Individual Contributions to Academic Interactions

by Jack Rechsteiner

Background Information

- Discourse analysis often focuses on small sets of data to make qualitative claims
- Data science + discourse corpora → quantitative analyses that are too difficult or time-consuming to do without computer assistance
    - These analyses can also provide evidence for the claims made by qualitative work (Johnstone, 2018)

- Previous discourse analysis work has observed that the contributions of an individual in an interaction are affected by social factors
- This project builds on this with a quantitative analysis of the amount of speech contributed by individuals and the effects of social factors using data from the Michigan Corpus of Academic Spoken English (MICASE)

Theoretical Foundations (Cameron, 2001)

- Institutional talk = talk in an institutional context that differs from 'ordinary talk'
  - Examples: a business meeting, a doctor's office, a courtroom, a classroom
- Asymmetrical talk = talk where participants have unequal distributions of conversational contributions, due to differences in power, status, and/or control
  - Can occur in institutions because of differences in institutional position
  - Can occur outside of institutions because of differences in social position
- Analyzing asymmetry in talk can provide insight into the distribution of power and inequality in these contexts

Research Questions

- How does the institutional position of an individual affect their contributions in an academic interaction?
- How does the social position of an individual affect their contributions in an academic interaction?
- How do institutional position and social position interact with each other in academic interactions?

Hypotheses

1. Speech event type will be related to differences in contribution levels based on the institutional "permissions" of the speech event
    a. Classes are more institutionally structured and will have greater inequality in contribution distributions
        i. i.e., students will talk less in lectures but will talk more in student presentations
    b. Extracurriculars are less institutionally structured and will have more equality in contribution distributions
        i. i.e., faculty and students talk about the same amount in office hours
2. Social factors will be more relevant to contribution levels when institutional positions are less relevant to an event

