The Socio-Regional Distribution of African American Vowel Systems in Piedmont North Carolina

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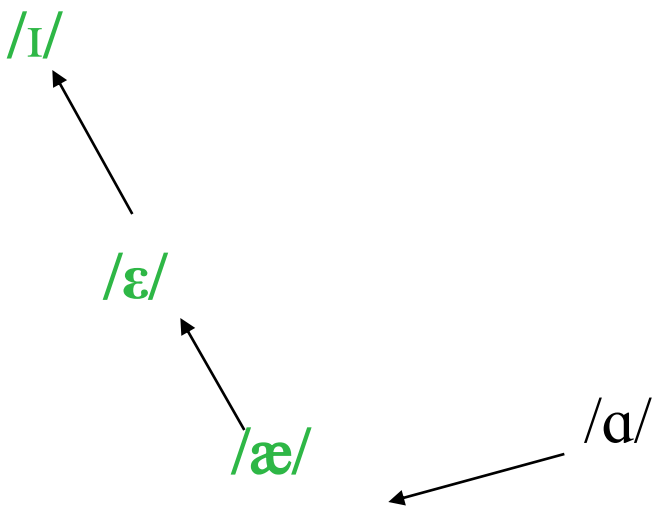
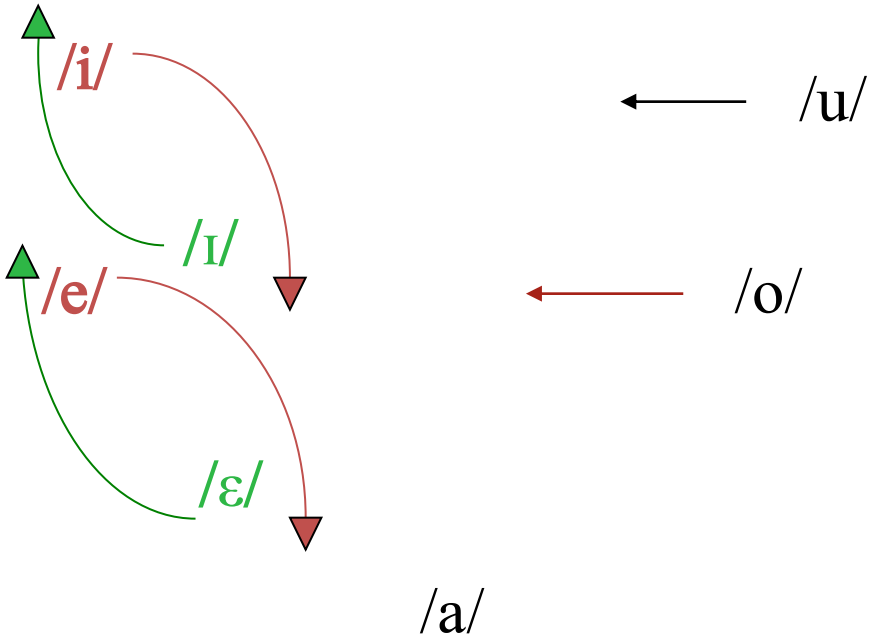
Two Vowel Paradigms

African American Vowel Shift



Based on Thomas (2007)

Southern Vowel Shift



Based on Labov (1991, 1994)

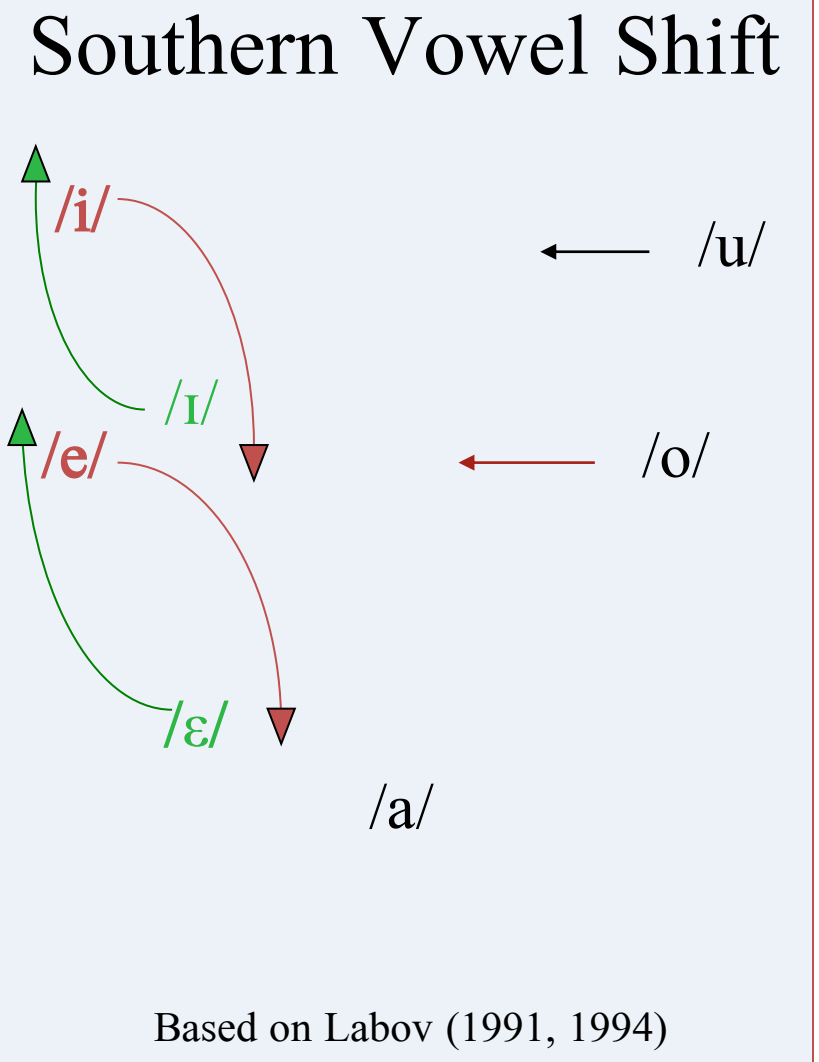
AAE Vowels in the South

- Shared features with Southern EAE (Thomas 2007, Fridland 2003)
  - PIN/PEN merger
  - BOT/BOUGHT unmerged
  - /ai/ glide weakening (non-pre-voiceless)
- Features not shared with Southern EAE
  - Front lax vowel raising without glides
  - Non-fronted back vowels

Southern AAE Vowel Variation

- Memphis
  - Fridland (2003)
- Roswell, Georgia
  - Andres & Votta (2010)
- Rural NC*
  - Childs et al. (2010)
  - Wolfram & Thomas (2002)

*Texana, Beech Bottom, Hyde County



Vowels in Piedmont, NC

- Raleigh, NC (Dodsworth & Kohn 2008, 2009)
  - BEET/BIT, BAIT/BET, BOAT
  - BAT, BET
- Frank Porter Graham Study (Kohn, Farrington & Ethier 2010)
  - Compared to other structural subsystems of AAE, there is more stability in the vowel system over the early lifespan
  - Impressionistic BAT raising correlated with vernacularity

AAE Vowels and Consonants

- Consonantal Variation of word final /-d/ correlates with African American English composite AAE vowel score in Houston, TX
  - Koops & Niedzielski (2009)
- Previously described patterns of African American English vowels appear to form an implicational scale with the majority of speakers participating in BOT fronting, and the fewest participate in BUT raising.
  - Niedzielski & Koops (2011)

Vowels and Vernacularity

1. What are the regional vowel characteristics of AAE speakers in Piedmont, NC?
2. Is there a relationship between morphosyntactic vernacular features and phonological features?
3. Is there a social/demographic distribution of these variables?

Frank Porter Graham

- 1990 : 88 African American children from 6-12 months (mean 8.1 months)
- 2011: 67 continue in study
- 71% below poverty level
- Batteries of standardized and nonstandardized tests, including progressively collected language samples annually or bi-annually

Methods

- Participants=14 children (7 boys, 7 girls)
  - Similar socioeconomic backgrounds
- Recorded in 8th Grade (Age 13)
- Recordings come from peer interactions, standardized tests, and adults formal/informal interactions.

≈ 200 tokens of vowels for each speaker = 2800 vowels

/i/ BEET*

/u/ BOOT

/ɪ/ BIT

/ʊ/ BOOK

/o/ BOAT, BOWL, BOAR

/e/ BAIT

/ʌ/ BUT

/ɛ/ BET

/ɔ/ BOUGHT

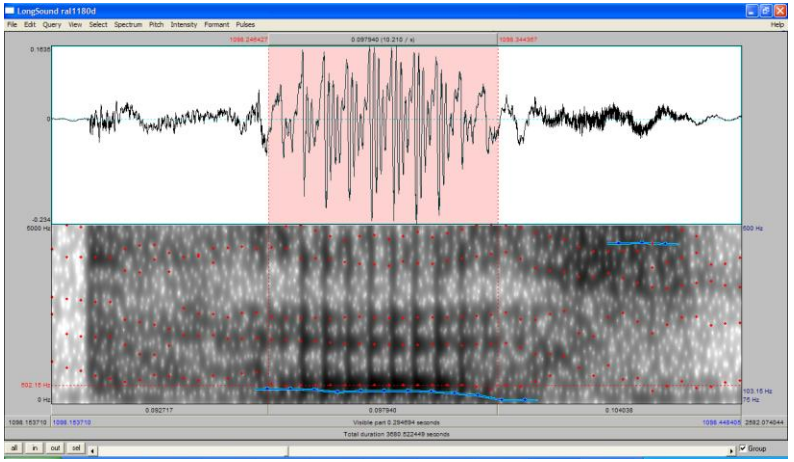
/æ/ BAT, BAN

/ɑ/ BOT

/ai/ BITE/BIDE

* Represents Wellsian-style frames

measurements at



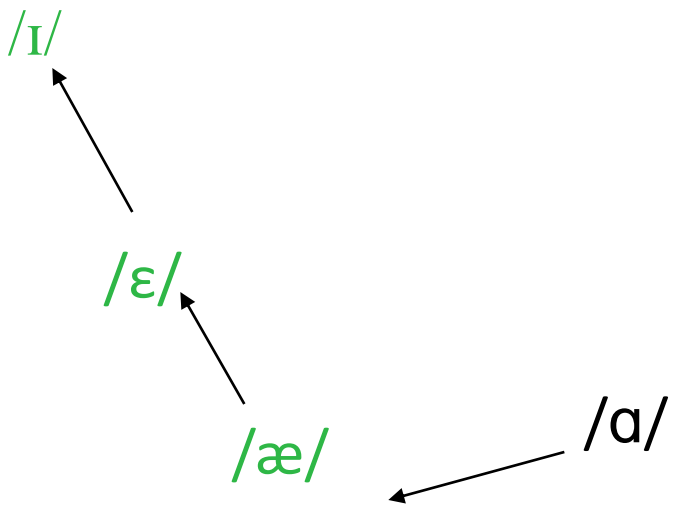
onset 25% 50% 75% coda

Normalized using Lobanov (1971)

