Gender and linguistic variation: a role for hormonal organising effects
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Introduction

Known: Women tend to lead language change from below.

Why? Answers Vary (e.g. Labov 2001, Eckert 2011).

A Problem
• Most macro-level studies of language change assume a gender binary
• Most research that doesn’t assume a gender binary doesn’t address itself to macro-level language change (e.g. Liminian et al. 2014).

Sociobiology

There is a growing literature on the connection between fetal testosterone exposure (hormonal organising effects) and gender identity (Hines et al. 2004; Berenbaum and Bailey 2003), and gendered behaviour (Hines et al. 2002; Auyeung et al. 2009). See Hines (2009), Balthazart (2011) for reviews, and related work on sexuality.

This Study

• We interviewed 14 speakers who would be classified as belonging to just one sex/gender group in most sociolinguistic studies (assigned-female-at-birth and female-identifying), matched in age and other social characteristics.
• We analyzed gender according to a continuous measure known to correlate with fetal testosterone exposure (index finger: ring finger ratio).
• We looked for a correlation between this continuous gender variation and inter-speaker differences for a change in progress.

2D:4D Ratio

Generally (in humans and non-humans):
• smaller ratio, greater perinatal Testosterone exposure.
• larger ratio, less perinatal Testosterone exposure.

Results

Interpretation: less pre-natal testosterone → more um.

Reliability Estimates

1,000 bootstrap replicates produce a CI that excludes 0: (0.095, 2.567), and a permutation test (10,000 permutations) yields p = 0.0563.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female effect, HCRC Maptask</td>
<td>2.3</td>
</tr>
<tr>
<td>Female effect, Fischer Corpus</td>
<td>1.37</td>
</tr>
<tr>
<td>Female effect, PNC</td>
<td>1.31</td>
</tr>
<tr>
<td>Finger Ratio, our Pilot 1</td>
<td>1.12</td>
</tr>
<tr>
<td>Female effect, Switchboard Corpus</td>
<td>1.03</td>
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<tr>
<td>Female effect, British National Corpus</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Conclusions

We Have Demonstrated:

2D:4D Ratio

Gradient Variation ~ Linguistic Variation

Possible Explanations

Cognitive Style (Yu, 2013; Wagner & Hesson, 2014)

Perception/acquisition of linguistic variation

Persona construction/projection (Eckert, 2011, Liminian, Davis & Raclaw, 2014)

Linguistic Variation Input (Foulkes, Docherty & Watt, 2005)

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References