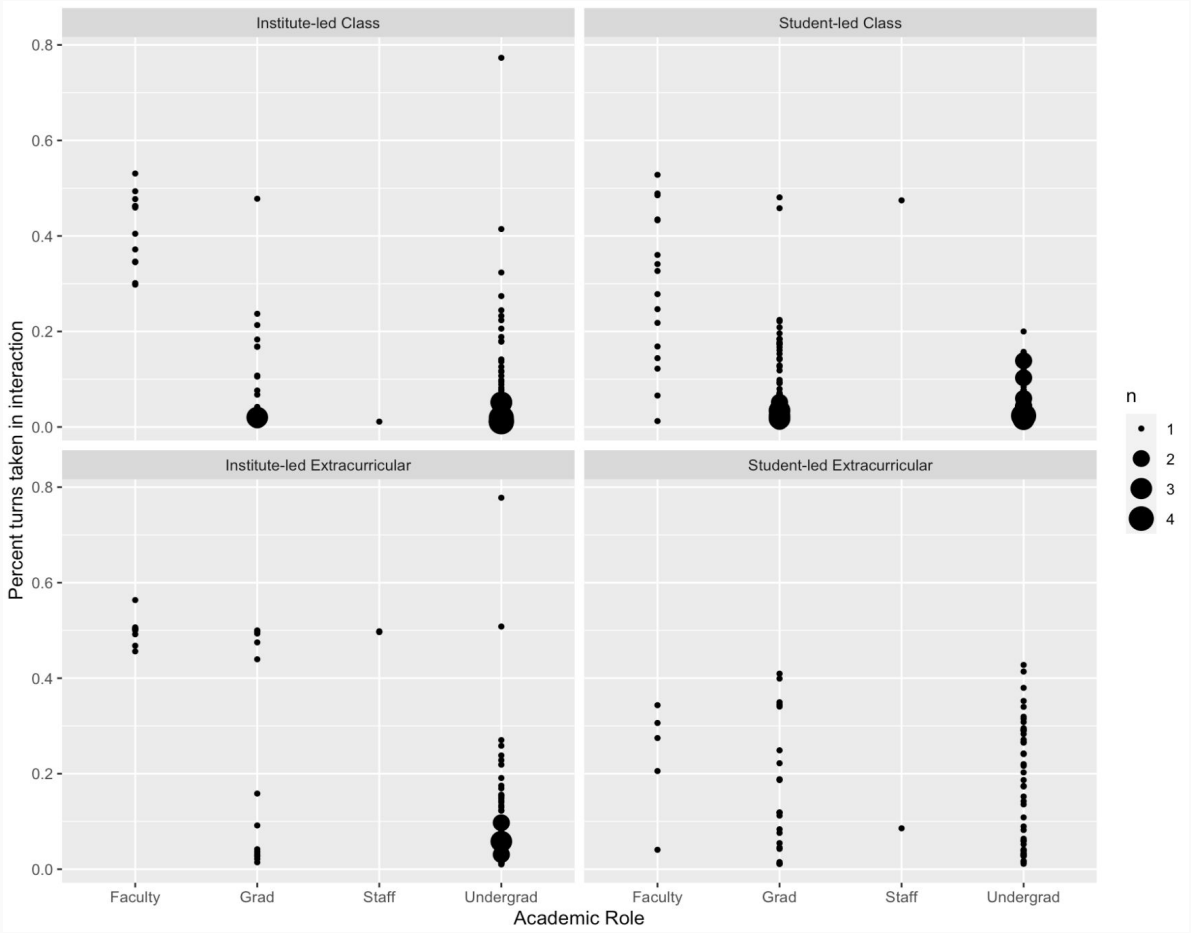
The Data – MICASE

- Created by the English Language Institute at the University of Michigan between 1997 and 2002
  - Transcriptions and XML files are available for ~200 hours of academic speech from 152 different speech events
  - MICASE defines academic speech as "speech which occurs in academic settings" (2002, p. 4)
  - Files include institutional role and social category data for the speakers
- This project uses data from the 75 events tagged as "Highly Interactive" or "Mostly Interactive"
  - However, 4 events were deemed outliers and are excluded from the analysis