Dialect Density Measure

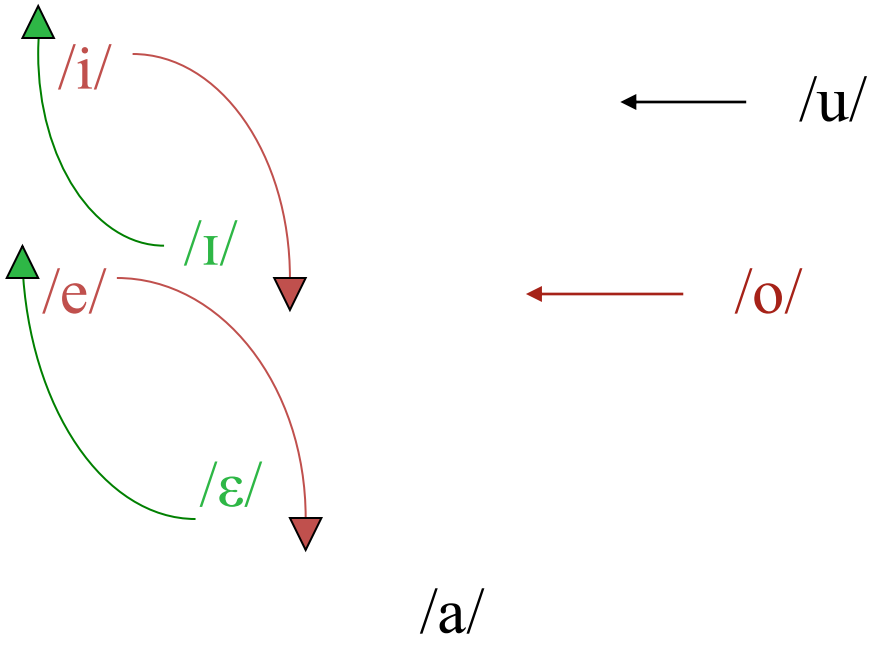
- Vernacularity measures from DDM
  - Token-based calculation in terms of dialect features per communication unit or word; based on and inventory of canonical vernacular AAE features
    (Craig and Washington 2006; Renn 2007)
- Sample features used in DDM
  - Nasal fronting, copula absence, auxiliary absence, 3rd pers. Sing. Absence, invariant *be*, negative concord, Ain't (*to be)* (Van Hofwegen & Wolfram 2010)

African American Vowel Shift

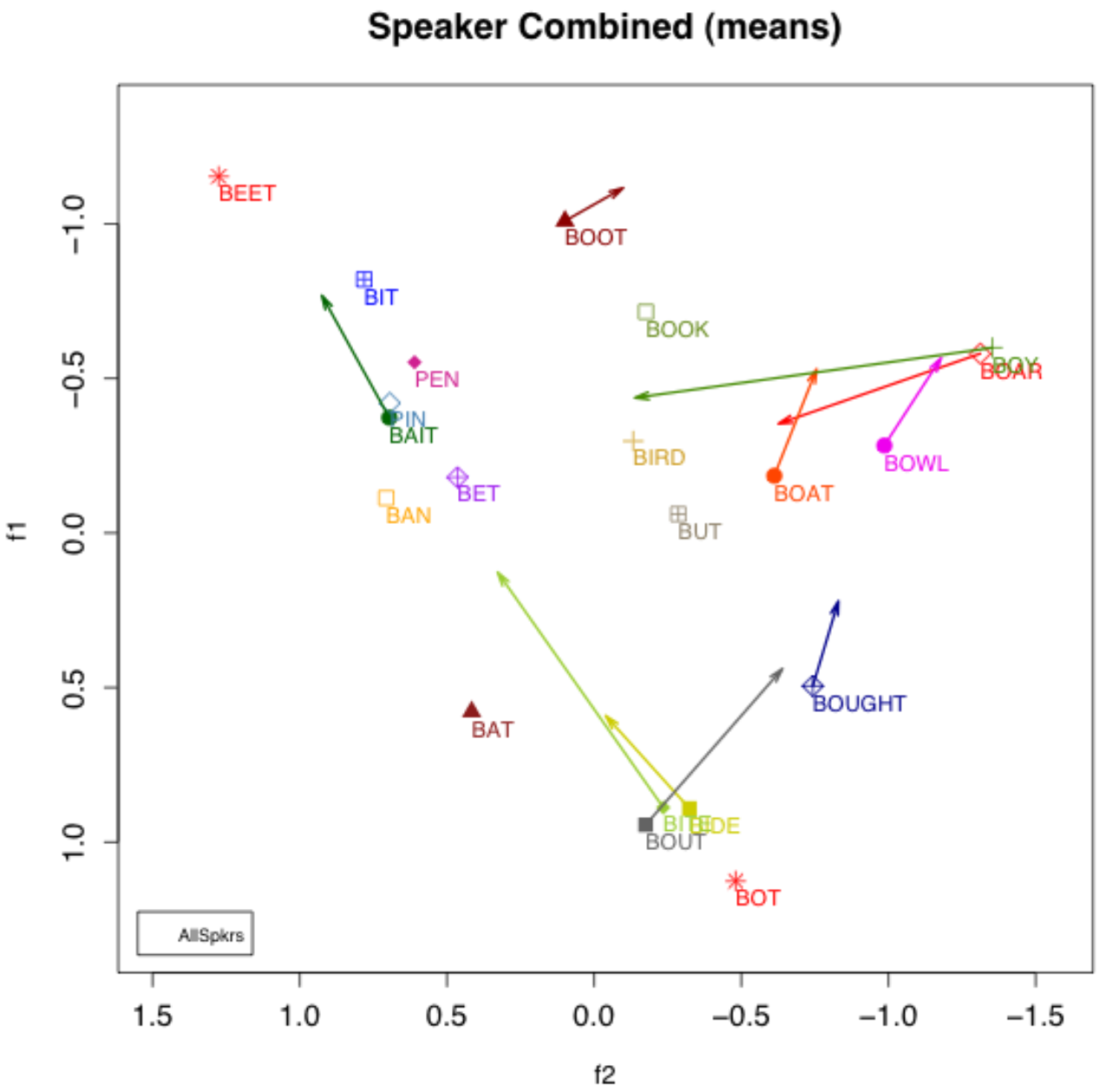


Based on Thomas (2007)

Southern Vowel Shift



Based on Labov (1991, 1994)



Grade 8 combined
DDM=0.39
Overall=.21

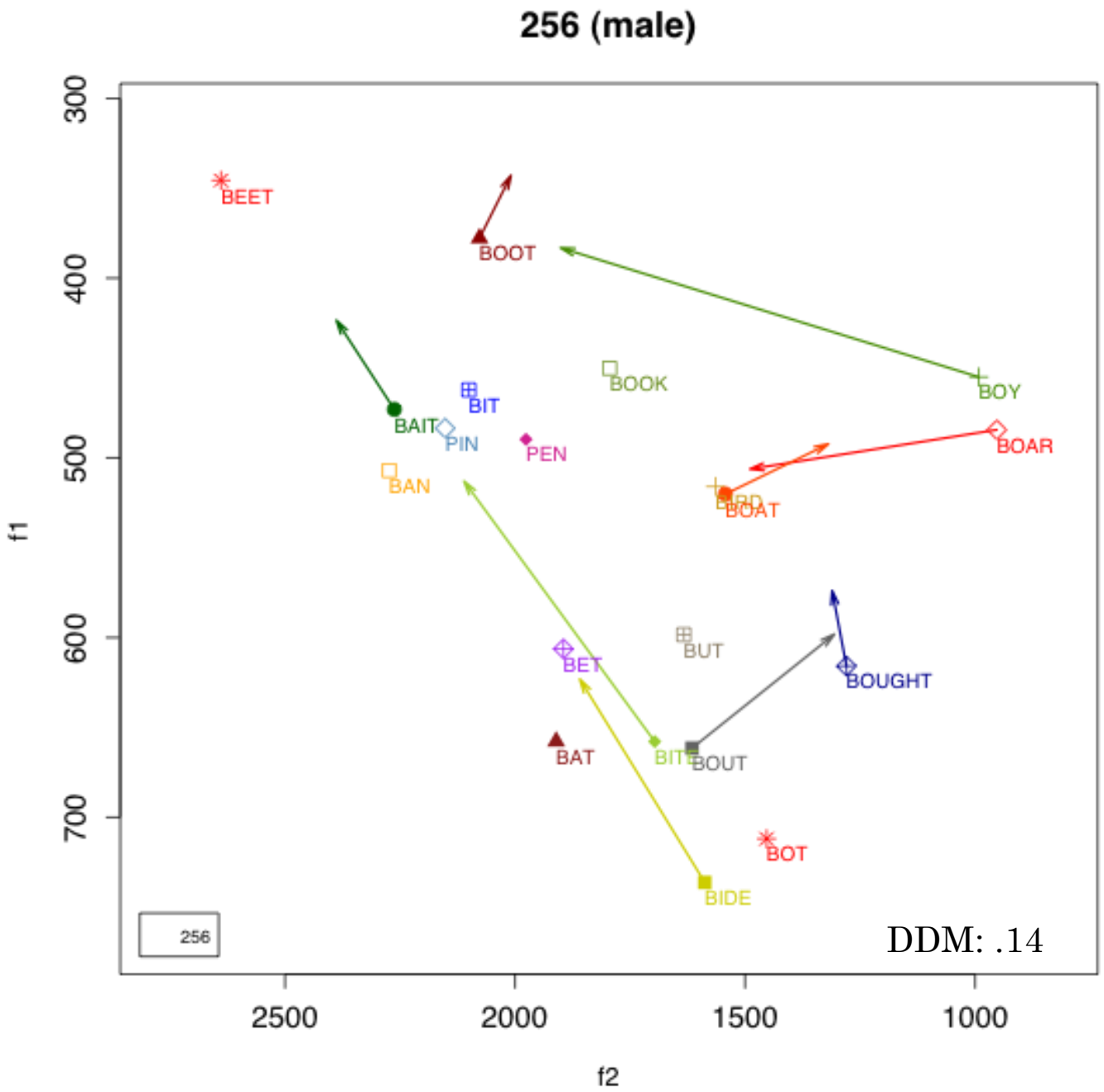
Values over .30 are considered ‘high vernacularity
(Van Hofwegen & Wolfram 2010)

