BIOLOGY, SOCIALIZATION, AND IDENTITY: ACCOUNTING FOR THE VOICES OF FEMALE-TO-MALE TRANSSEXUALS

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LSA 2010, Baltimore
January 8, 2010
GENDER AND THE VOICE

- Differences between men’s and women’s voices are frequently attributed to physiological differences between the sexes, but are often in fact learned (Simpson 2009)
  - Literature on childhood language socialization shows that boys and girls take on gendered phonetic traits before physiological differentiation occurs during puberty (e.g. Sachs et al. 1973)
  - Even features linked to biology are also influenced by culture (see, e.g. Yuasa 2009)
- However, we still lack a comprehensive understanding of a number of issues. For instance:
  - Which phonetic features are influenced by biology, and how strong is this influence?
  - Which are learned during language socialization?
  - How malleable are these features beyond childhood?
A NEW SPEAKER GROUP

To add to our understanding of these issues, I focus on a group that is almost completely absent from the linguistic literature: female-to-male transsexuals, or trans men

- Individuals assigned to a female gender role and raised as such, but who identify as men and take steps to transition from a female gender role to a male one.

Previous studies of transsexuals’ voices have shown that we can learn quite a bit from looking at these speakers, but usually the focus is on trans women

- For instance, Gelfer & Schofield (2000) analyzed the differences between trans women whose voices were perceived as male and those perceived as female, and identified 160 Hz as a cross-over point that distinguished the two groups
NEW INSIGHTS

- However, trans men promise a unique set of insights. There are a number of reasons for this:
  - One of the most common medical interventions sought by trans men is testosterone therapy, which produces many of the changes men typically go through during puberty, including a drop in vocal pitch.
  - Because trans men’s voices are usually perceived as male, they can shed light on the perception of different kinds of masculinities (as well as maleness/femaleness).
  - As Kulick (1999) suggests, some may assume that trans women are actively constructing femininity but that trans men aren’t doing anything special in talking like men.
    - (In other words, “talking like a man” may be seen speaking in a neutral way, while “talking like a woman” is seen as involving some degree of artifice.)
One of my analyses investigated the perception of 6 trans men’s voices compared to 7 non-trans men who were rated as either straight- or gay-sounding based on read speech.

The goal was to discover how trans men would be perceived on a scale of gay-soundingness and whether this might have anything to do with gender socialization.

Many of the phonetic features linked to the perception of sexual orientation are also socially learned differences between men’s & women’s voices (Smyth & Rogers 2002).

Listeners did in fact perceive the trans men in this study the same way as they perceived the gay-sounding non-trans men.
ACOUSTIC COMPARISONS

- For the most part, trans men’s voices are acoustically indistinguishable from non-trans men’s voices
  - Mean pitch
  - Pitch range
  - Voice quality
  - Mean F1 & F2
  - Vowel peripherality
  - Sibilants except center of gravity

- These similarities show that childhood gender socialization is far from deterministic – these speakers either
  - Failed to acquire normative feminine styles, and/or
  - Changed gendered features of their voices during transition

- In other words, self-defined identity matters too
TRANS MEN’S VOICES

- Having compared trans and non-trans men, I now want to turn to differences among trans men’s voices
  - 8 trans men from CA (n = 5), CO (1), MA (1) and OK (1)
  - 1 speaker was Black, 4 White, 3 Multi-racial
  - Age range from 19-51
  - Length of time on testosterone varies from 7 months to 10 years

- First, intra-speaker variation & change over time
- Second, inter-speaker variation based on length of time on testosterone and age of speaker
The only other acoustic study of trans men was done by van Borsel and his colleagues (van Borsel et al. 2000; Adler & van Borsel 2006)

2 Belgian trans men during their first 13 months on hormones
  - Language spoken is unclear
  - Trans men were taking oral testosterone, which is not typically used in the US and is thought to produce slower and less dramatic masculinization than other forms (Gorton, Buth & Spade 2005)

Found that trans men experience a significant drop in F0 during the first year on testosterone, along with a significant narrowing in pitch range

Based on a reading passage, mean F0 went from 215 to 155 Hz for one speaker and 160 to 132 Hz for the other
CHANGE OVER TIME

- Two speakers in my study were available for a follow up session approx. one year after the initial recording session
  - Sam, a college student from MA who was 21 with 11 months on hormones at our first recording and 23 months at our second
  - Phil, who is also a student and who is from CA, was 24 and had been on testosterone for 8.5 years at our first recording and 9.5 years at our second
- Both speakers had changes progressing beyond the first year of testosterone
- However, Sam’s changes are (predictably) more dramatic and wide-reaching
<table>
<thead>
<tr>
<th>Feature</th>
<th>11 months</th>
<th>23 months</th>
<th>Difference</th>
<th>P-value</th>
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<tr>
<td>Mean F0</td>
<td>129 Hz</td>
<td>111 Hz</td>
<td>-13.95%</td>
<td>0.001016 **</td>
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<td>F0 range</td>
<td>79</td>
<td>76</td>
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<td>Mean F1</td>
<td>493</td>
<td>481</td>
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<td>Mean F2</td>
<td>1737</td>
<td>1720</td>
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</tr>
<tr>
<td>/s/ center of gravity</td>
<td>6762</td>
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<td>/s/ standard dev.</td>
<td>3183</td>
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<tr>
<td>/s/ skew</td>
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<td>-0.084144044</td>
<td>-124%</td>
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<tr>
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<td>-117.8%</td>
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<td>Feature</td>
<td>8.5 years</td>
<td>9.5 years</td>
<td>Difference</td>
<td>P-value</td>
</tr>
<tr>
<td>--------------------------</td>
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<tr>
<td>Mean F0</td>
<td>92 Hz</td>
<td>98 Hz</td>
<td>+6.52%</td>
<td>Not significant</td>
</tr>
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<td>F0 range</td>
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<td>Mean F1</td>
<td>551</td>
<td>534</td>
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<td>Mean F2</td>
<td>1651</td>
<td>1752</td>
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<tr>
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TIME ON HORMONES AND AGE

Time on hormones

- Speakers who have been on testosterone longer show:
  - Lower mean F2 (p < 0.035)
  - Smaller standard deviation for /s/ (p < 0.019)
  - Lower kurtosis for /s/ (p < 0.036)
- This provides more evidence for ongoing change
- After transition, speakers experience ongoing socialization as men

Speaker age

- Older speakers show (suggestively):
  - More negative skew for /s/ (p < 0.076)
- Before transition, speakers experience ongoing socialization as women
- Older speakers may experience less dramatic linguistic changes
DISCUSSION

○ Researchers of gender socialization often focused on the ways that this process can be oppressive by forcing children into tightly restricted roles on the basis of biological sex

○ However, the research I presented demands a somewhat different view of gender socialization:
  - Those undergoing socialization are not passive recipients of the social order, but rather have some agency in what kinds of gendered styles they take on
  - Gendered styles are not acquired during childhood alone – language socialization continues throughout the lifetime
  - The ongoing nature of socialization promises room for change, but also constrains speakers by making change more difficult over time
  - Socialization and biology interact intimately with identity
FUTURE DIRECTIONS

- Long-term ethnographic research
  - Longitudinal study that shows changes in progress, including pre-testosterone recordings
  - Interactive data
  - How interlocutors actually make sense of the changes these speakers experience
THANK YOU!

And thanks to the participants in this research and the Department of Linguistics at the University of Colorado, Boulder for funding the data collection for this work.

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REFERENCES


REFERENCES, CON’T.


- Zimman (in progress). Identity, socialization, and gay-sounding voices.