

Rethinking the meaning of Minnesotan [æ]: sexual orientation or personal well being?

E. Allyn Smith¹, Benjamin Munson²,
Kathleen Currie Hall¹

¹Department of Linguistics, The Ohio State University

²Department of Speech-Language-Hearing Sciences,
University of Minnesota, Minneapolis

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Talk Outline

- The association between [æ] variants and sexual orientation in the North-Central U.S.
- The experiment we conducted showed a different result from what had been found previously.
- Follow-up studies give a clue to what's going on, along with future work.
- Conclusion: method matters!

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/æ/ and Sexual Orientation in Minnesota

- Point of departure: Strand and Johnson's (1996) study of gender differences in fricative perception
- Munson, McDonald, DeBoe, and White (2006) conducted a norming study on perceived sexual orientation in men's speech.
- The results were used in a subsequent perception experiment examining the influence of perceived sexual orientation on the perception of an /s/-/ʃ/ continuum.
 - Subsequently published as Munson, Jefferson, & McDonald (2006)

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/æ/ and Sexual Orientation in Minnesota

- Munson, McDonald et al. collected a variety of speech samples from self-identified gay and straight men.
- Naïve listeners rated these on a variety of scales, including perceived sexual orientation (pSO)
- Likert scales were used to measure pSO, following Gaudio (1994)

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/æ/ and Sexual Orientation in Minnesota

- /æ/ acoustics differed between straight and gay men.
 - Gay men: lower, more-retracted /æ/ (rAE)
 - Straight men: higher, more diphthongal 'tense' /æ/ (tAE)
- pSO ratings were correlated with acoustic characteristics of /æ/.
- A reasonable hypothesis: /æ/ is a marker of men's sexual orientation in Minnesota.
 - It isn't the only possible marker: /u/, /o/, and /s/ also differed between the groups, and were related to perceptual measures.

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[æ] in a Different Experimental Paradigm

- Potts and Kawahara (2004) use formal semantic methods to argue that honorifics are a kind of meaning called Conventional Implicature (CI)
- Silverstein (1976) divides meanings into three classes, with honorifics and sociophonetic variants in the same category.

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[æ] in a Different Experimental Paradigm

- Smith, Hall, and Munson (2008) wanted to test whether sociophonetic variants could also be considered CIs using conventional semantic tests (such as entailment).
- One of the variables that we chose to examine was /æ/ and perceived sexual orientation in the North Central Dialect.
- The experiment that we used to measure this turned up interesting findings that we didn't expect. These are the topic of the talk today.

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[æ] in a Different Experimental Paradigm

- Sociophonetic variants, unlike honorifics, can only be identified when pronounced, which necessitated implementing the semantic methods experimentally.
- This required a grammatically-diverse range of *sentential* stimuli containing our variable of interest, [æ], as well as some control sentences.
- Because we needed to control both the form of the sentences and the form of the [æ] in the sentences, we used trained speakers producing 'matched-guise' sentences.
 - (e.g., Giles & Bourhis, 1976; Purnell, Baugh, & Idsardi, 1999; *inter alia*)

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[æ] in a Different Experimental Paradigm

- To assess entailment, grammatical form needed to be controlled carefully.
- We constructed sentences that we thought did not convey anything obvious about sexual orientation.

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[æ] in a Different Experimental Paradigm

- After each sentence, participants answered three questions about the talker who produced the sentence. One of these was about sexual orientation; the other two were about something else (well-being characteristics).
 - Intended to minimize the possibility that listeners would use overt stereotypes about [æ] and sexual orientation

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[æ] in a Different Experimental Paradigm

- Rather than asking "Does this person sound...?", we asked "How surprised would you be to learn that this person is...?"
 - Doesn't presuppose that people parse talkers as 'gay' or 'straight'

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[æ] in a Different Experimental Paradigm

- Audio survey example:
 - Play sound file (once): 
 - New screen: Answer questions:

	Extremely surprised		I'm not sure		Not surprised at all
	1	2	3	4	5
How surprised would you be if you were to discover that this person is overweight?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How surprised would you be if you were to discover that this person is in a good mood?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How surprised would you be if you were to discover that this person is gay?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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[æ] in a Different Experimental Paradigm

- Participants, Recruitment, Stimuli:
 - 34 listeners, recruited through Facebook, Craig's List, and a variety of professional listservs, and through word of mouth
 - 23 women, 11 men (average age = 26.5 years)
 - Self-reported listening conditions and demographic information
 - Results of people who report to be from the North Central U.S. were used.
 - (Additional data were collected from 50 people outside the North Central U.S. Their data haven't yet been analysed.)
 - 20 test sentences, 10 fillers

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Survey Questions

- Five categories of questions, each with two non-complementary variants:

Category	Variante 1	Variante 2
Sexual Orientation	Gay	Straight
Mood	Good Mood	Bad Mood
Age	Under 20	Over 60
Weight	Skinny	Overweight
Smoking Habits	Never Smoked	Chronic Smoker

- Listeners never answered two questions from the same category for any given stimulus.

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Results

- Surprising Result #1:
- [æ] variant didn't affect levels of surprise to either the 'gay' or 'straight' questions.
 - rAE wasn't associated with the perception of the talker being gay.
 - tAE wasn't associated with the perception of the talker being straight.

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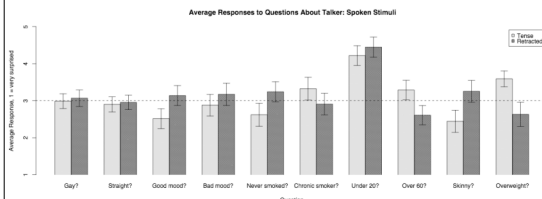
Results

- Surprising Result #2:
- [æ] variant was consistently associated with the variables that we asked about in the filler sentences.
 - Talkers of rAE sentences were perceived to be non-smokers, under 20, skinny, and in a good mood.
 - Talkers of tAE sentences were perceived to be chronic smokers, over 60, overweight, and in a bad mood.
- Are these really surprising? Maybe not so much.
 - Watson and Munson (2007): older adults in Minnesota produce more tAE, younger adults produce more rAE.
 - Johnson (2006): different [æ] variants are associated with different moods in the Northern Cities.

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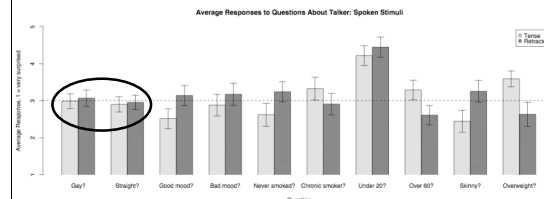
Results



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Results



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Houston, We Have A Problem!

- We did not replicate Munson et al.'s (2006) finding.
- Has this kind of problem been noted before? Yes!
 - Campbell-Kibler (2005) showed how a variant can be construed differently in different tasks and when different expectations about talkers are present.

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Houston, We Have A Problem!

- The rest of the talk discusses some of the possible reasons we failed to find the association that Munson et al. found, as well as follow-up studies that we have done to explore these possibilities.
 1. The content of the sentences may have biased people to respond to the spoken stimuli a particular way.
 2. The tokens of tAE and rAE in the sentences may have differed from the tokens used by Munson, McDonald et al. in a way that explains the failure to replicate the earlier finding.

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A Potential Problem: The Possible Interference of Lexical Content

- We tried to minimize the possibility that the sentences would convey anything about the speaker attributes we chose, but we did not assess this explicitly.
 - “Then the guys behind me **tap** me in the middle of the film because they don't want me to keep talking.”
- The first follow-up experiment examined this.