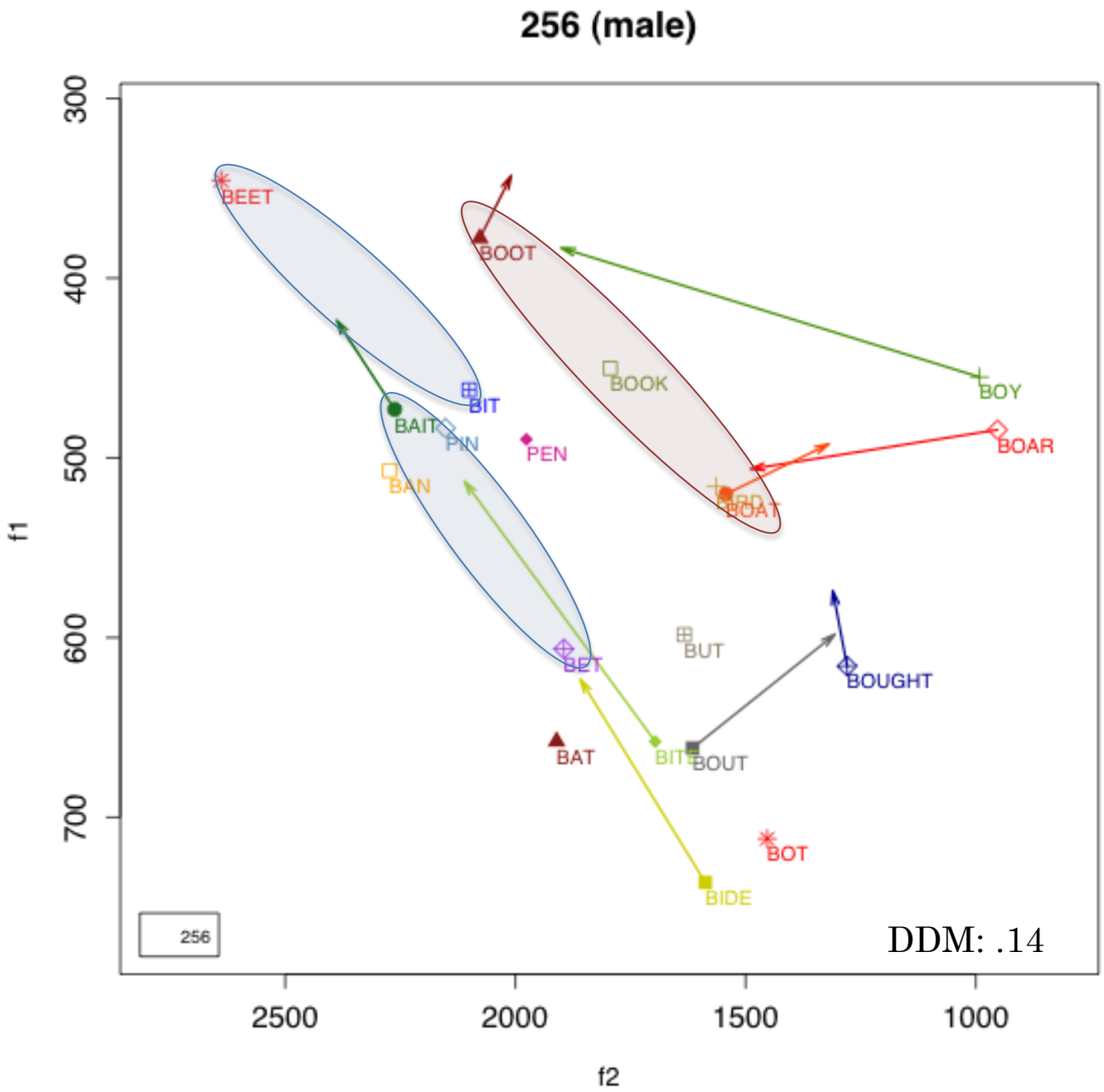
Speakers and DDM (age 13)

Speaker	Gender	DDM-age 13	DDM (mean)
256	M	.14	.21
268	F	.20	.11
269	M	.26	.24
1025	M	.27	.22
1070	F	.331	.38
1015	M	.333	.34
280	M	.38	.35
1061	F	.396	.19
273	F	.397	.30
1072	F	.45	.43
1058	F	.45	.26
1088	F	.51	.40
1057	M	.59	.37
275	M	.77	.34

Vernacularity

Low <.10
Medium .10 to .30
High >.30


256 (male)
f1
f2
300
400
500
600
700
2500
2000
1500
1000
BEET
BOOT
BOOK
BOY
BIT
BAIT
PIN
PEN
BOAR
BAN
BOAT
BUT
BET
BOUGHT
BAT
BIT
BOUT
BOT
BIDE
256
DDM: .14


