Does accent familiarity affect lexical processing?

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Background

- Variability of the speech signal

- More research needed on perception of variation compared to production

 (Thomas, 2002)

- Models of spoken word recognition – abstract vs. episodic

        - The disagreement must be settled (Weber and Scharenborg, 2012)

- Contribute to multiple areas of study

Previous research: is socioindexical information used during speech processing?

• Gender, age and regional origin can influence phonological categorisation (Strand, 1999; Niedzielski, 1999; Koops et al., 2008)

• Recognition is slower and less accurate for words produced by multiple speakers than for words produced by the same speaker (Mullennix et al., 1989; Goldinger et al., 1991)

• Phonetic info signalling the geographical origin of a speaker is used to select the meaning of an ambiguous word (Cai et al., 2017)
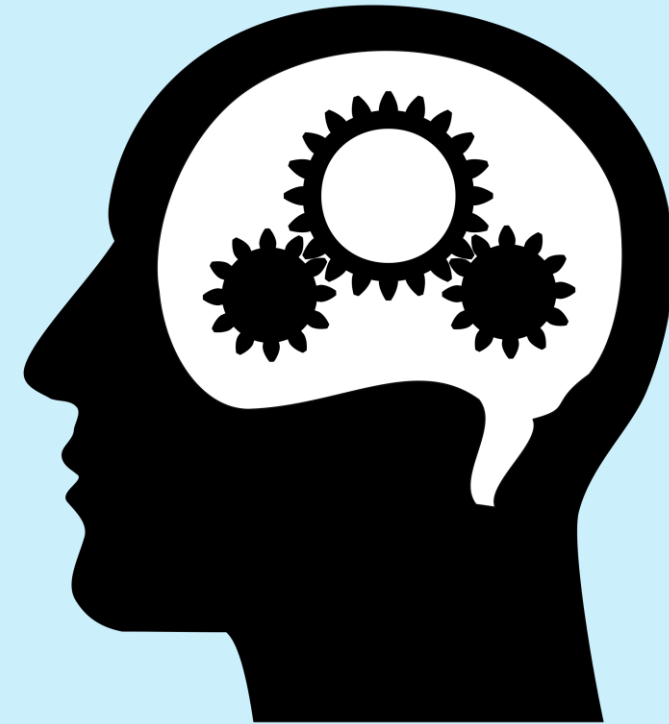
Previous research: accent familiarity

• Foreign accented speech more difficult to process than native accented speech (Lane, 1963; Trude et al., 2013) BUT increased familiarity reduces processing costs (Clarke and Garrett, 2004)

What about regional accents?

• Children: performance on definition tasks (Nathan et al., 1998)

• Adverse listening conditions: higher intelligibility levels maintained for familiar accents (Adank et al., 2009; Mattys et al., 2012)

• Faster and more accurate identification of words produced in accent closer to own (Evans and Iverson, 2004)

• Lexical classification faster for local, familiar accents (Clopper, 2017)
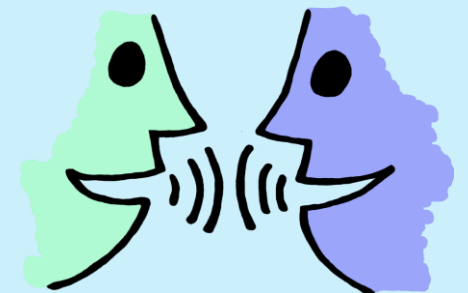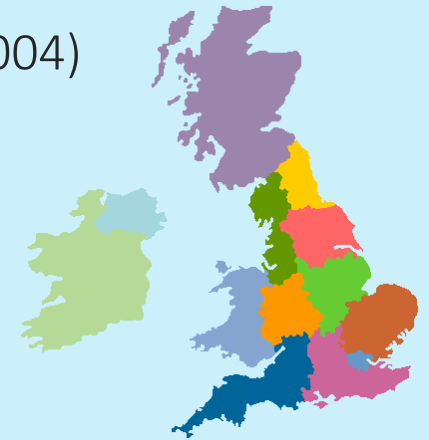
Floccia et al. (2006)
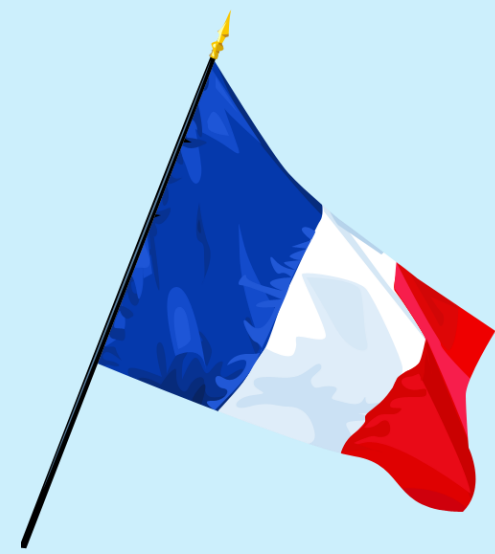
- Auditory lexical decision task