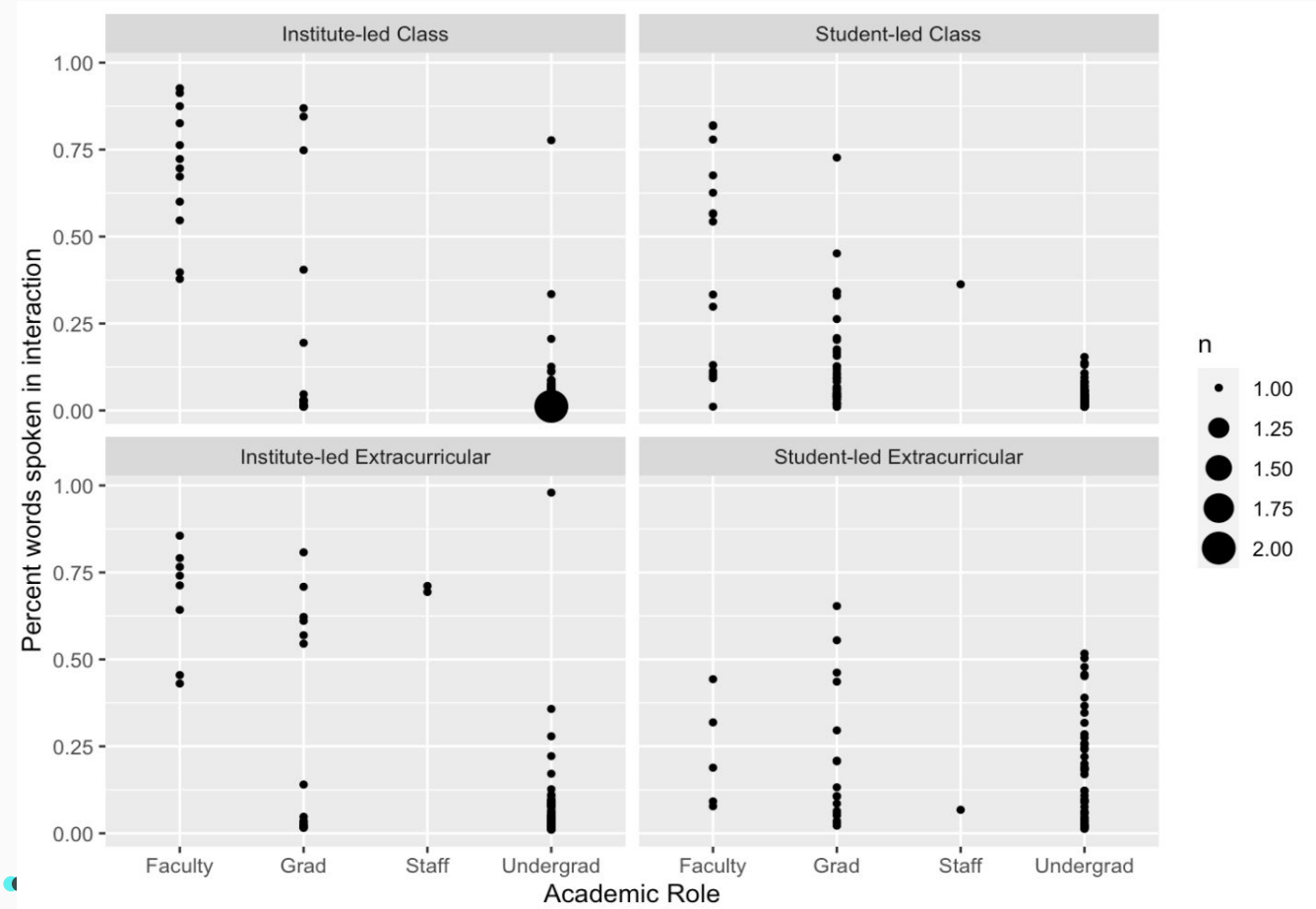
Event Data Overview

Speech Event Category	Count	Description
Institute-led Class	18	Lectures, lab sections
Student-led Class	17	Student presentations, seminars, discussion sections
Institute-led Extracurricular	16	Advising sessions, office hours