256 (male)
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BOOT
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BOAR
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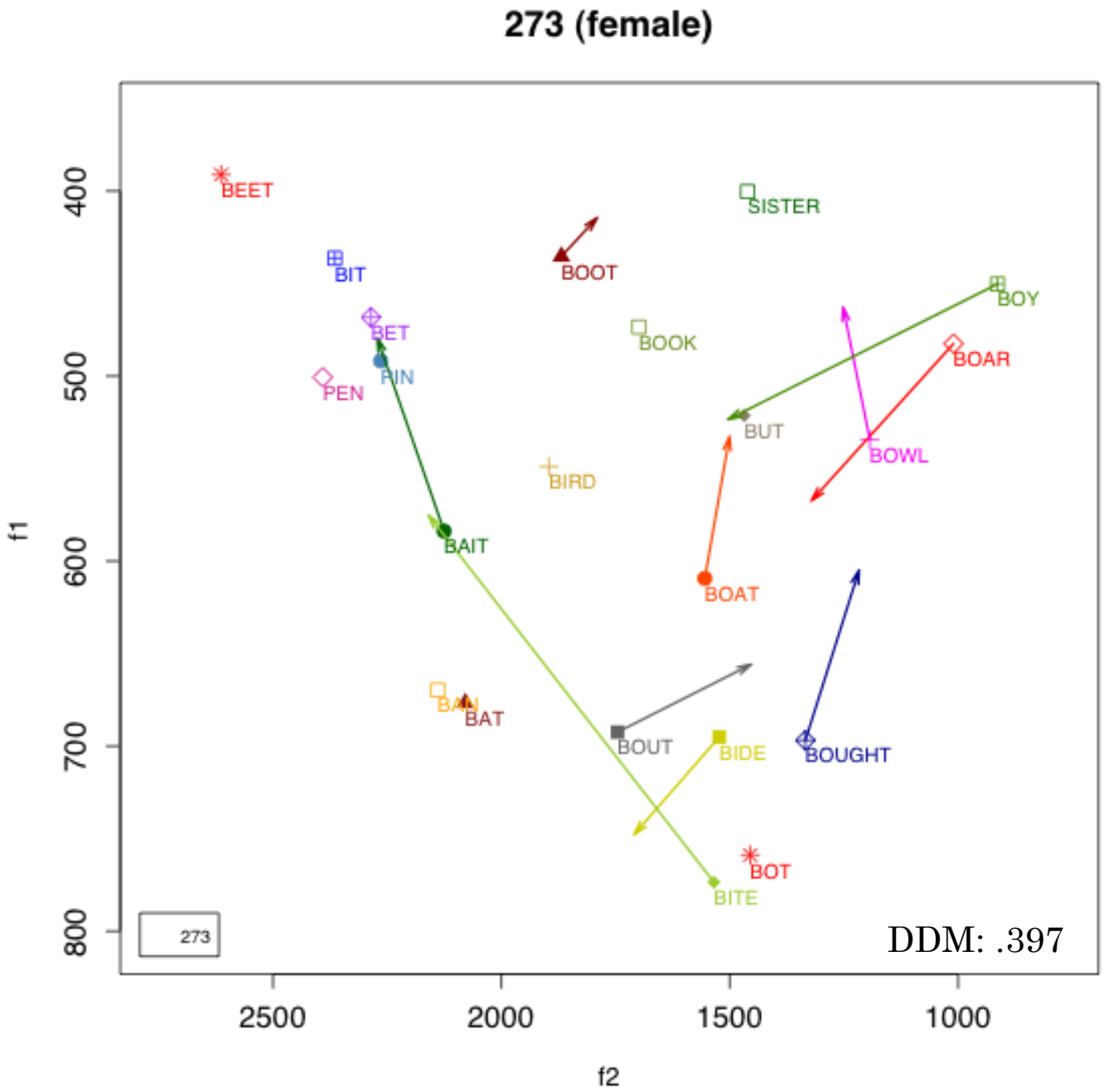
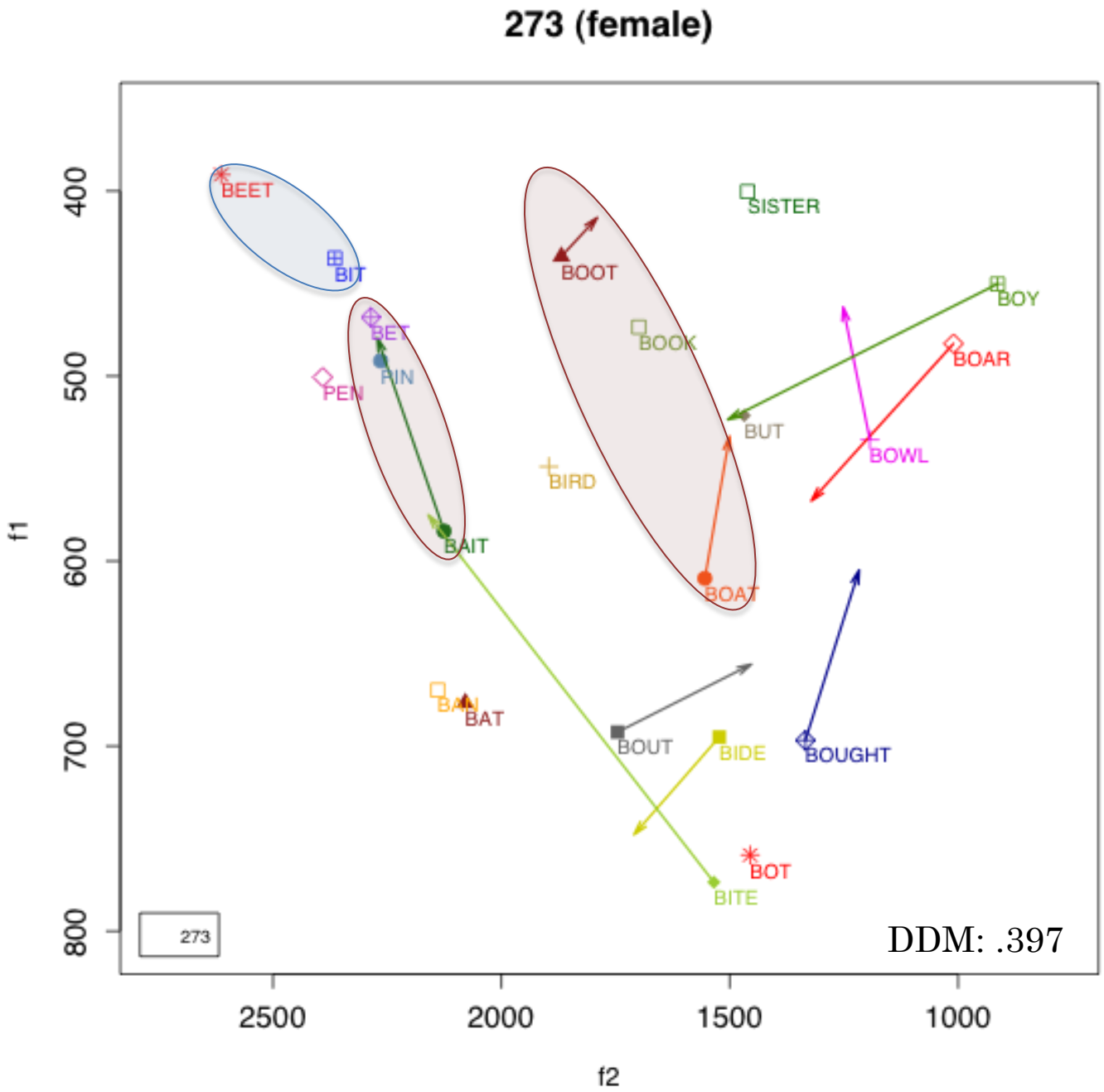
BIT
BOUT
BOT
BIDE
256
DDM: .14


273 (female)
BEET
SISTER
BIT
BOOT
BOY
BET
BOOK
BOAR
PEN
PIN
BUT
BOWL
BIRD
BAIT
BOAT
BAN
BAT
BOUT
BIDE
BOUGHT
BOT
BITE
273
DDM: .397
f1
f2
400
500
600
700
800
2500
2000
1500
1000


273 (female)
BEET
BIT
BET
PEN
PIN
BAIT
BOOT
BOOK
BIRD
BOAT
SISTER
BOY
BOAR
BUT
BOWL
BAN
BAT
BOUT
BIDE
BOUGHT
BOT
BITE
273
DDM: .397
f1
f2
400
500
600
700
800
2500
2000
1500
1000

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Vernacularity

Low <.10
Medium .10 to .30
High >.30

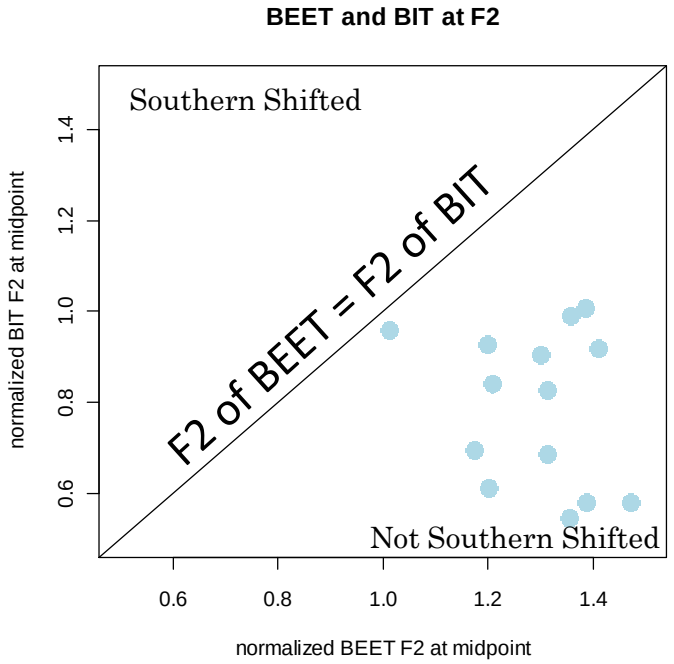
Methods

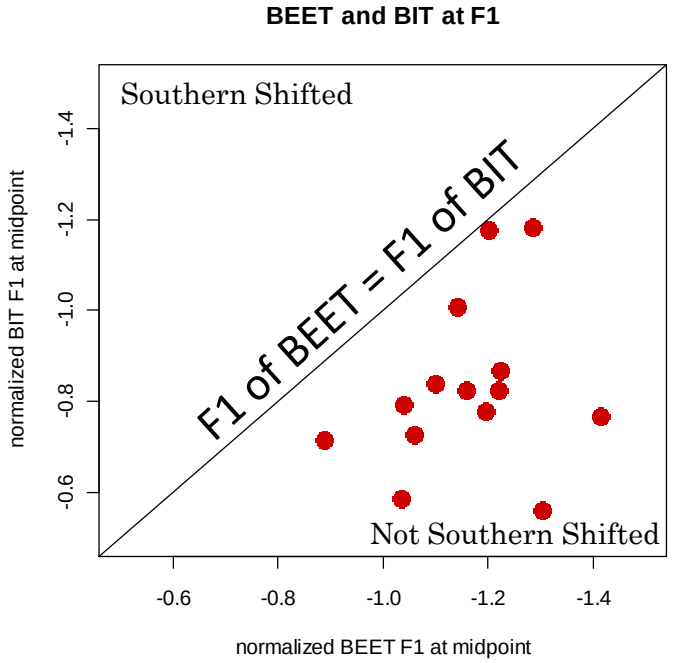
- Linear mixed model regressions
  - BEET/BIT, BAIT/BET, BAT, BOOK, BOOT, BOUGHT
- T-tests
  - BOT/BOUGHT
- Dependent Variables
  - Normalized F1/F2 for front vowels
  - Normalized F2 for BOOT, BOOK, and BOUGHT vowels
- Independent Variables
  - Sex
  - Vowel Duration
  - Following Place of Articulation
  - DDM score

* ($p<.05$), ** ($p<.01$), *** ($p<.001$)

