

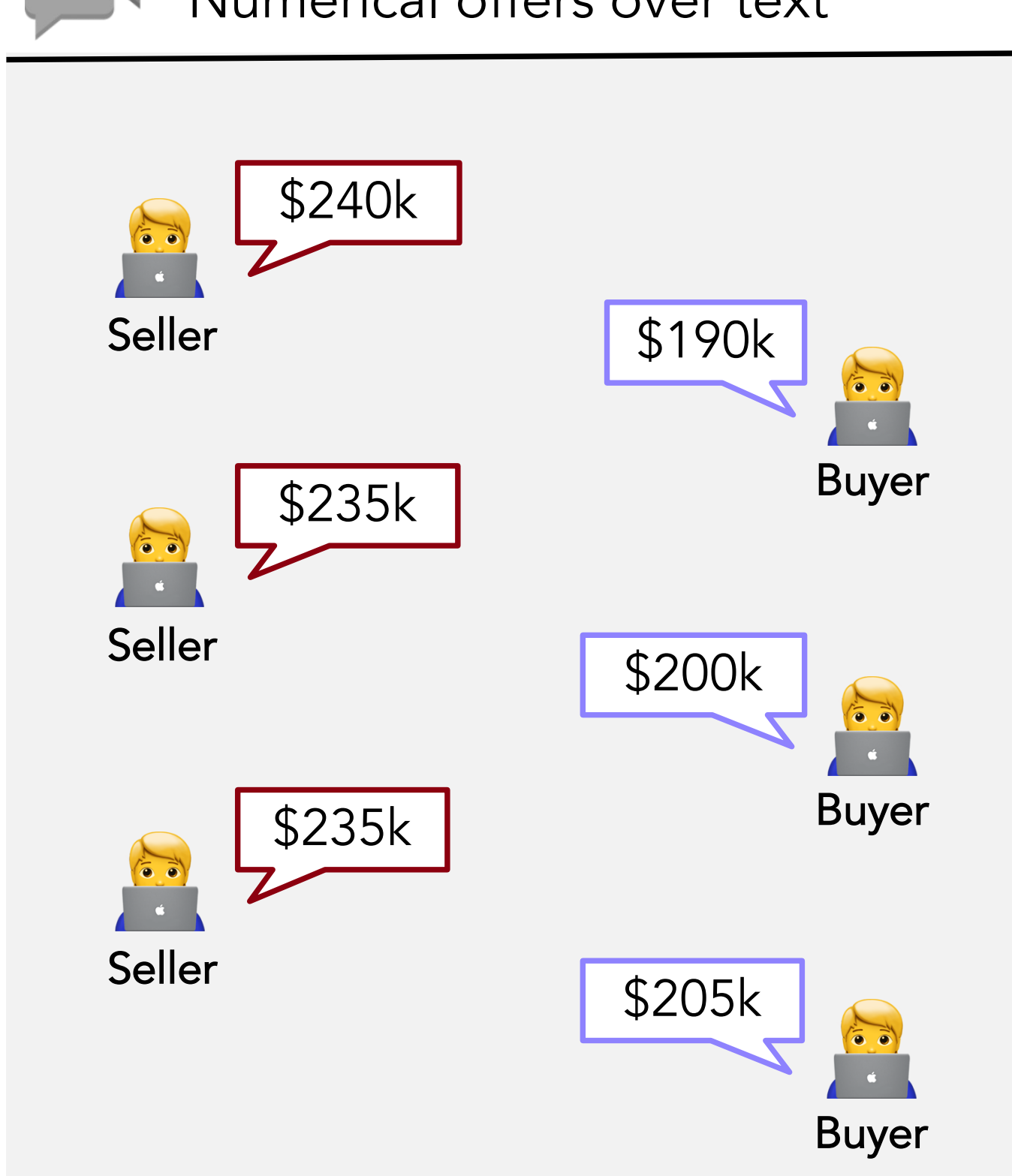


Motivation

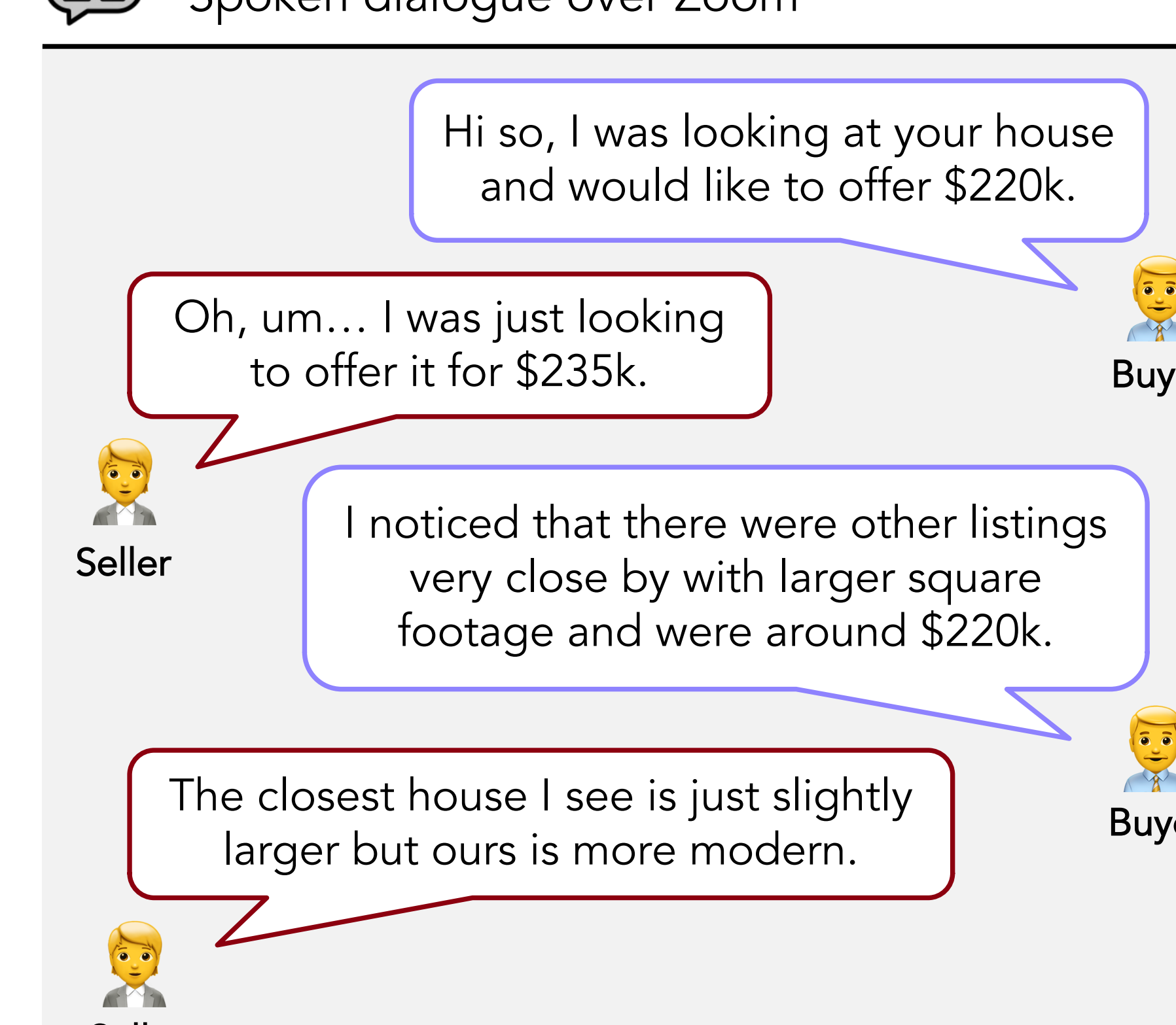
- In bargaining, how does language help or hinder cooperation? And, how does the use of language produce winners and losers?
- Existing bargaining datasets are limited in being based on written exchanges (He et al., 2018), often in the context of a highly structured game (Asher et al., 2016; Lewis et al., 2017).
- There is growing interest in bargaining in NLP oriented towards the goal of building dialogue systems capable of engaging in effective negotiation (Zhan et al., 2022; Fu et al., 2023).