Student-led Extracurricular	13	Study groups, student meetings
Academic Event	7	Tours, service encounters, dissertation defenses, workshops

Turn Contributions by Academic Role across Event Types



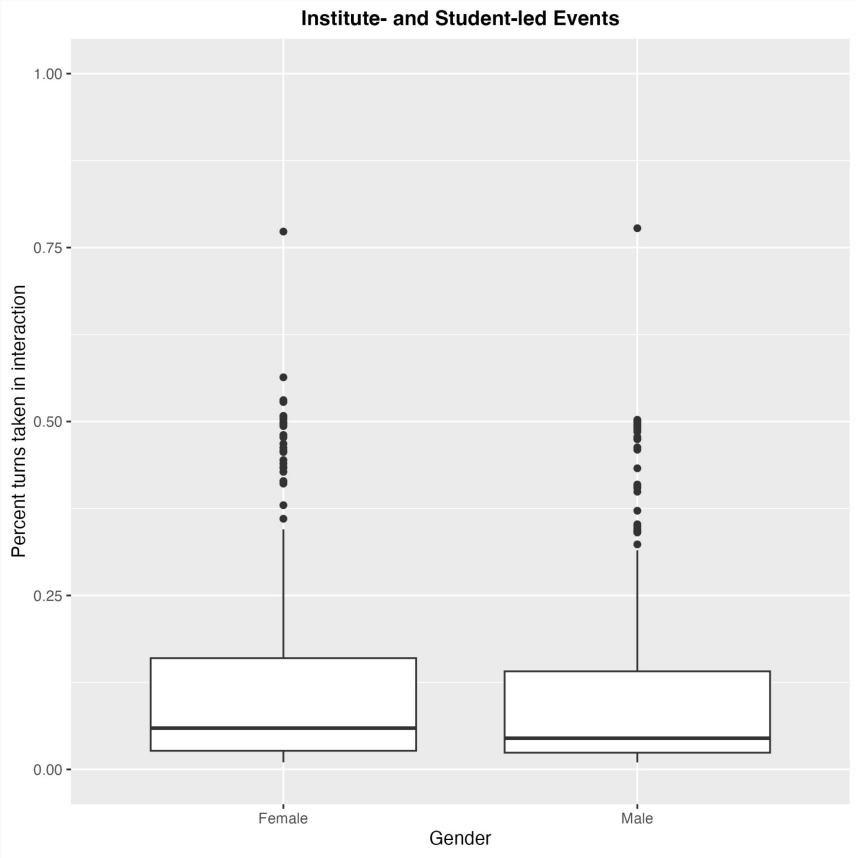
Word Contributions by Academic Role across Event Types

