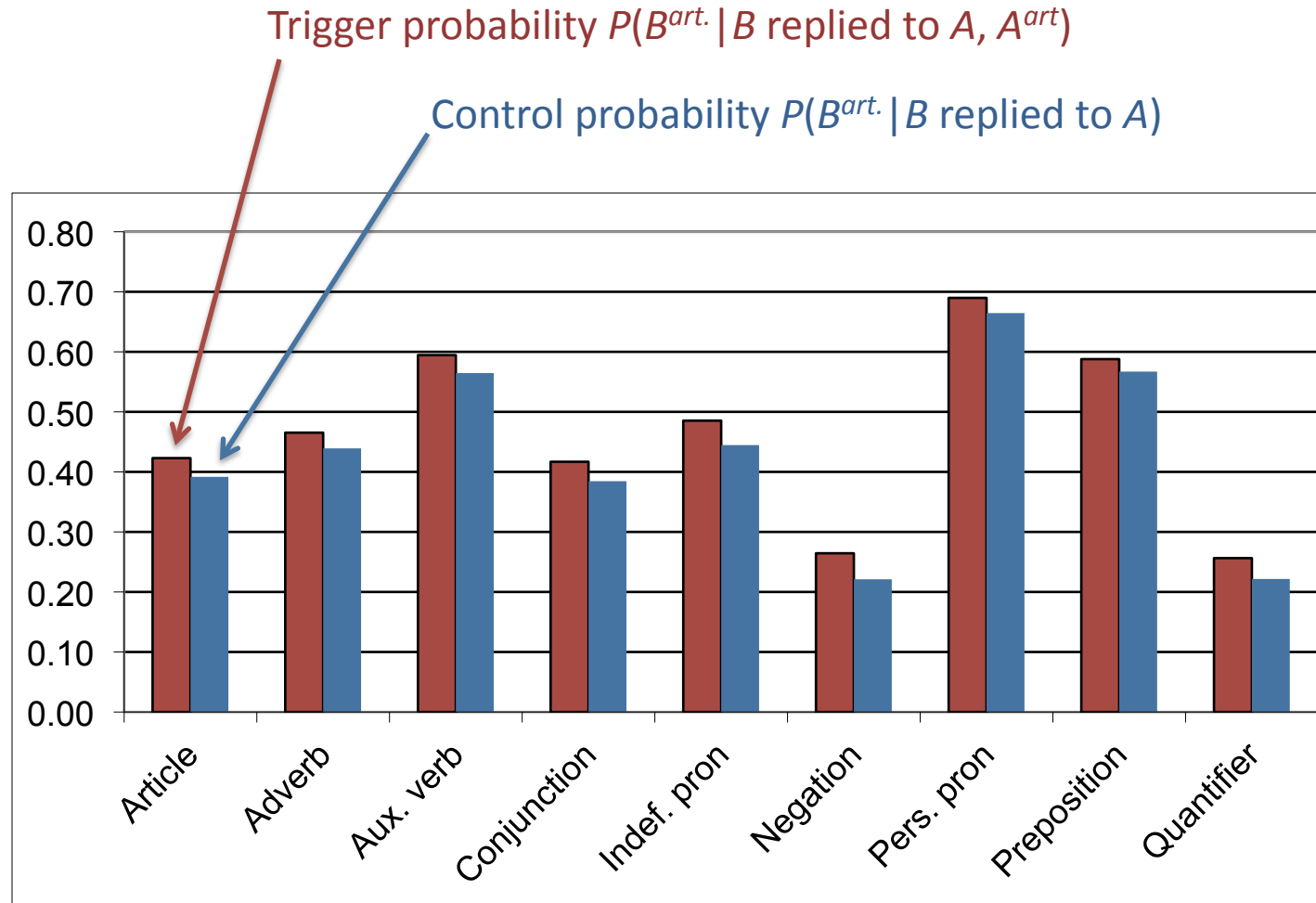
What we want: how much does A 's inclusion of an article (say) **immediately trigger** the occurrence of articles in B 's reply?

$$\text{Accommodation}_{(B \text{ to } A)}(\text{art.}) = P(B^{\text{art.}} | B \text{ replied to } A, \overset{\text{Trigger}}{A^{\text{art.}}}) \dots \\ - \underbrace{P(B^{\text{art.}} | B \text{ replied to } A)}_{\text{control}}$$

We thus discount: how B generally talks to A .