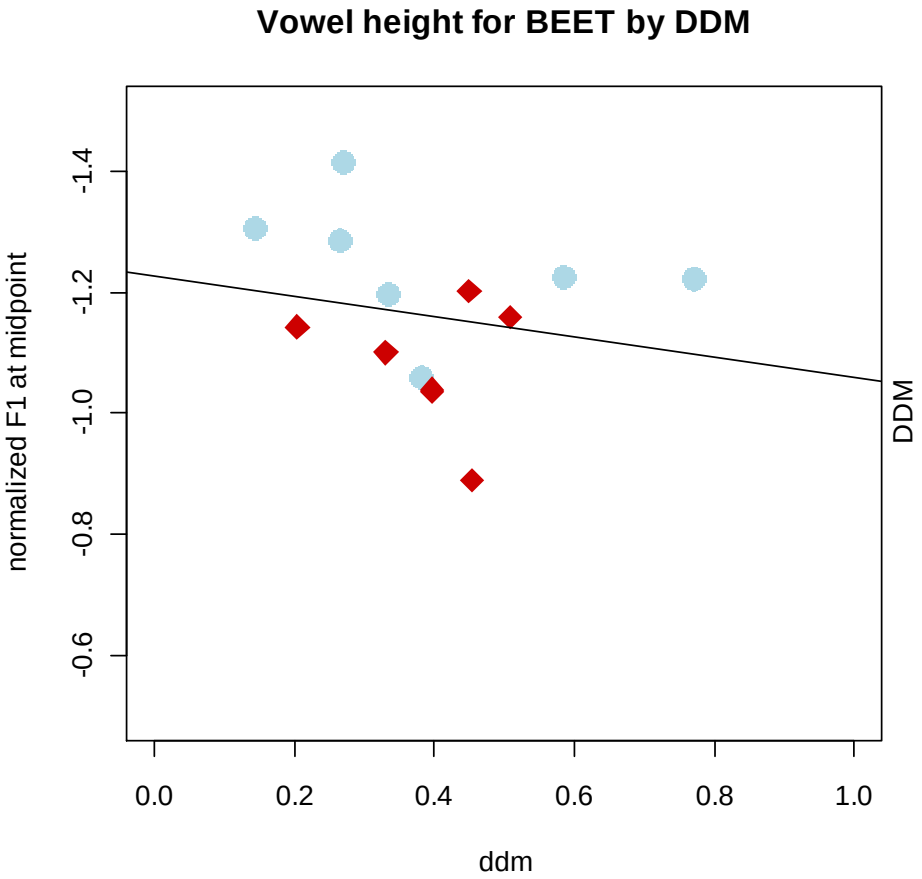
BEET/BIT

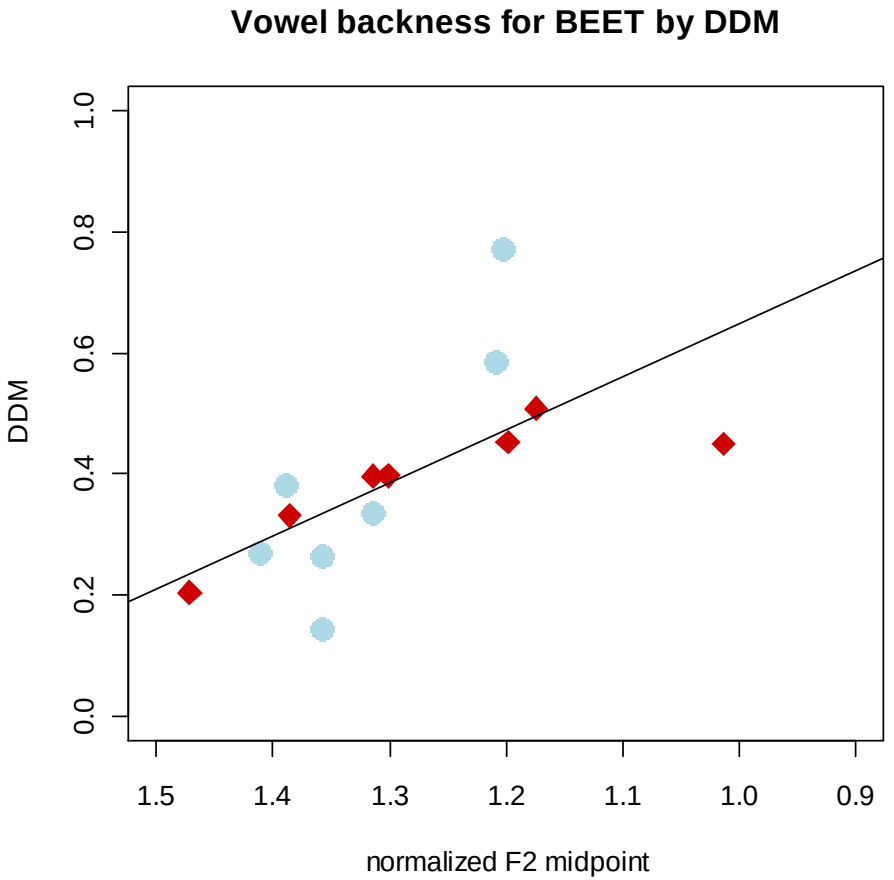
- None of the participants show a reversal of BEET and BIT for either F1 or F2.





Regression Results for BEET

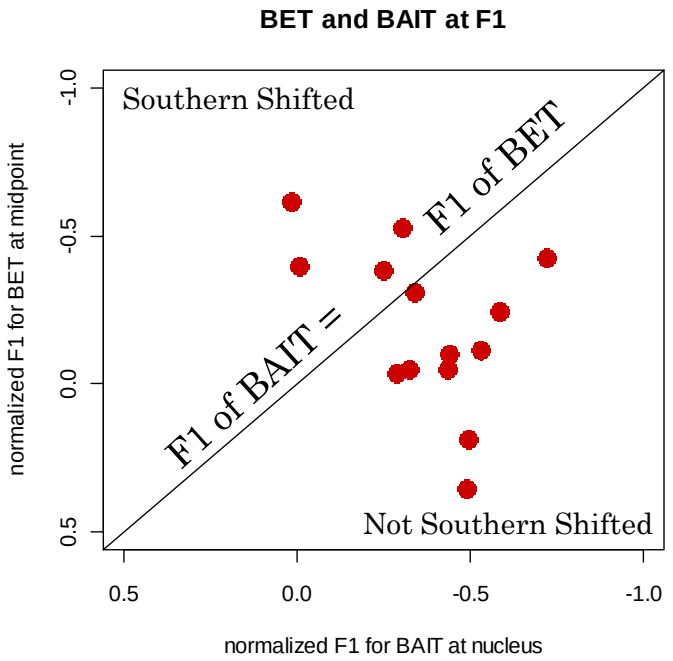


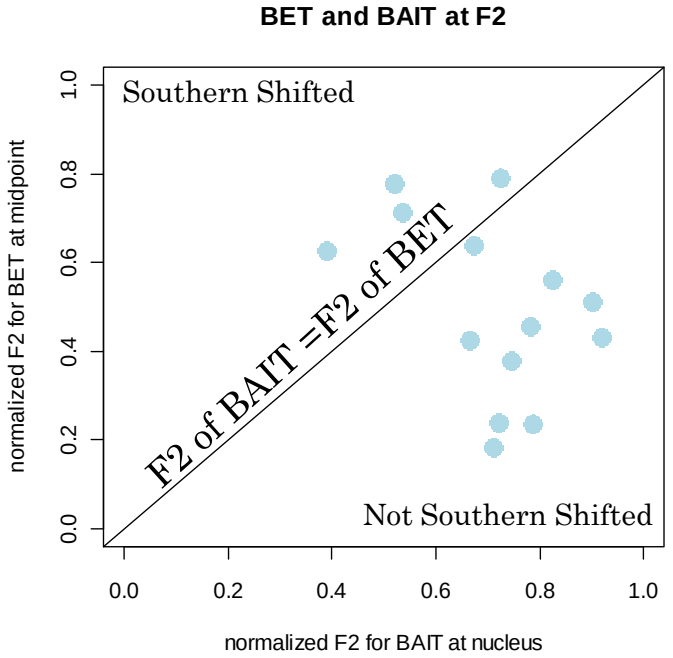


BEET	F1 Sex* Pre-glottal**		BIT	F1 Labial**	F2 Labial***
	F2 DDM **			Velar*	Velar**
	Duration*			Duration**	Duration (p=.07)

BAIT/BET

- Four participants show a reversal of BET/BAIT





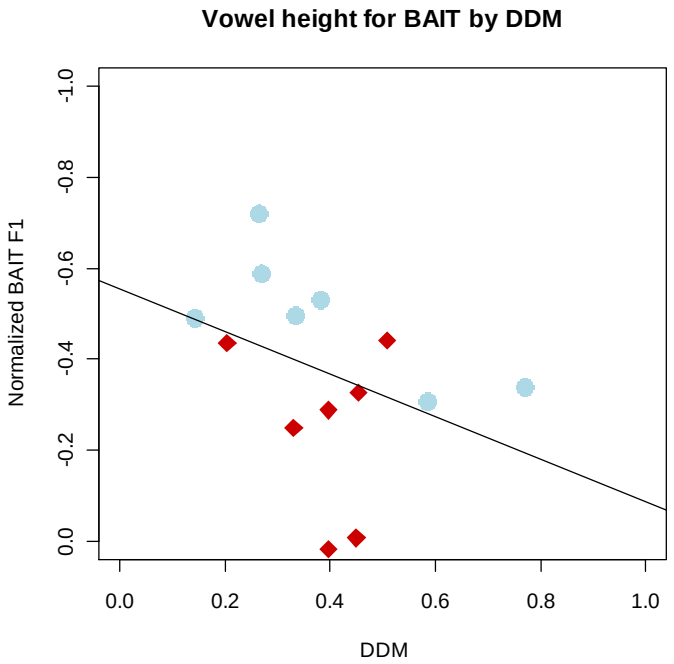
Regression Results for BAIT/BET

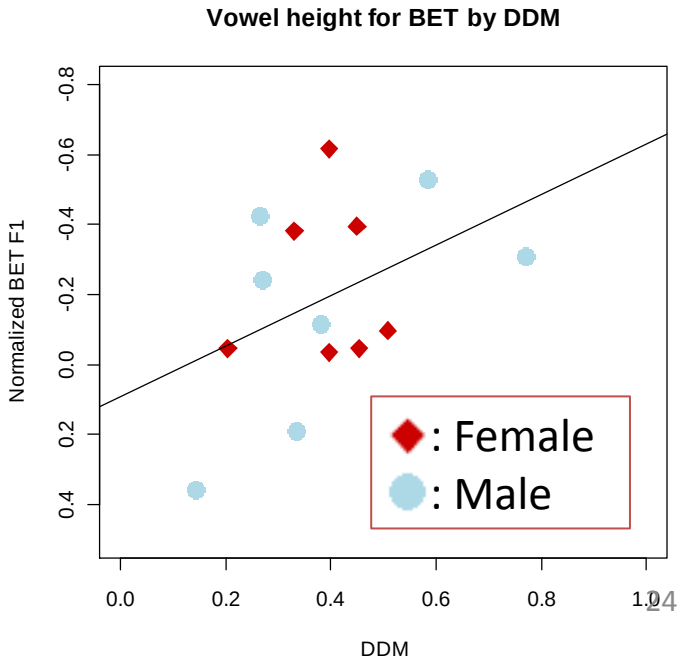
BAIT

- F1 Sex**
  - Glottal (p=.057)
  - DDM (p=.089)
- F2 Labial****
  - Glottal*
  - Velar**