- 3 French regional accents – native, familiar and unfamiliar

- No significant difference between reaction times for native and familiar

- Unfamiliar accent elicited a 30 millisecond delay in response times

The current study

✓ Accents and a population not yet investigated in this way

✓ Higher levels of control over carrier sentences and lexical characteristics

  of target words

✓ Test reliability of previous findings

NATIVE: YORKSHIRE   FAMILIAR: LIVERPOOL   UNFAMILIAR: INDIAN

Alternative hypothesis: listeners' reaction times on a lexical decision task will be faster when the auditory stimuli are produced by the speaker of a familiar or native accent than when the auditory stimuli are produced by the speaker of an unfamiliar accent.

Methodology

Auditory lexical decision task using PsychoPy (Peirce, 2007)

"Yesterday evening, all of the teenagers went to the **zord**"

Stimuli

• 60 sentences recorded by speakers of the 3 accents (20 in each accent)

• Real words matched for orthographic neighbourhood, phonological neighbourhood, frequency and length

• Non-words matched for orthographic neighbourhood, phonological neighbourhood and length

• Same 4 carrier sentences in all conditions

Participants

• 18 individuals aged 18-50, born and raised in Yorkshire

• Convenience sample

"When she got to the bottom of the hill, Jane noticed a **road**"

Procedure

- Training period

- Fully randomised

- Left arrow key = real word,

right arrow key = non-word

- Quiet, controlled room

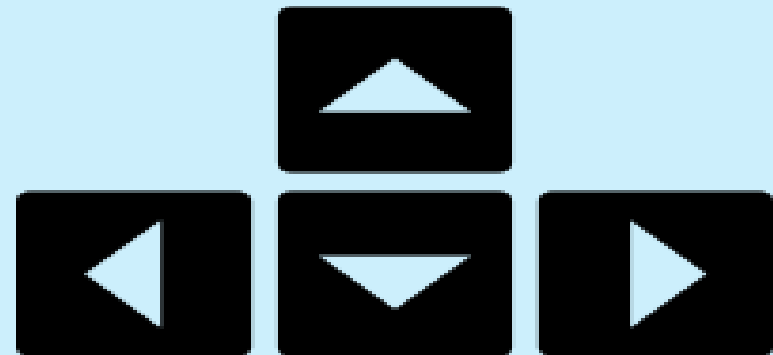Welcome to this experiment investigating how accents of English are processed.
When the experiment begins, you will listen to a series of 60 sentences through the headphones provided.
Once you have heard the whole of each sentence, you will decide whether the FINAL word in the sentence is a real English word or is a fake word (not a real English word).
If the final word is REAL, you must press the LEFT arrow key on the keyboard. If the final word is NOT REAL, you must press the RIGHT arrow key on the keyboard.
Halfway through, you will be given the option to take a break of up to 2 minutes - instructions on how and when to continue will appear on the screen.
When you have finished reading these instructions, please press the space bar to continue. First, you will hear 5 practice sentences to allow you to get used to how the task works. Then, the main experiment shall begin.