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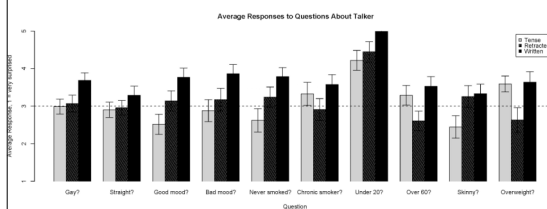
Perception of The Written Sentences

- The methods were identical to the earlier experiment, but the stimuli were written sentences instead of spoken ones.
 - The same rating scales...
 - ...with the same questions
 - ...in the same order
 - ...using the same survey design
- Eleven native, monolingual English-speakers from the North-Central dialect region participated.

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Perception of The Written Sentences



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Perception of The Written Sentences

- The relatively limited range of average ratings suggests that the content of the written sentences was not a confounding factor in the results in our audio survey.
- (A separate analysis confirmed that there was not a statistical relationship between the ratings for individual sentences.)

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A Second Possibility: The Phonetics of [æ]

- We know that the tAE and rAE tokens in the audio survey were acoustically very distinct from one another, as determined by acoustic analysis...
- ...yet the sentences themselves didn't elicit differences in perceived sexual orientation.

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A Second Possibility: The Phonetics of [æ]

- Given the substantial differences between the tAE and rAE words, we ought to see an even larger effect of [æ] variant on pSO for words that had been excised from the sentences used in the audio survey if we put them in a Munson et al.-style rating study.

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Perception of Single Words Excised from Sentences

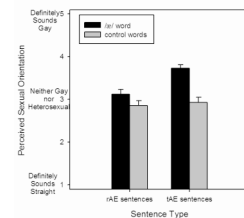
- A perception experiment
- 11 listeners (same as in the written-sentence experiment) listened to single words excised from the audio survey.
- Ratings given on a five-point scale (as in Munson, McDonald et al., 2006, and in Gaudio, 1994)
 - 5=definitely gay, 1=definitely straight, 3=neither
- In a sound booth, over headphones

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Perception of Single Words Excised from Sentences

- The plot thickens!
- The talkers were rated as MORE GAY sounding when saying tAE words than rAE words.
- Similar differences were not found for words without /æ/ from the same sentences.



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Yet Another Possibility!

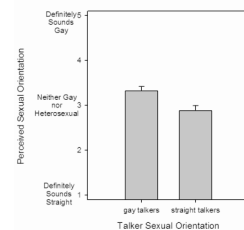
- Perhaps the association between /æ/ variants and perceived sexual orientation is not stable.
- If so, then we should see the reverse effect of what was seen in Munson, McDonald et al. (2006) if we re-run those original stimuli.

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Partial Replication of Munson, McDonald et al. (2006)

- The plot continues to thicken...
- ...because we can still replicate that finding.



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Why The Discrepancy?

- Sounds that are coded as tAE and rAE encompass many different acoustic variants.
- The productions in the audio survey are (perceptually) more extreme—almost stereotypic—examples of tAE and rAE than were collected by Munson, McDonald et al.

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Why The Discrepancy?

- There is no reason to believe that pSO should follow the dichotomy between tAE and rAE. Maybe pSO is related to acoustic characteristics of /æ/.
- We are currently working to phonetically parameterize the /æ/ tokens in both studies to examine this. Maybe there is no discrepancy at all.

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But We Also Can't Rule Out The Following...

- We also can't rule out the possibility that the discrepancy between the audio survey findings and the single-word perception findings relate to broader methodological choices.
- The listeners in Munson, McDonald et al. (2006) may have had associations between /æ/ and well-being, but they were not able to express them in the experiment because they were asked about sexual orientation instead.
- In response, they developed 'on the fly' stereotypes linking sexual orientation with these characteristics.
 - A similar argument is presented by Hay and Drager (2006).

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Conclusion: It's Ongoing

1. The methods that we use to measure social meaning have a substantial impact on our results.
 - We can find wildly different results about a seemingly simple relationship (i.e., between /æ/ and sexual orientation) depending on the method used.
2. Impressionistic phonetic transcriptions can under-predict relationships between phonetic variation and perception of speaker attributes.

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