The Role of Social Information in Cognitive Processing: Sex and Sexuality

{ Eric Wilbanks } North Carolina State University – English Linguistics

DEPARTMENT OF ENGLISH

1. Introduction

Exemplar models of linguistic cognition hold that our mental representations of language are derived from statistical learning applied to our experiential memories (Pierrehumbert, 2006). Information such as emotion or social context are encoded simultaneously (Sumner et al., 2014).

Recent experiments have found that congruence between **speaker age/word age** (Walker and Hay, 2011) and **sex/word gender** (Sumner and King, 2013) reduces reaction time (RT) and facilitates processing. Conversely, incongruence between mediating social factors and lexical items inhibit linguistic processing.

2. Research Questions

1. How does sex/sexuality information influence lexical processing?
2. Does congruence between expected semantic links based on this social information facilitate processing speed?
3. To what degree do listener demographics play a role in the processing of this information?

3. Lexical Association Task

- Speakers: **GM** (gay male), **SM** (straight male), & **SF** (straight female)
- 513 words **(Primes)** randomized, presented to four listeners
- Lexical Association (LA) Task: "First word that comes to mind" **(Target)**
- Selection of 12 prime-target pairs that varied across speakers
- **Brush** → *Teeth* for **GM** & **SM**
- **Brush** → *Hair* for **SF**

4. Lexical Decision Task

"Is this written word a real word?"

- 8 participants, 3 male and 5 female students
- Participants would hear one of the three speakers say the **Prime**
- Then they would see the written **Target** on the screen
- Reaction Time (RT) logged via Button Box

Type	Prime	Target
Biased	Brush	Hair
Neutral	Judge	Court
Nonse	Mirror	Zedries

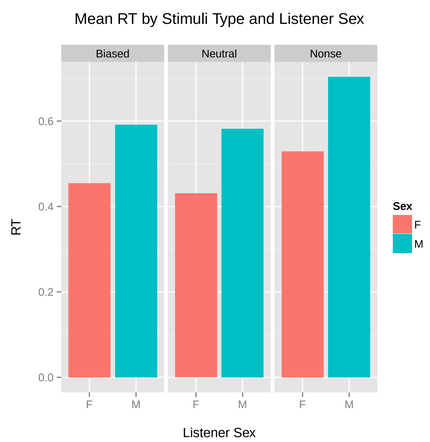
Table 1: Example Prime-Target Pairs

- 216 Total Prime-Target Pairs, 72 per speaker
- Broken down by **Type** (Above) & **Agreement** (Pos. or Neg.)

Speaker	Prime	Target	Agreement
SF	Brush	Hair	Positive
SF	Brush	Teeth	Negative
SM	Brush	Teeth	Positive
SM	Brush	Hair	Negative
GM	Brush	Teeth	Positive
GM	Brush	Hair	Negative

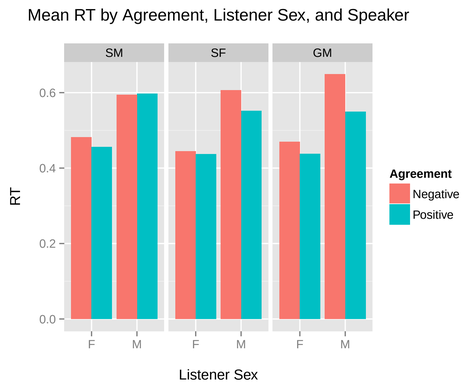
Table 2: Example Biased Type Prime-Target Pairs

5. Reaction Time (RT) Analysis I



- Linear mixed effects model, dependent: RT; predictor variables: type, listener sex, and block; random slope: participant
- Model fit determined by likelihood ratio tests
- $p < .01$ for all comparisons
- Decrease in RT over time
- Neutral < Biased < Nonse
- Females < Males

6. RT Analysis II



- Biased Data Only - Linear mixed effects model, dependent: RT; predictor variables: agreement, listener sex, block; random slope: participant
- $p < .05$ for all comparisons
- **Positive** < **Negative**
  - Agreement between Prime and expected Target facilitates processing speed
- Ad hoc t-test between intersex agreements
  - F rating sf: p = .77
  - M rating sm: p = .90

7. Conclusion

- Semantic links between Prime-Target significantly decrease RT for all three speakers
- Within Biased, disagreement with expected Prime-Target relationship increases RT, showing increase in processing
- This effect does not exist for inter-sex(uality?) pairs (i.e. males rating sm)
- Social Information intervenes in linguistic processing, aiding or inhibiting lexical access

References

Pierrehumbert, J. B. (2006). The next toolkit. *Phonetics*, 34:516–530.
Sumner, M., Kim, S. K., King, E., and McGowan, K. B. (2014). The socially weighted encoding of spoken words: a dual-route approach to speech perception. *Frontiers in Psychology*, 4(1015):1–13.
Sumner, M. and King, E. (2013). Voice-specific lexicons: acoustic variation and semantic association. Oral Presentation given at the Conference on New Ways of Analyzing Variation in Language, Pittsburgh.
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8. Future Research

- Inclusion of Lesbian speakers
- Listener demographics
- Perceived rather than actual sexuality against RT
- Include visual stimuli
- Recruit larger n