Results: Accuracy Rate

Mean accuracy rate (%) for words and non-words in each accent condition
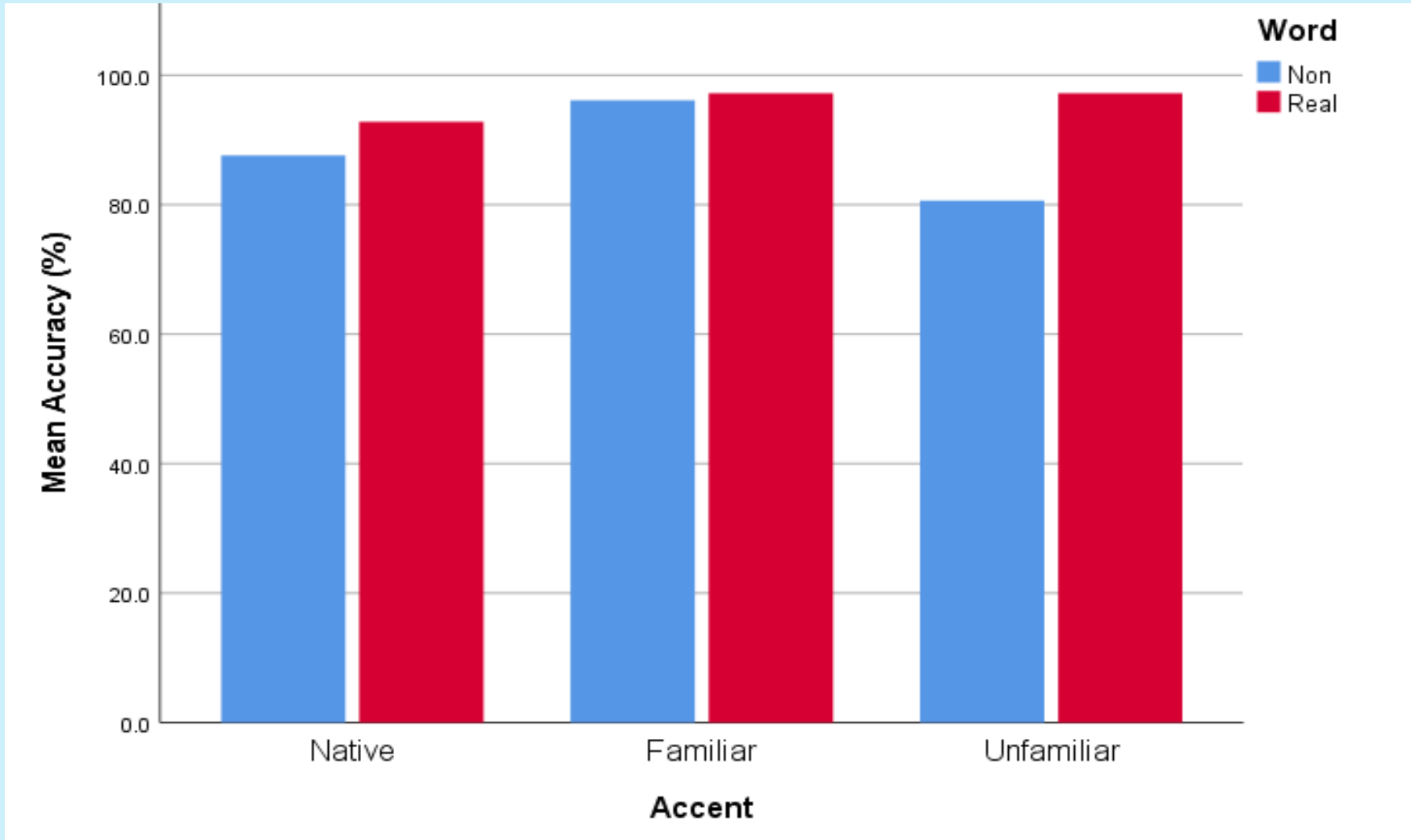
Accent condition	Mean accuracy rate (%)
Native	90.2
Familiar	96.7
Unfamiliar	88.9

