The acquisition of non-rhoticity in musical and non-musical advanced Polish students of English

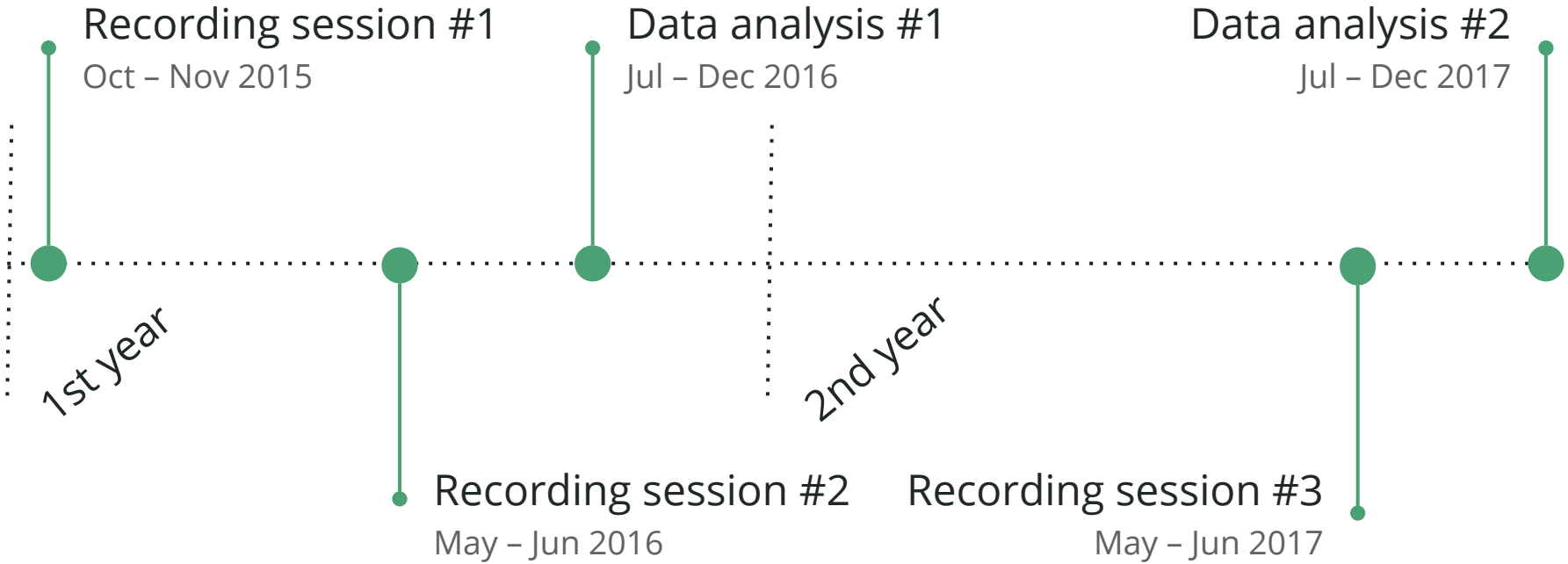
Kamil Malarski and Mateusz Jekiel

Adam Mickiewicz University in Poznań, Poland

About the project

- musical hearing in the acquisition of EFL pronunciation
- 2015 – 2017
- Polish advanced learners of English
- NATIONAL SCIENCE CENTRE POLAND

Project roadmap



Background

- music and language evolution (Brown 2001, Mithen 2005)
- music and neurolinguistics (Patel 2008, Fadiga et al. 2009)
- music and L1 acquisition (Carlton 2000, Strait et al. 2012)
- music and L2 acquisition (Pastuszek-Lipińska 2008)
- music in didactics and pedagogy (Franklin et al. 2008)
- popular science

Issues to address

- difficult to measure and define
- difficult to control and assess
- scarcity of empirical data for musical hearing
- scarcity of longitudinal studies
- general language proficiency vs specific aspects of pronunciation
- general musical aptitude vs specific aspects of musical hearing

Research questions

- What is the influence of musical hearing on the acquisition of EFL pronunciation?
- To what extent are pitch perception, melodic memory and musical rhythm correlated with the acquisition of rhoticity, English vowels, intonation, and language rhythm?
- To what extent do musical experience and musical education influence the process of second language acquisition?