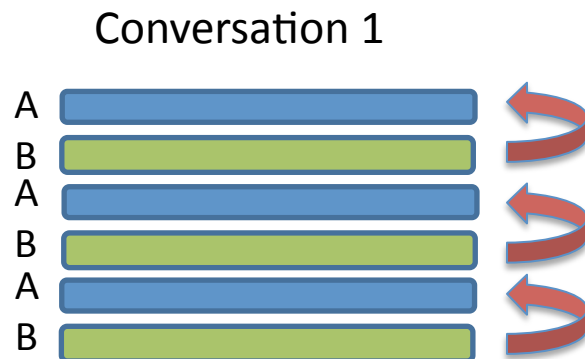
Also, if A doesn't use a trigger, we don't penalize B for including it.

Twitter: stat. sig. effect on all 9 families

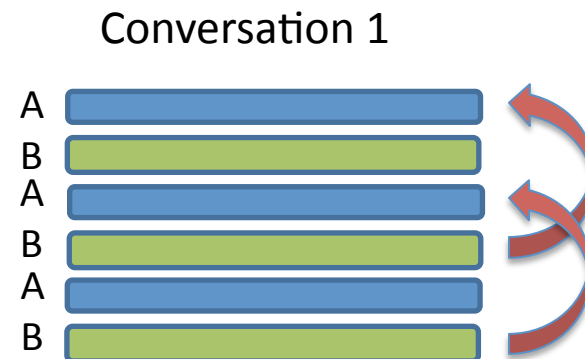


Control: delay experiments

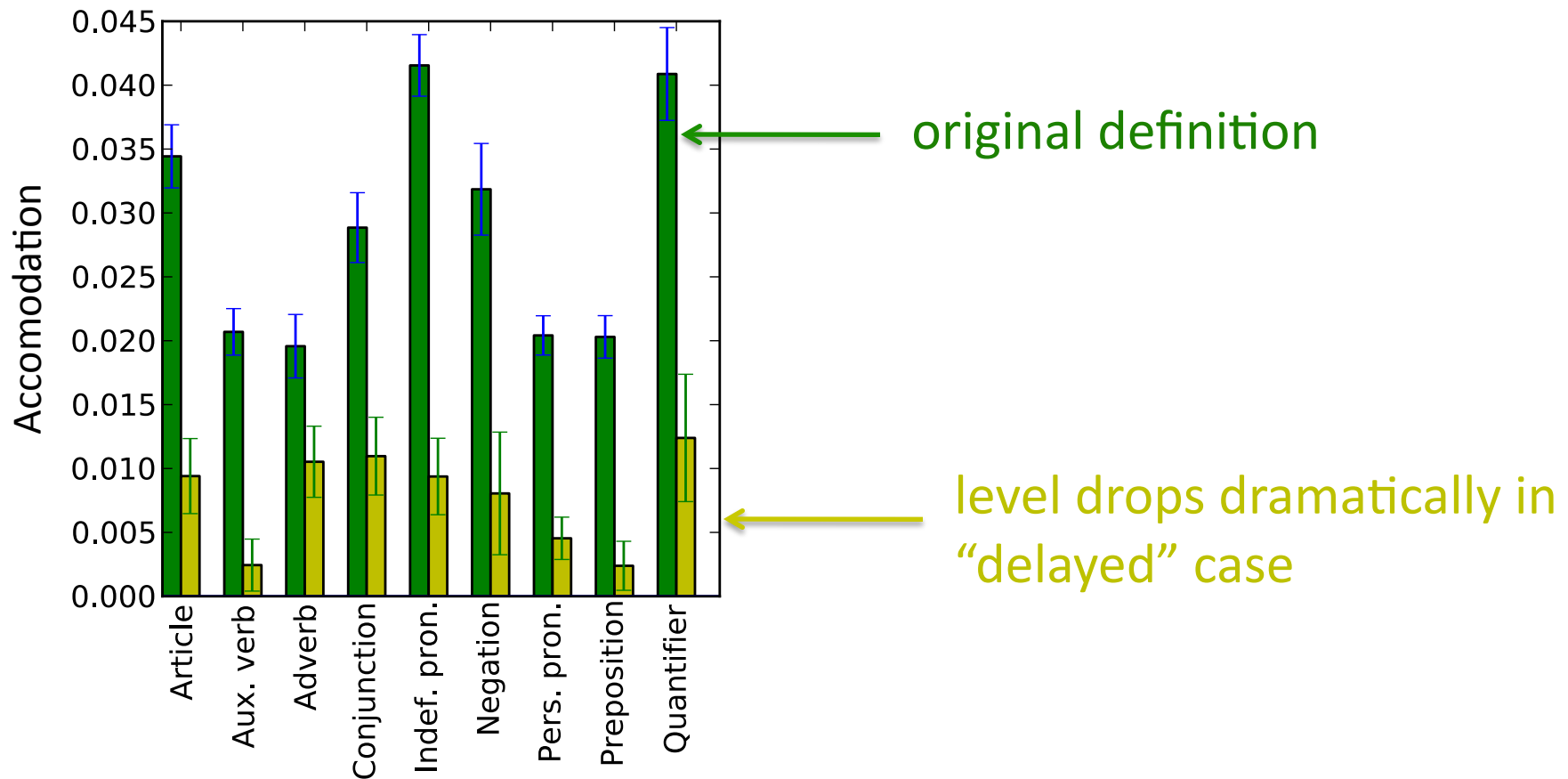
Immediate accommodation of B to A:



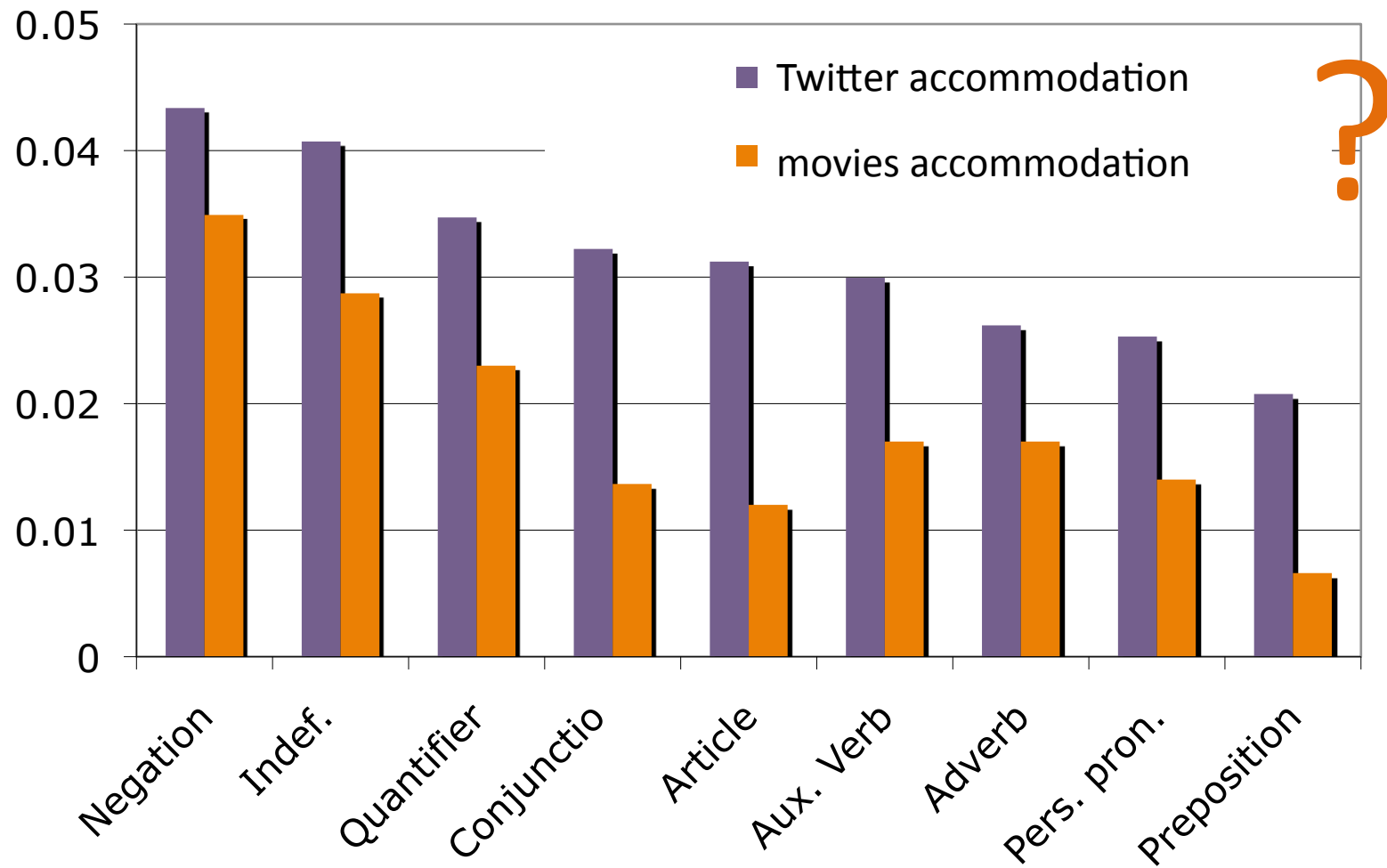
“Delayed accommodation” of B to A:



Control: results of delay experiments



Control: “fake conversations”, i.e., movie scripts



Implications of initial movies results

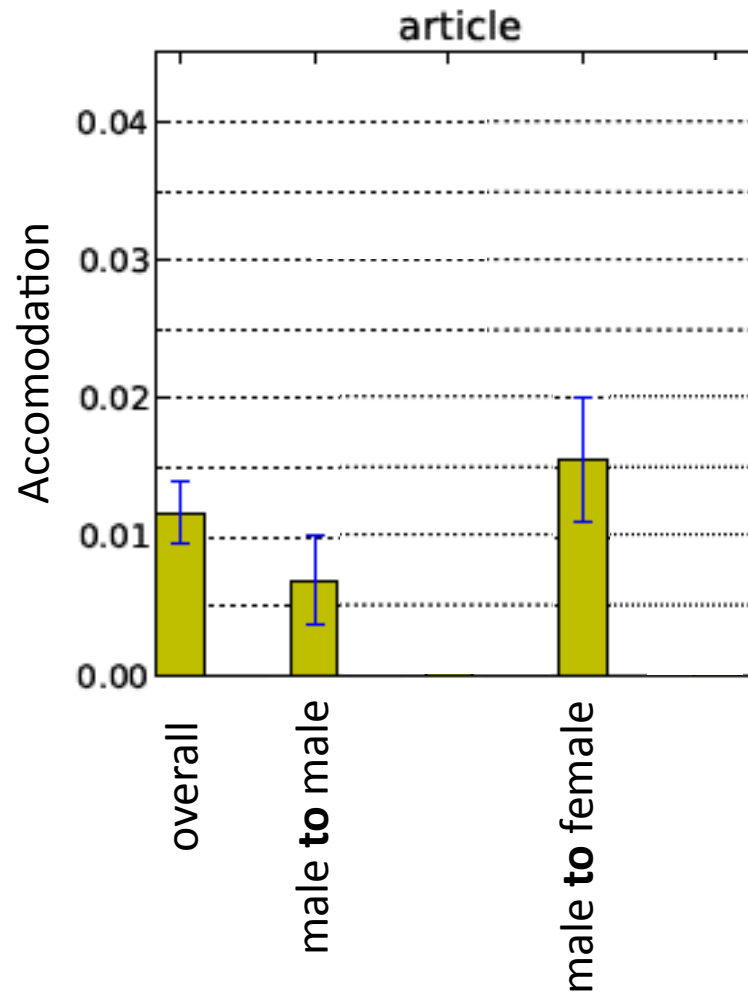
Accommodation has neared “reflex” status