Mean accuracy rate (%) for all words in each accent condition

Results: Accuracy Rate

- Significantly <u>higher</u> for all words in the <u>familiar</u> condition

- No significant difference between native and unfamiliar

- Significantly <u>higher for real words than for non-words</u>

- There was a <u>significant interaction between accent and word type</u> - there is a stronger effect of word type on accuracy rates when the stimuli sentences are produced by the speaker of an unfamiliar accent
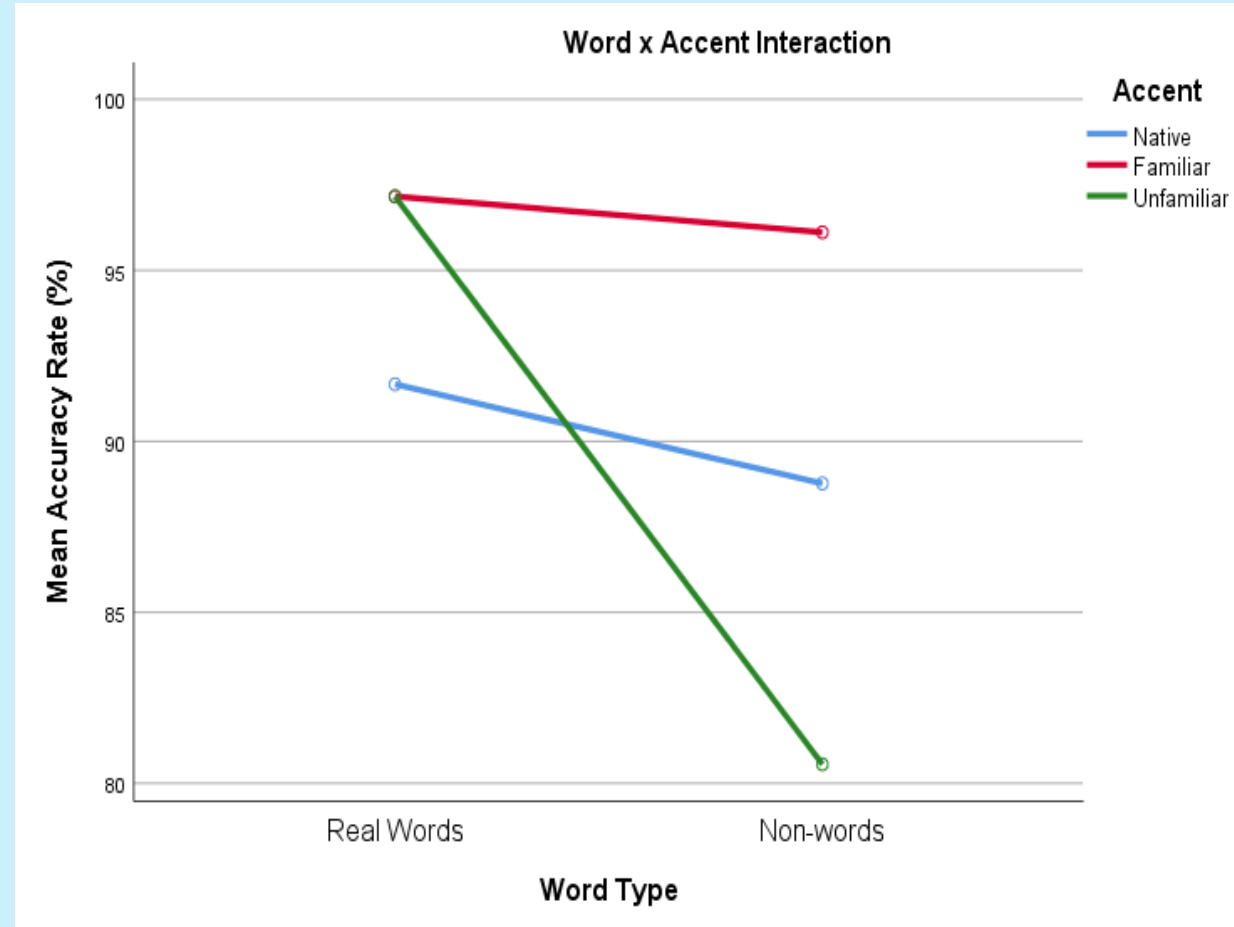
Profile plot of the interaction between word type and accent