BET

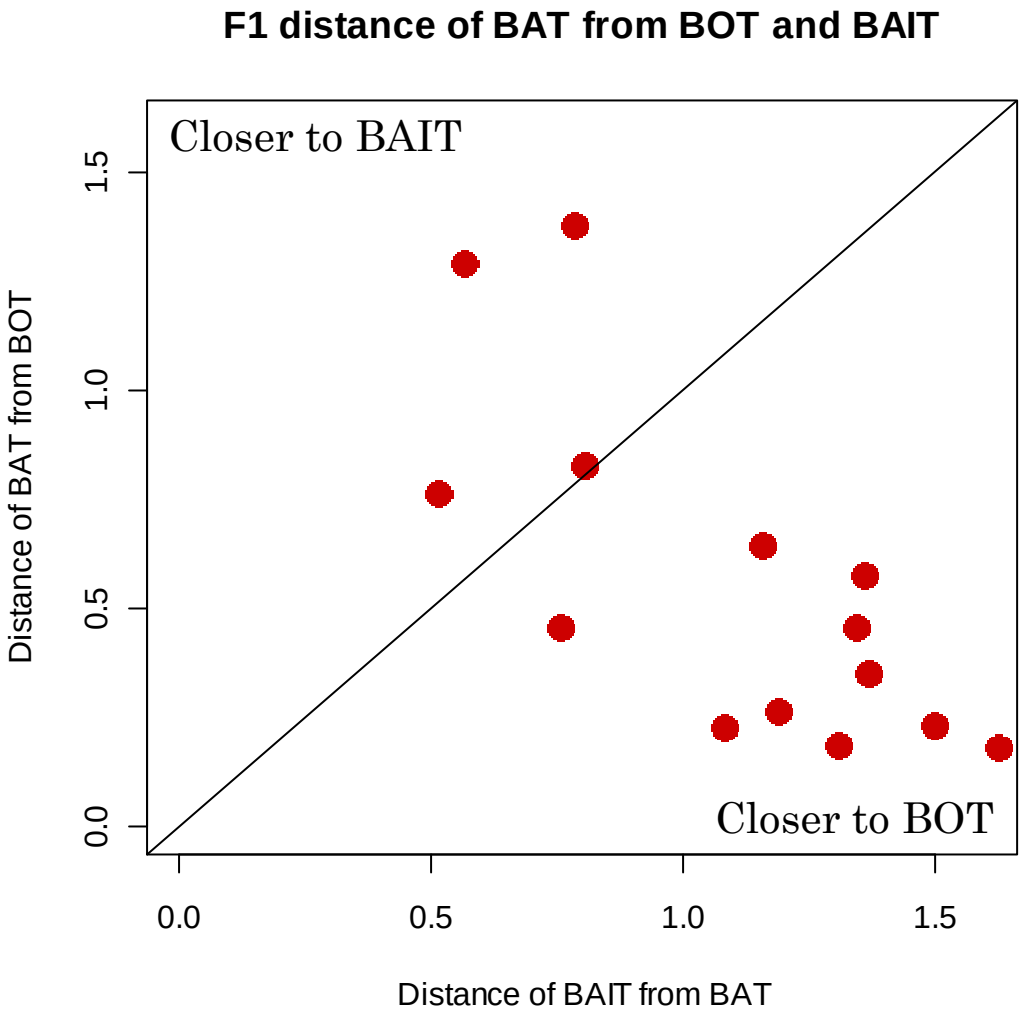
- F1 Labial***
  - DDM (p=.09)
- F2 Labial****
  - Velar*





BAT

- BAT F1
  - Labial***
  - Velar*
- BAT F2
  - DDM (p=.08)
  - Labial****
  - Duration**



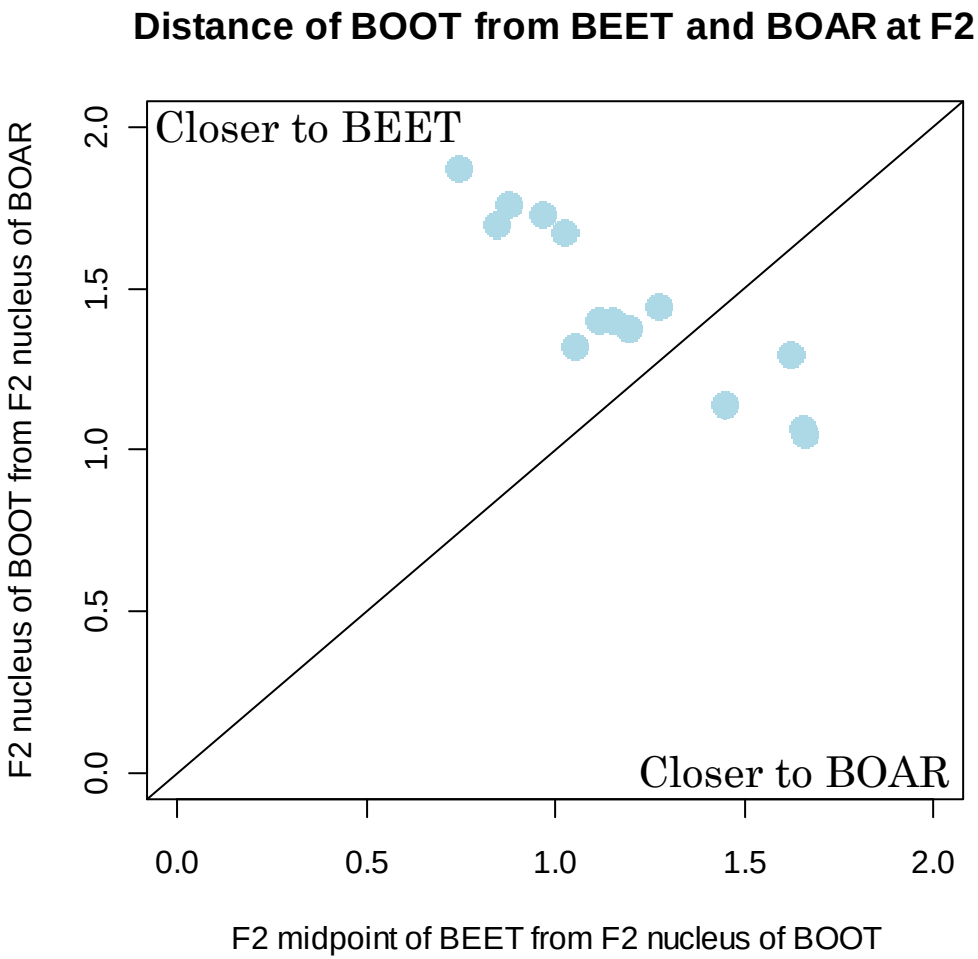
DDM and AAE vowels

Speaker	Sex	DDM	BET above BAIT	BAT raising (closer to BAIT)
256	M	**.14**	no	no
268	F	**.20**	no	no
269	M	**.26**	no	no
1025	M	**.27**	no	no
1070	F	**.331**	n.s.*	yes
1015	M	**.333**	no	no
280	M	**.38**	no	no
1061	F	**.396**	no	no
273	F	**.397**	yes	no
1072	F	**.45**	yes	yes
1058	F	**.45**	no	no
1088	F	**.51**	no	yes
1057	M	**.59**	yes	yes
275	M	**.77**	n.s.*	no

*n.s. means no significant difference between BET and BAIT.