- Scriptwriters still produce it despite large cognitive loads (competing needs: advance the plot, reveal character, perfect the jokes, provide background info, etc.) and despite not being the beneficiaries of the presumed social benefits

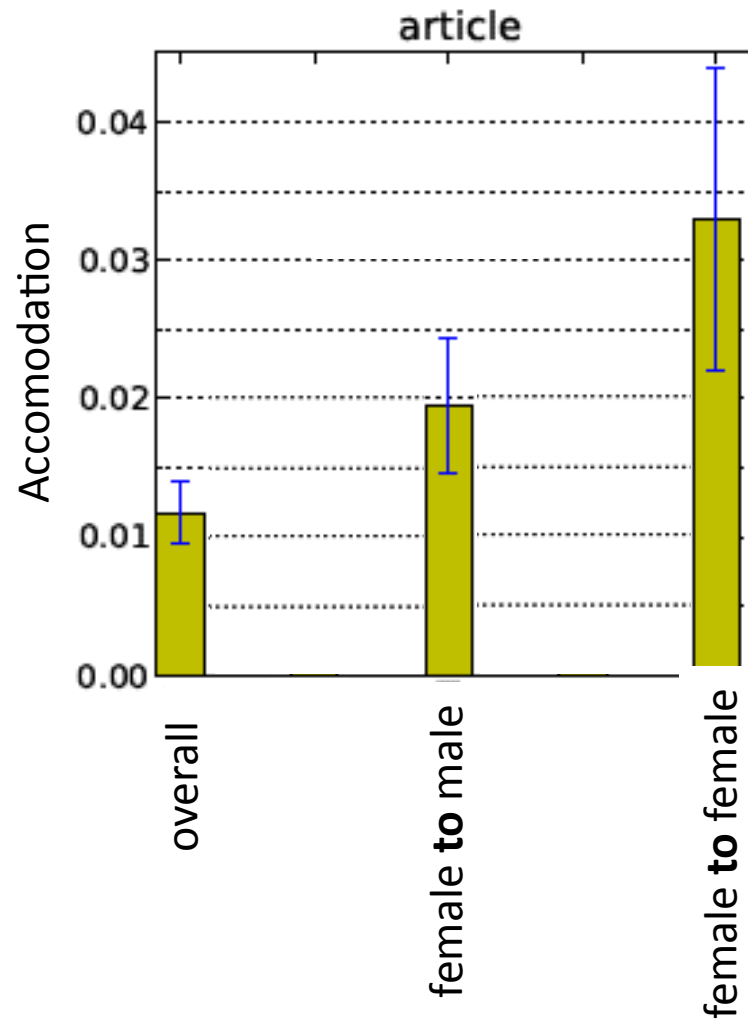
Movie scripts are a large and meta-data-rich source for studying these phenomena

- our corpus: 9000 characters, 220K conversational exchanges for pairs who talked to each other at least 5 times