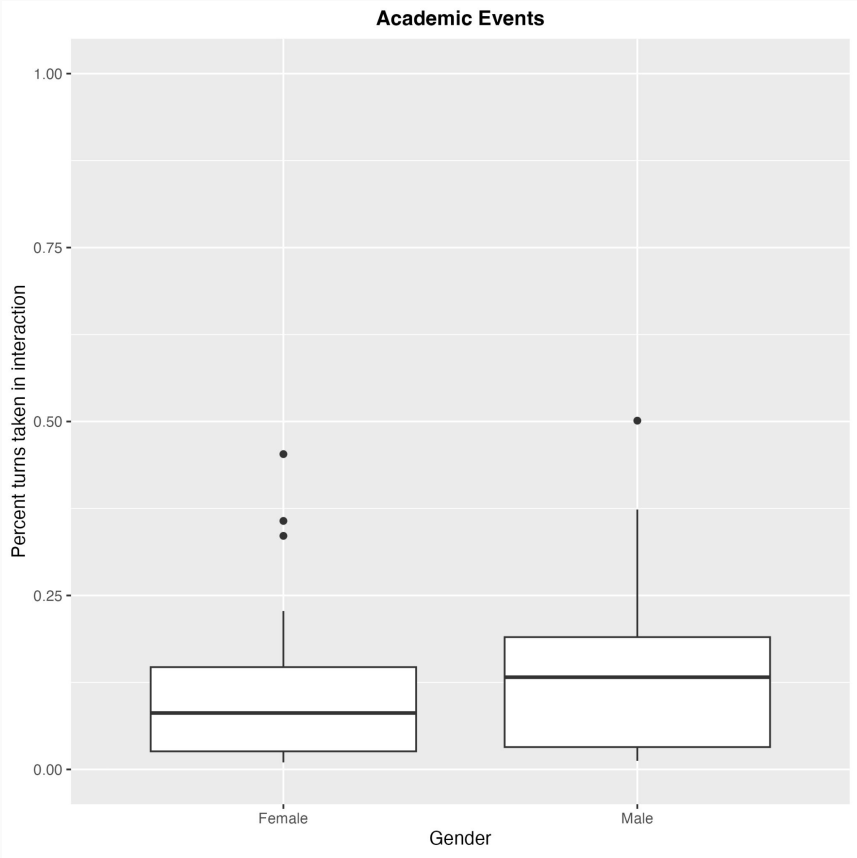


Comparing Undergrad Turn & Word Contribution Averages across Events

Event Type	Undergrad Turn Average	Undergrad Word Average
Institute-led Class	6.7%	5.3%
Student-led Class	4.7%	4%
Institute-led Extracurricular	9.5%	7.3%
Student-led Extracurricular	17.8%	17.9%
Academic Event	13%	24.4%