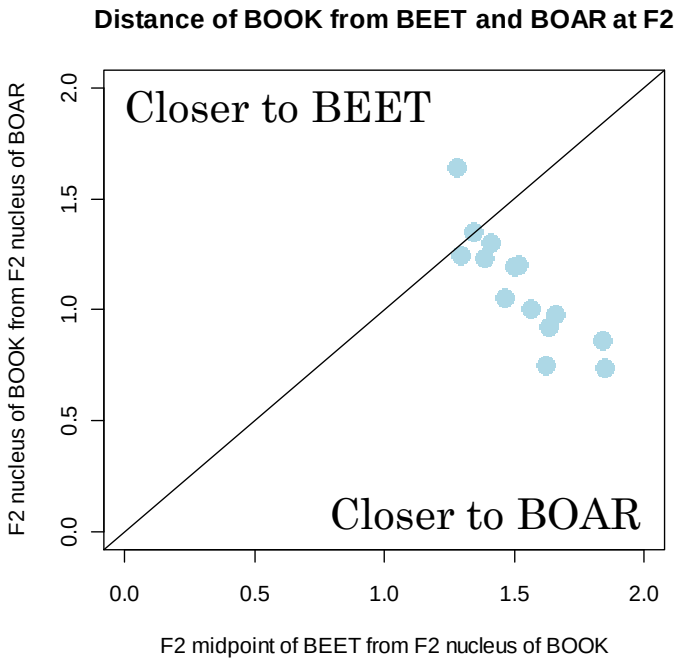
BOOT

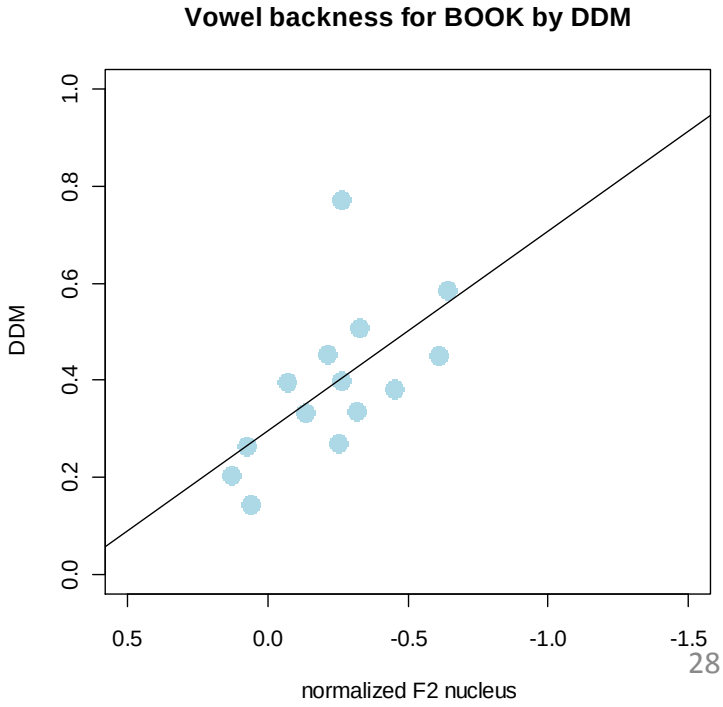
- F2 Phonetic
  - Glottal**
  - Labial*
  - Duration**



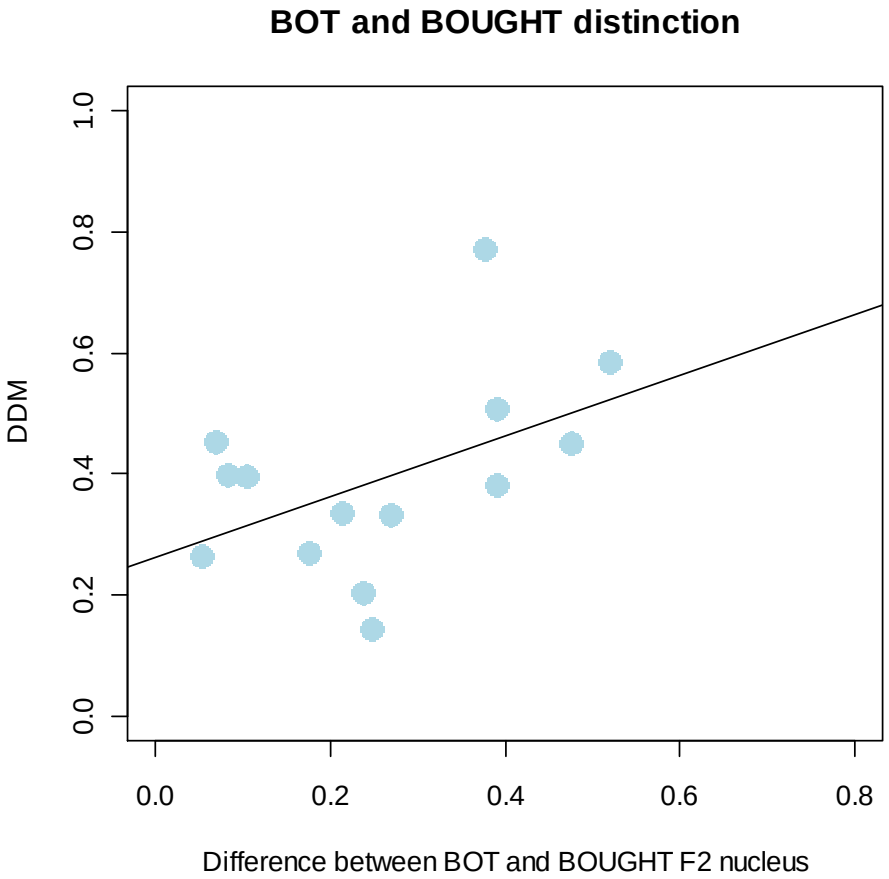
BOOK

- DDM is sig
  - Higher DDM* associated with backing
- Following place is sig
- F2
  - Velar****
  - Gender (p=.09)

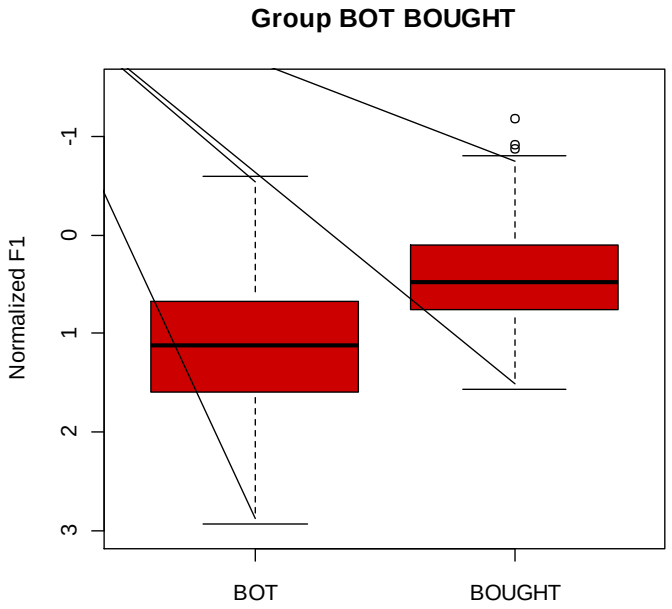


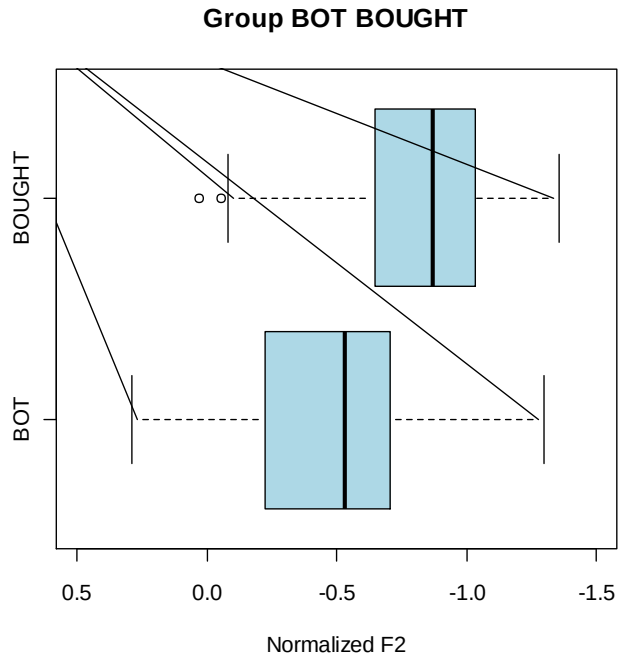


BOT/BOUGHT



BOUGHT F2
DDM*
Pre-labial*





DDM and EAE Vowels

Speaker	Sex	DDM	BOT=BOUGHT t-test	BOAT F2>BOT F2	BOOT F2>BAT F2
256	M	.14	no	yes	yes
268	F	.20	no**	yes	yes
269	M	.26	yes	no	no
1025	M	.27	no	no	yes
1070	F	.331	no	no	no
1015	M	.333	no	no	no
280	M	.38	no	no	no
1061	F	.396	yes	no	yes
273	F	.397	no**	yes	no
1072	F	.45	no**	yes	no
1058	F	.45	yes	no	no
1088	F	.51	no**	no	no
1057	M	.59	no	no	no
275	M	.77	no**	no	no

**F1 is merged; F2 is not merged

Observed Patterns

- Back vowel /ʊ/ fronting and /ɔ/
  - Resistance to fronting and merger is associated with increased morphosyntactic vernacularity
- Mid front vowels /ɛ/ and /e/
  - Suggestive but not conclusive findings with relation to vernacularity
- High front vowels /i/
  - Backing correlated with DDM Vernacularity

Speakers and DDM (age 13)

Speaker	Gender	DDM-age 13	DDM (mean)
256	M	**.14**	.21
268	F	**.20**	.11
269	M	**.26**	.24
1025	M	**.27**	.22
1070	F	**.331**	.38
1015	M	**.333**	.34
280	M	**.38**	.35
1061	F	**.396**	.19
273	F	**.397**	.30
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1058	F	**.45**	.26
1088	F	**.51**	.40
1057	M	**.59**	.37
275	M	**.77**	.34

Vernacularity

Low <.10
Medium .10 to .30
High >.30

Speakers and DDM (overall mean)

Speaker	Gender	DDM (mean)	DDM-age 13
268	F	**.11**	.20
1061	F	**.19**	.396
256	M	**.21**	.14
1025	M	**.22**	.27
269	M	**.24**	.26
1058	F	**.26**	.45
273	F	**.30**	.397
1015	M	**.34**	.333
275	M	**.34**	.77
280	M	**.35**	.38
1057	M	**.37**	.59
1070	F	**.38**	.331
1088	F	**.40**	.51
1072	F	**.43**	.45