Results: reaction times

Mean reaction time for words and non-words in each accent condition
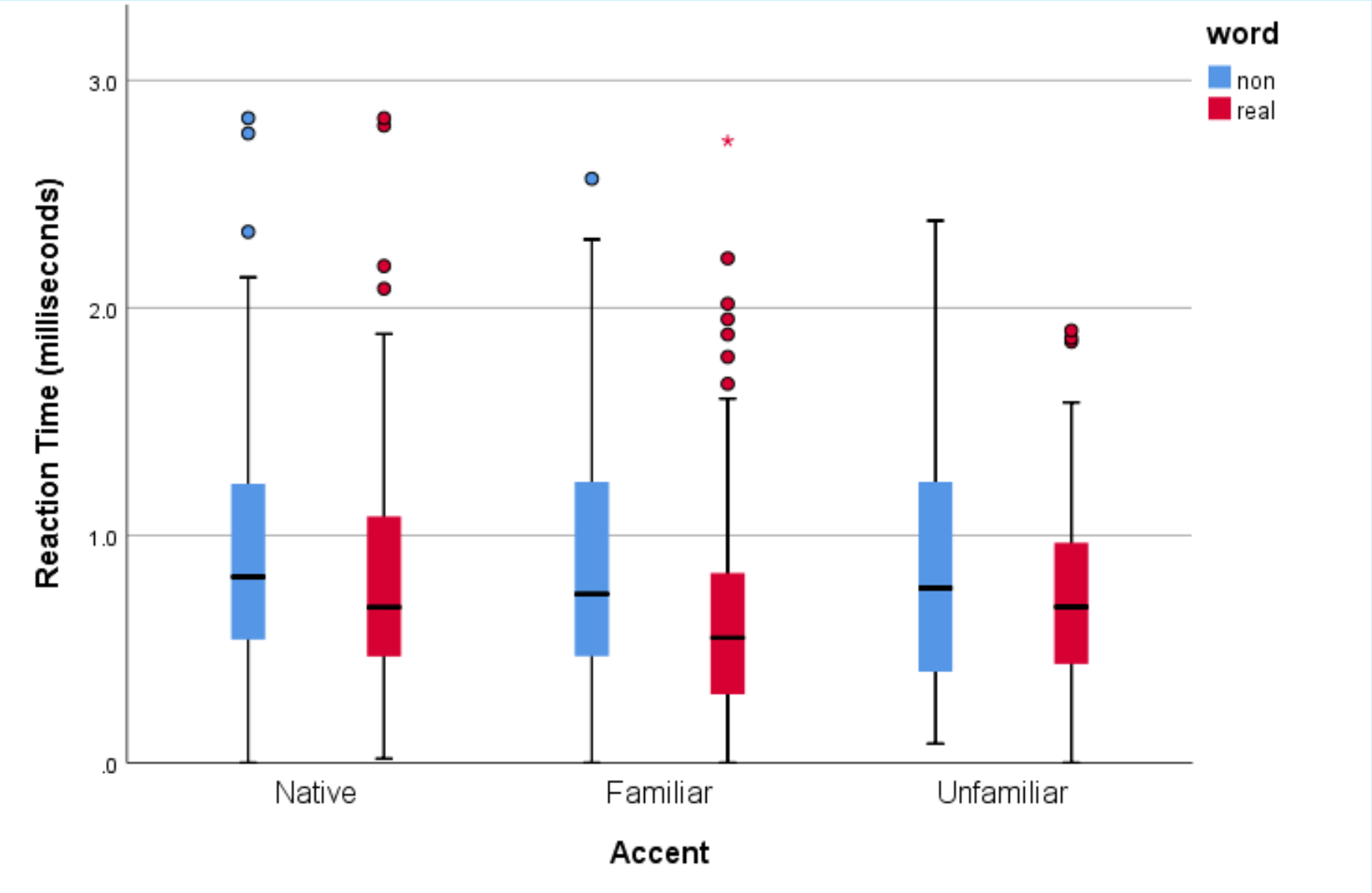
Accent	Raw mean (milliseconds)
Native	860.8
Familiar	761.3
Unfamiliar	789.6

Mean reaction time (ms) for real words in each accent condition

Results: reaction times

- Transformed data for real words

- Participants' reaction times were significantly faster in the familiar accent condition compared to the native accent condition and unfamiliar accent condition

- There was no significant difference in reaction times between the native and unfamiliar accent conditions

Discussion

Accent familiarity DOES affect lexical processing….

• Null hypothesis rejected

… BUT not in the direction that the alternative hypothesis predicted

• Cultural prominence (Montgomery, 2012)

• Idiosyncratic, speaker-specific differences other than accent

• Is the Indian English accent really unfamiliar?

• A 'Yorkshire' accent?

Conclusion

- Familiarity with variation related to geographical origin does affect

  lexical processing

- Results of previous research were not replicated

- Suggestions for future research

- The importance of cultural prominence (Montgomery, 2012)

- Implications for models of spoken word recognition

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Any questions?