Controlled Experiment

Control: Alternating Offers
Numerical offers over text



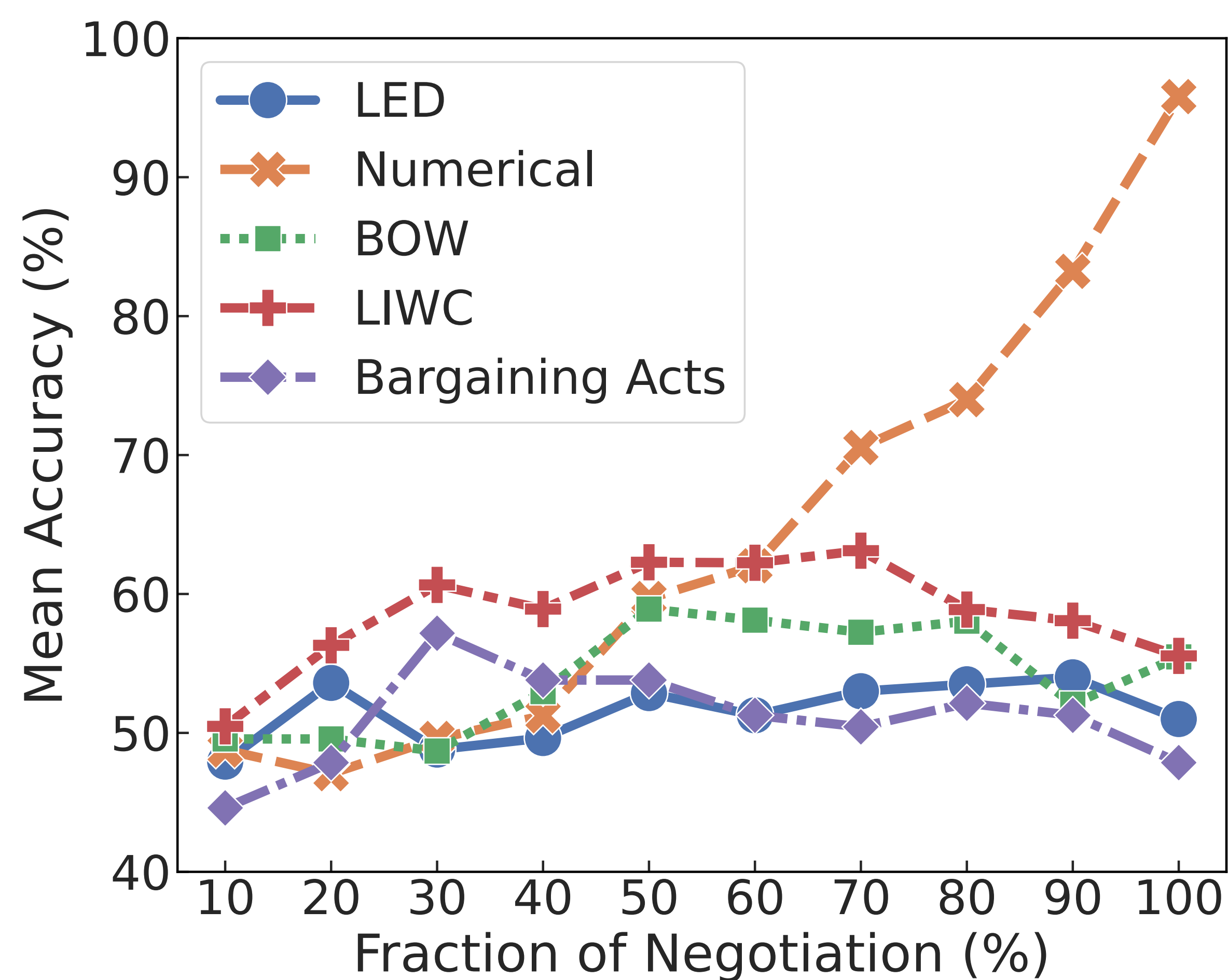
Treatment: Natural Language
Spoken dialogue over Zoom



High Quality Data

- Spoken language is more fluid and natural, akin to real-world bargaining scenarios.
- First work to introduce a control condition without the use of natural language.
- Participants are recruited through behavioral labs at universities and their incentive structure is high-powered.
- We supplement the transcripts with manual annotation of speech acts that we develop specific to the bargaining scenario.