Gender Differences in Turn Contributions



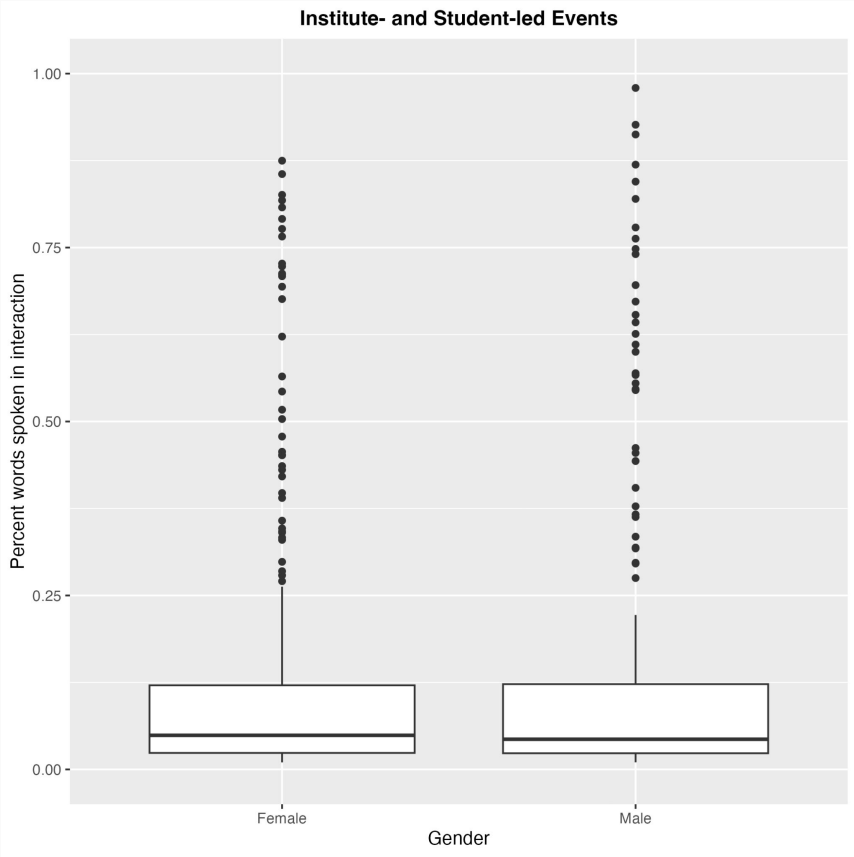


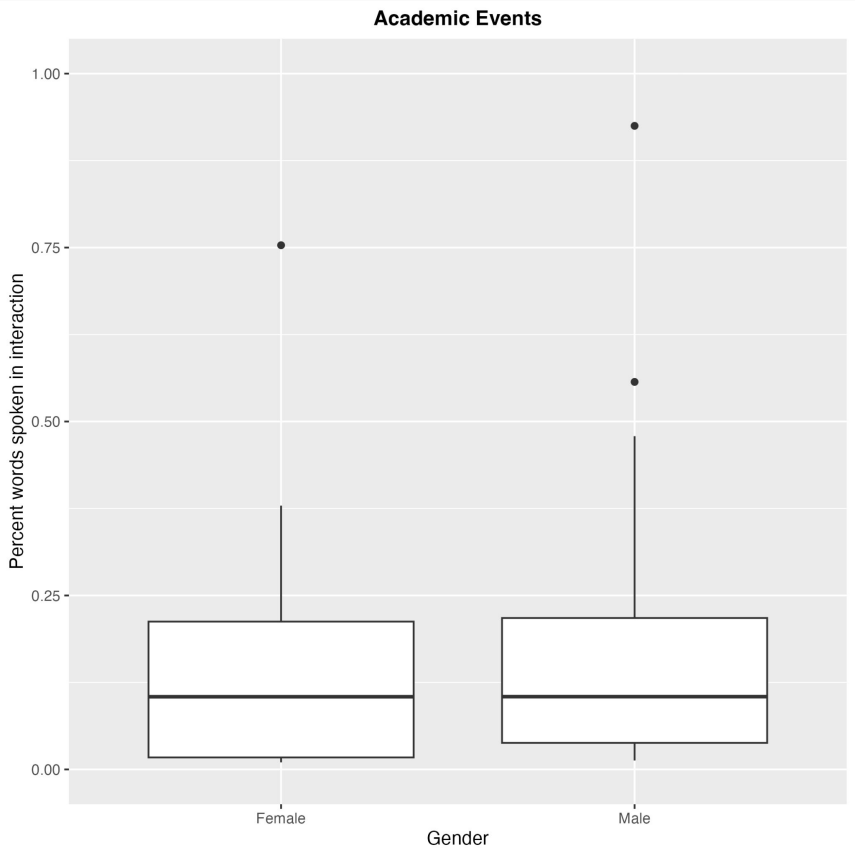
Linear Model Results of Turn Contributions and Gender