Movie scripts: one gender experiment

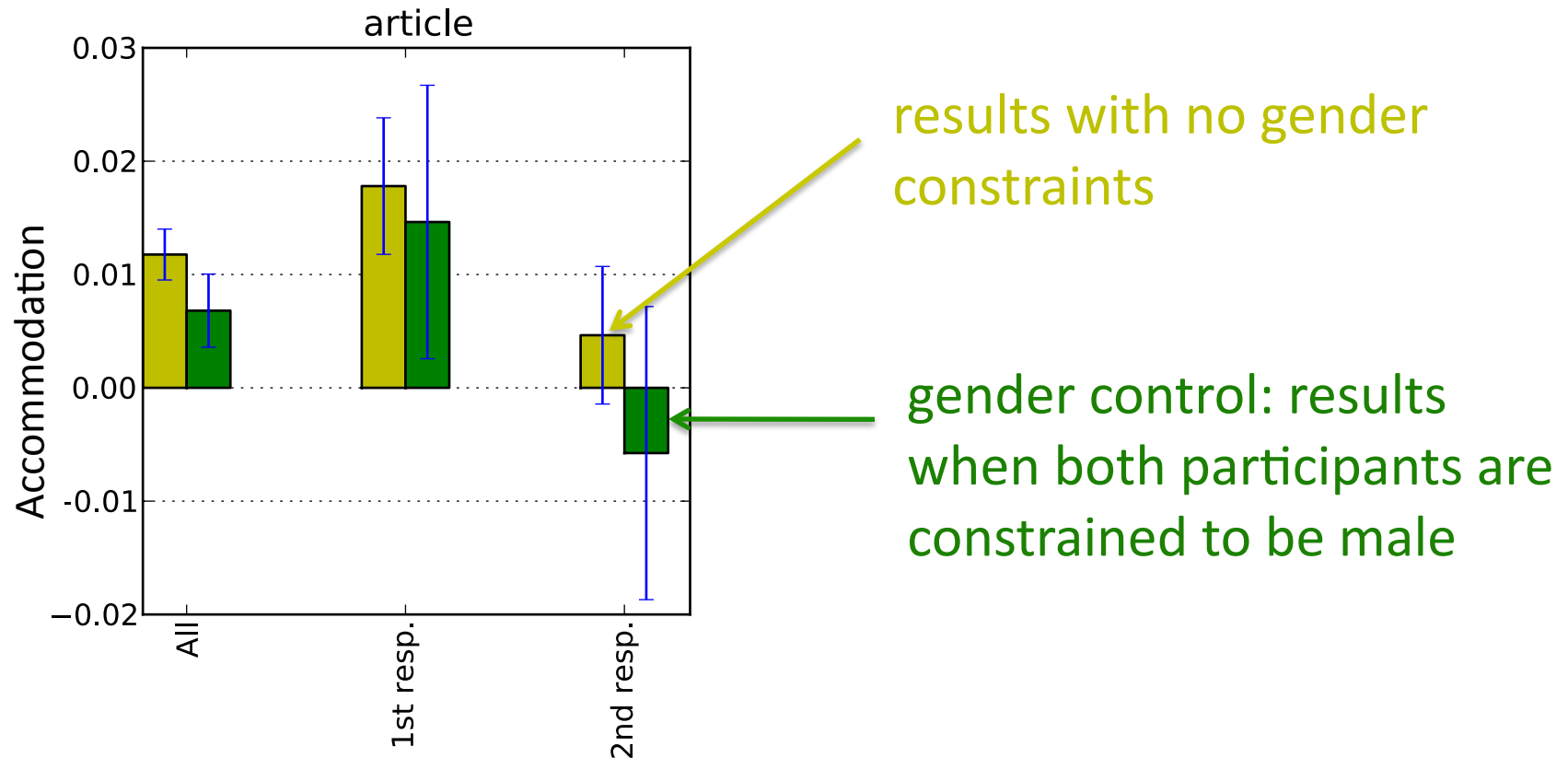


Movie scripts: one gender experiment



Movie scripts: one experiment related to status

What if the two participants are the 1st-billed character (the first in the credits list) and the 2nd billed character?



Conclusions

We've started studying interactions between language and influence.

- We've discovered that opinion variance affects how relative position affects how an opinion is received. This was not predicted by social psychologists.

- We've found accommodation effects in new types of environments: Twitter and movie scripts.

These results seem to be interesting to psycholinguists and others.

Most importantly,
I hope you'll work on such problems, too!