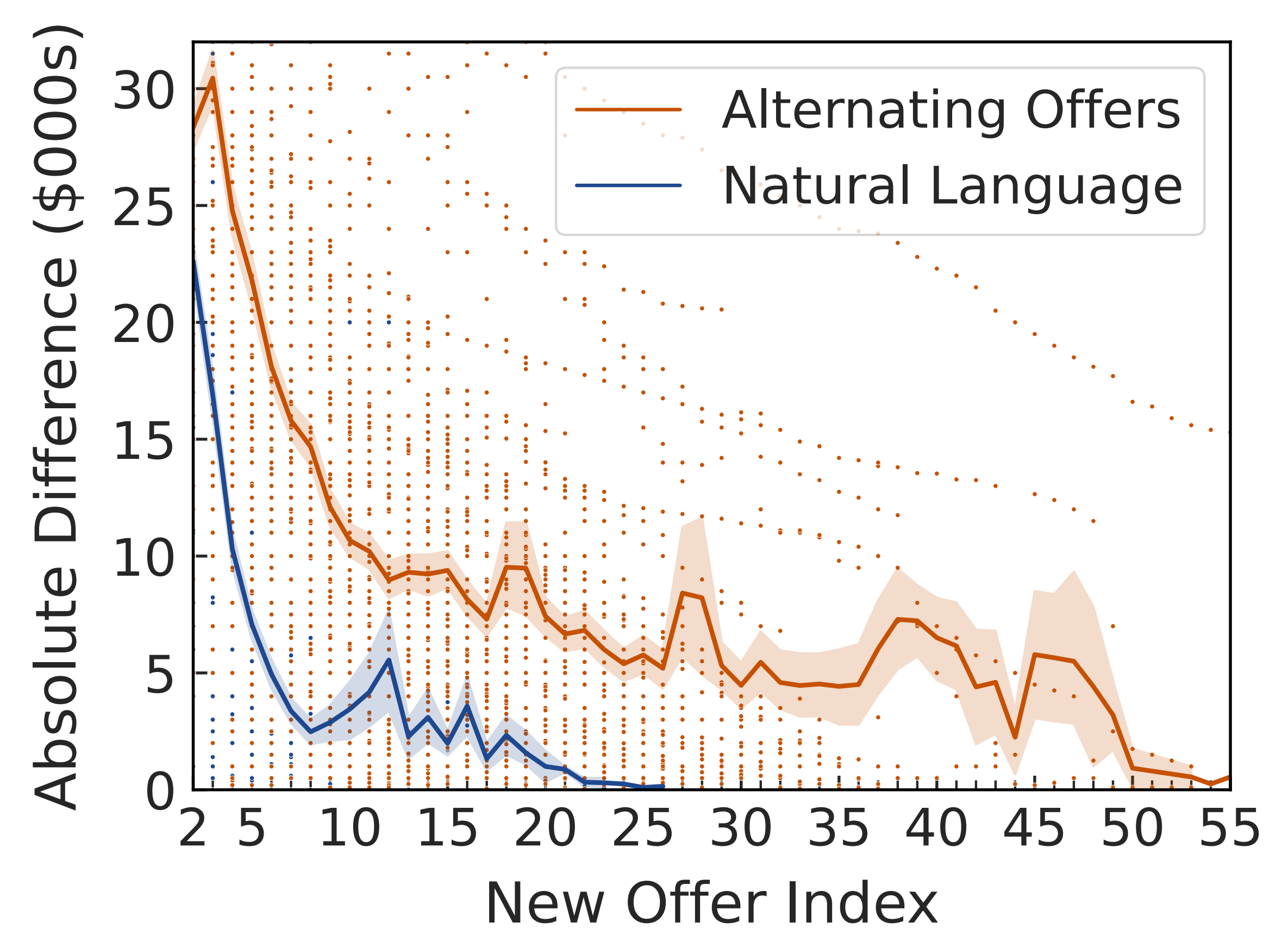
Predicting Outcomes



1. LIWC features provide consistently strong performance and even outperform Longformer (Beltagy et al., 2020) given the beginning of a negotiation.
2. Successful sellers address buyers directly with the pronoun "you" and prompt them to divulge their considerations and preferences.
3. Successful buyers convey a sense of emotional indifference and thoughtfulness through filler words and curt acknowledgements of the sellers' arguments.

- In contrast to comparable datasets, such as CRAIGSLISTBARGAIN, our natural language negotiations have an average of over 4x more turns exchanged.

Effects on Cooperation



- We find that when participants are able to converse with one another rather than simply exchange numerical offers, they are able to come to an agreement more quickly and in fewer offers.

TL;DR: The ability to communicate using language facilitates cooperation. To win, it is advantageous to be patient and reactive.