Fixed Effect	Estimate	P value
Male:Class/Extracurricular	**0.11**	**<0.001*** **
Female:Class/Extracurricular	0.01	0.48
Male:Academic Event	0.02	0.52
Female:Academic Event	−0.01	0.72

```
lm(percent_turns_contributed ~ gender * speech_event)
```

Gender Differences in Word Contributions





Linear Model Results of Word Contributions and Gender

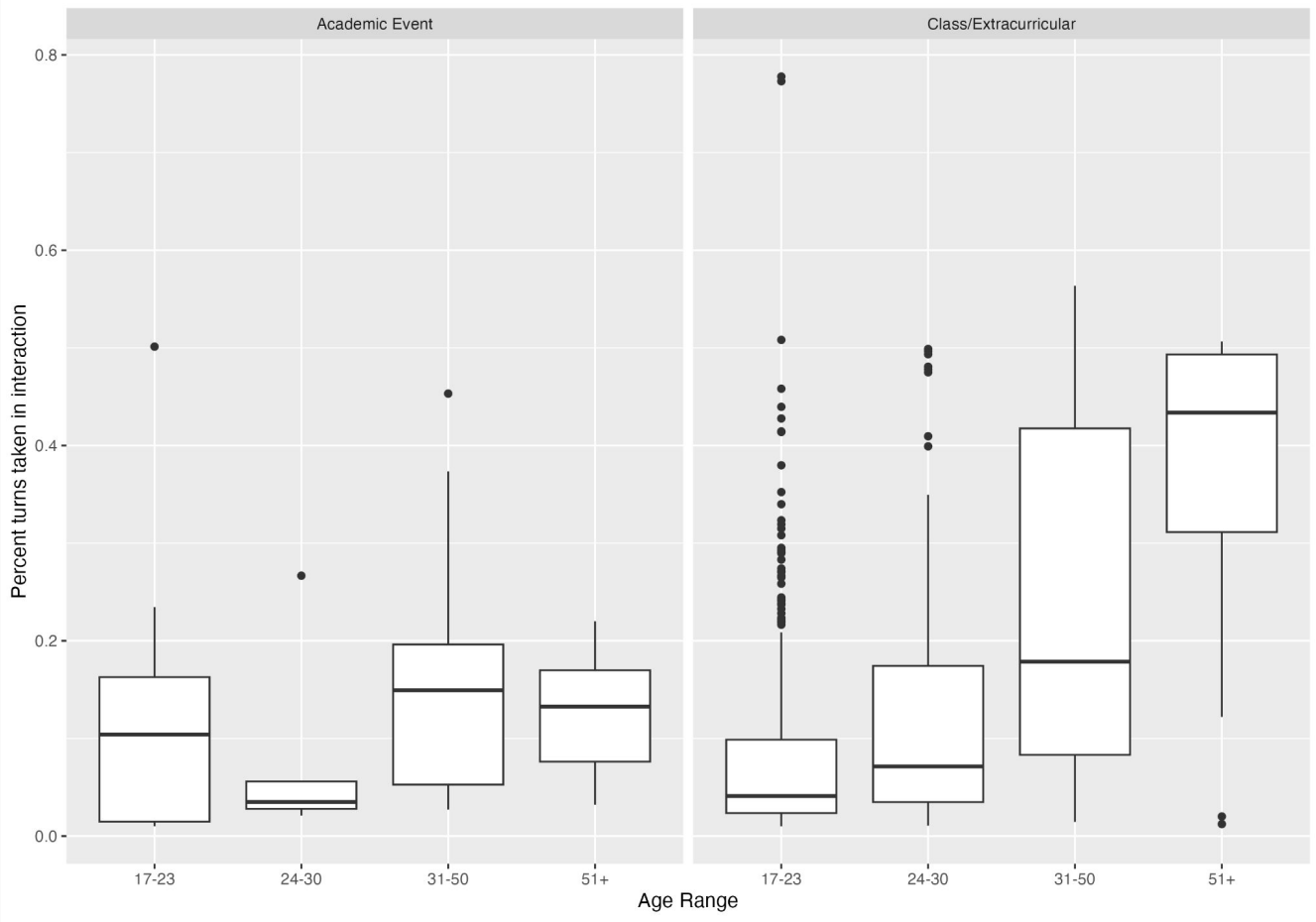
Fixed Effect	Estimate	P value
Male:Class/Extracurricular	**0.15**	**<0.001*** **
Female:Class/Extracurricular	−0.01	0.54
Male:Academic Event	0.03	0.50
Female:Academic Event	0.00	0.99

```
lm(percent_words_contributed ~ gender * speech_event)
```

