



Perceptual Dialect Classification by Adults with High-Functioning Autism

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Background

•The speech signal contains information about linguistic meaning, and about indexical properties of the speaker, such as regional background (Klatt, 1989)

•Neurotypical (NT) adults use indexical information in the speech signal to accurately categorize unfamiliar talkers based on dialect (Clopper & Pisoni, 2004)

•Categorization requires an intact perceptual system, which adults with high-functioning autism (HFA) appear to have in the domains of phonological discrimination (Constantino et al., 2007), prosodic tune recognition (Jarvinen-Pasley et al., 2008) and unfamiliar talker identification (Boucher et al., 2000)

•Adults with HFA have problems with social aspects of language (e.g., Baron-Cohen et al., 2000) which may impair their ability to identify talkers by dialect

Research Questions

- Can adults with HFA categorize and make explicit judgments about talker dialects?
- How does their performance compare to NT adults?

Methods

Participants

Dialect Free Classification

	N	Mean Age (years)	Gender	Mean AQ Scores
HFAs	23	22.9	6 F, 17 M	25.5 (8.6)
NTs	27	21.2	16 F, 11 M	17.7 (5.5)

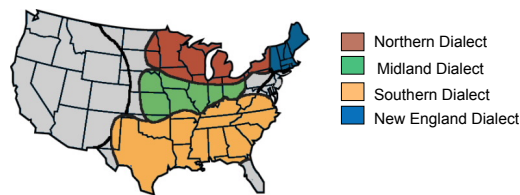
Dialect Rating

	N	Mean Age (years)	Gender	Mean AQ Scores
HFAs	14	24.9	3 F, 11 M	29.1 (8.4)
NTs	27	20.5	19 F, 8 M	17.5 (6.1)

- All native speakers of American English
- NTs and HFAs were significantly different on the Autism Quotient ($t(89)=6.29, p<.001$)

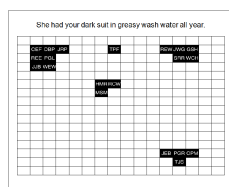
Stimulus Materials

- 20 male talkers from New England, Northern, Midland, and Southern dialect regions
- “She had your dark suit in greasy wash water all year.”



Dialect Free Classification

•Group the talkers into as many groups as you want with as many talkers in each group as you think appropriate.



- Northern Dialect
- Midland Dialect
- Southern Dialect
- New England Dialect

Dialect Rating

•Pick the statement that best applies. How likely is it that this person comes from Columbus, Ohio?

- Very Likely
- Somewhat Likely
- Maybe or Maybe Not Likely
- Somewhat Unlikely
- Very Unlikely

• Both groups sort New England & Southern into distinct categories, while Midland and Northern are less distinguishable.

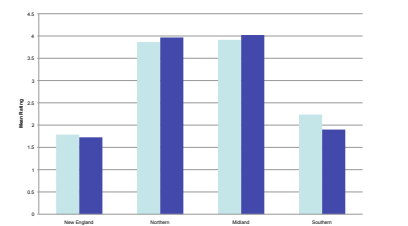
•HFAs confuse Northern with all other dialects, while NTs confuse Northern primarily with Midland.

Dialect Free Classification Means and SDs

	# Groups	# Talkers/Group	% Correct	% Error	Accuracy Score
HFAs	7.7 (3.9)	3.4 (1.9)	27 (17)	13 (12)	14 (12)
NTs	6.1 (2.4)	3.8 (1.4)	43 (21)	9 (6)	34 (18)

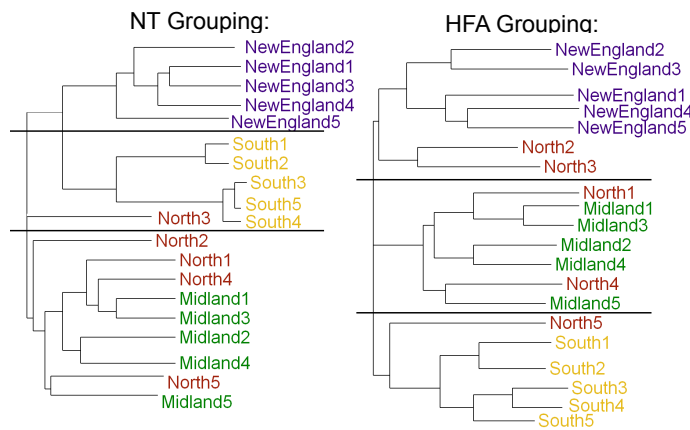
•NTs performed more accurately overall than HFAs ($t(48)=-4.61, p<.001$).

Dialect Rating



Results

Dialect Free Classification



Discussion

•Findings suggest that adults with HFA can perceive relevant dialect differences in the speech signal, and can use this variation to categorize talkers by dialect

•However, the differences between the HFA and NT groups suggest that the HFA adults' perceptual dialect categories are less robust than the NT adults' categories

•Ongoing work is examining the extent to which HFA performance differences in perception are related to differences in social categorization of dialects

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