Vernacularity

Low <.10
Medium .10 to .30
High >.30

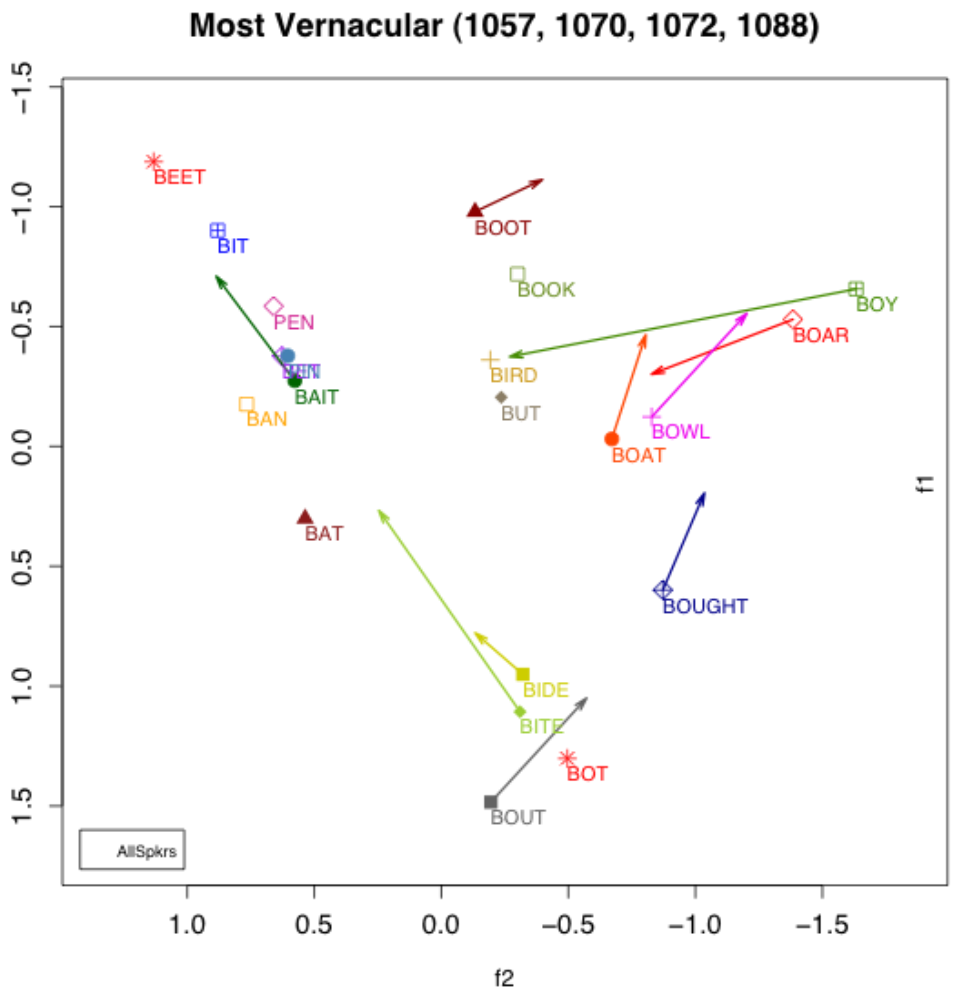
Regression results with overall average DDM and front vowels

Vowel	F1	F2
BEET		More vernacular are backer***
BIT		
BAIT	More vernacular are lower, p=.0859	
BET	More vernacular are higher, p = .09	More vernacular are fronter*
BAT	More vernacular are higher***	
BUT	More vernacular are higher**	

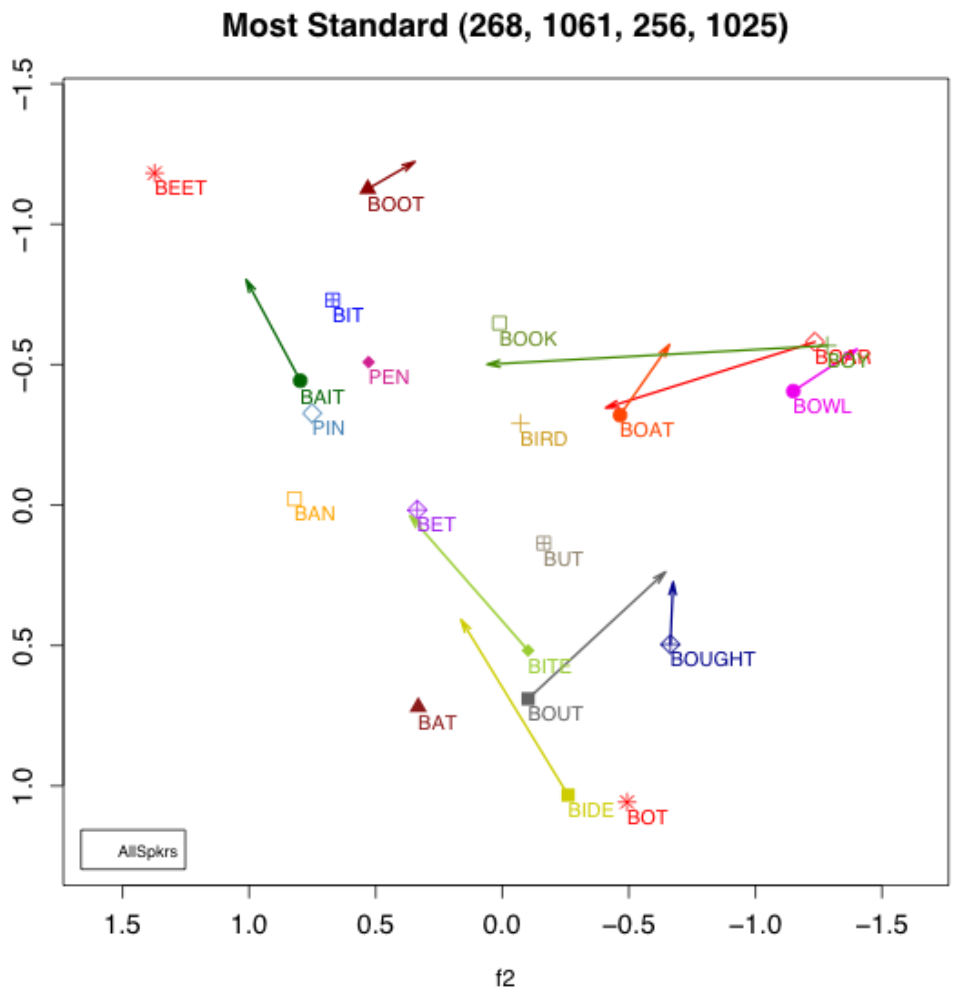
* (p<.05), ** (p<.01), *** (p<.001)

: In the expected direction

: In the opposite direction

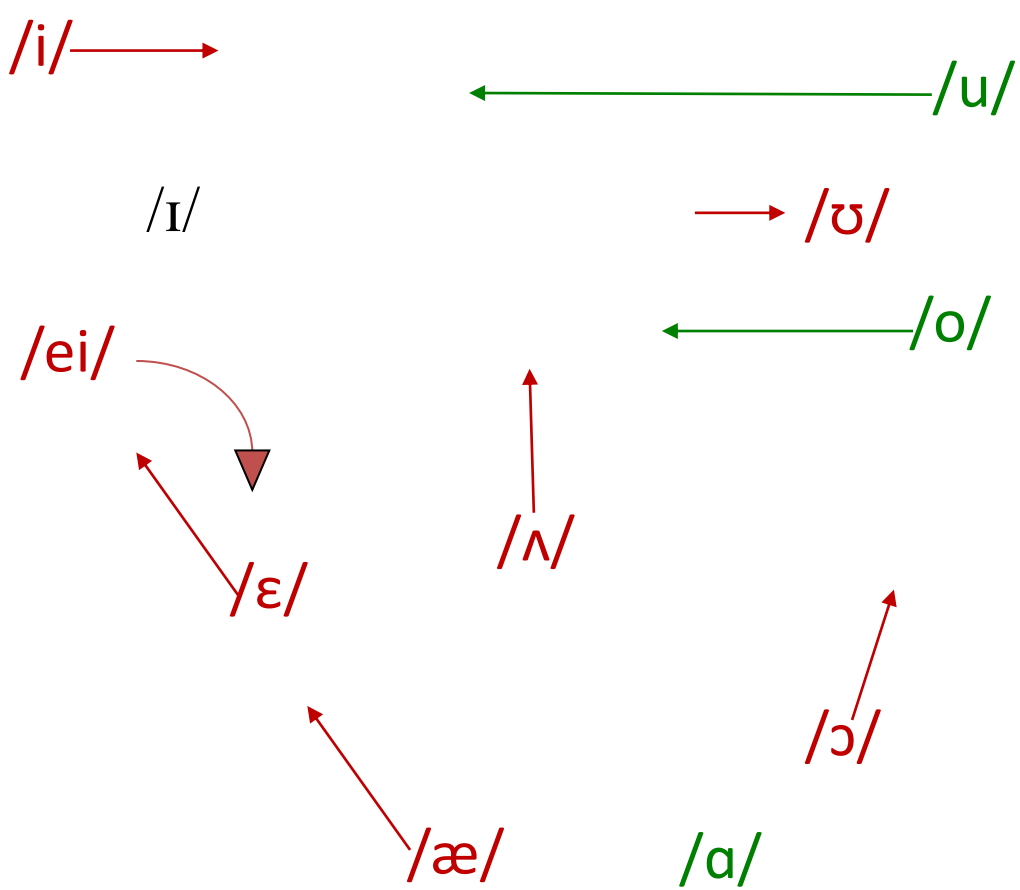


DDM Overall Mean=.397



DDM Overall Mean:.186

Vernacular FPG Vowel Traits



-All speakers
-More vernacular

Conclusions

- The vowels of African American speakers in Piedmont, NC, appear to be more related to the Southern Vowel Shift continuum than the AAE Shift continuum when exploring the relationship between AAE morphosyntactic and vocalic vernacularity

- The differential change in vowels vis-à-vis other subsystems demonstrates both the autonomy and interdependency in indexing ethnicity and vernacularity

Conclusions

- It is heuristically insightful to use composite scales (e.g. a Dialect Density Measure) to compare subsystems of the AAE system

- The study of individual AAE structures should be complemented with the study of subsystems (vowels, TMA, etc.) and composite scales to provide an authentic profile of AAE

Acknowledgements

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