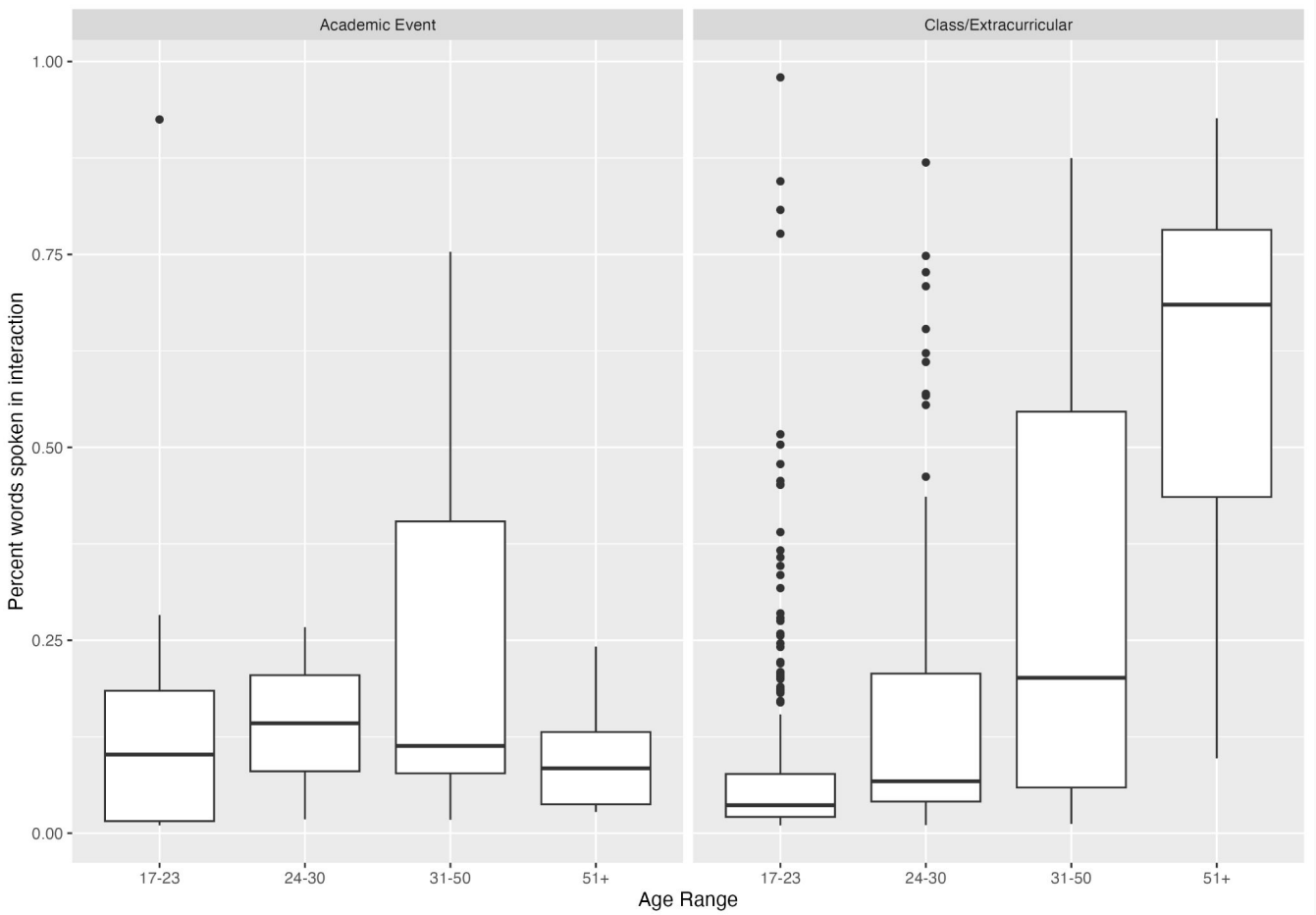
Caveat

- MICASE attempted “to get approximately equal amounts of speech from male and female speakers within each academic division” (2002, p. 5)
  - This might be one explanation for the lack of gender effects
  - I didn’t know this until after making the gender plots and models
- So let’s quickly look at another social category in the data

Age Differences in Turn Contributions



Age Differences in Word Contributions



Discussion

- Hypothesis 1: Speech event type will be related to differences in contribution levels based on the institutional "permissions" of the speech event
  - Undergrads appear to have lower contribution rates for turns *and* words in classes than in other interactions
    - Regardless of whether the interactions are institute-led or student-led, which supports hypothesis 1 but in a different way than expected

- Hypothesis 2: Social factors will be more relevant to contribution levels when institutional positions are less relevant to an event
  - Gender doesn't appear to affect contribution rates regardless of event type
  - Age appears to affect contribution rates, but only for classes/extracurriculars
    - Even with the correlation between age and institutional position, this goes directly against hypothesis 2

Conclusions

- **Next Steps**
  - After working through the current analysis, I'm considering combining staff and faculty into a category of "institutional employees"
  - I want to look at the outliers in the undergrad and 17-23 age range categories that have contribution percentages of 80% to 100%

- **Future Work**
  - Investigate the potential effects of "native English speaker status"
  - Examine the intersections of institutional positions and social positions

Thank you!
Questions?

Works Cited

Cameron, D. (2001). *Working with spoken discourse*. SAGE.
Johnstone, B. (2018). *Discourse analysis* (Third edition). John Wiley & Sons, Inc.
Simpson, R., Lee, D., & Leicher, S. (2002). MICASE Manual. Ann Arbor, Michigan, USA; English Language Institute, The University of Michigan.

Bonus Slide Thoughts

- It's important to thoroughly read the existing documentation for a corpus (if it's available) when deciding the variables for analysis
- Decisions on how to quantify a "contribution" in an interaction can affect the results of the analysis