Participants

- 38 Polish advanced learners of English (31 F, 7 M)
- 1BA English studies programme
- 19-22 years old
- General British pronunciation model
- intensive two-year pronunciation course
- extensive one-year phonetics and phonology course

Recording sessions

- spontaneous speech (warm-up)
- reading passage (*Please Call Stella*)
- dialogues (four dialogues eliciting rhoticity/non-rhoticity)
- wordlist (vowels START and NORTH before non-prevocalic /r/)

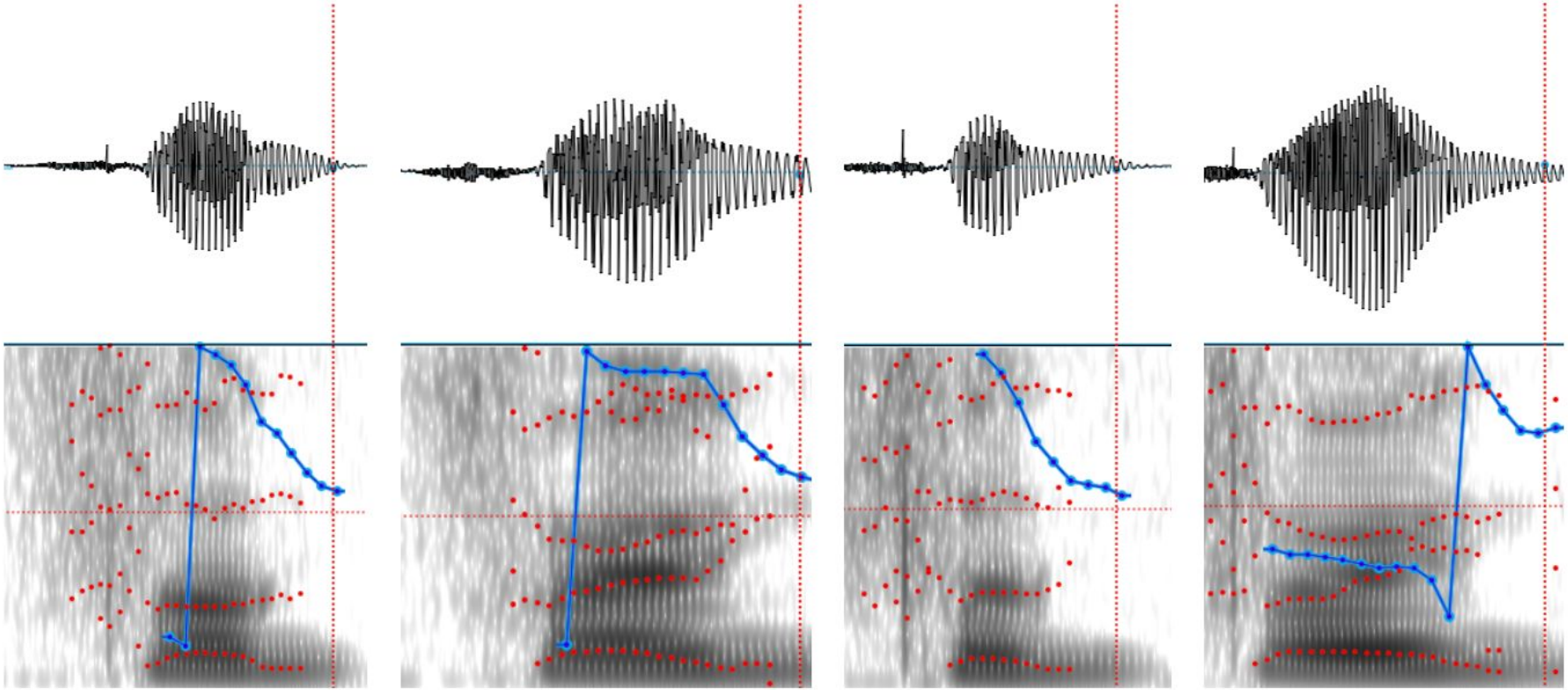
Musical hearing tests (Mandell 2009)

- pitch perception (Hz)
- melodic memory (%)
- musical rhythm (%)

Online survey

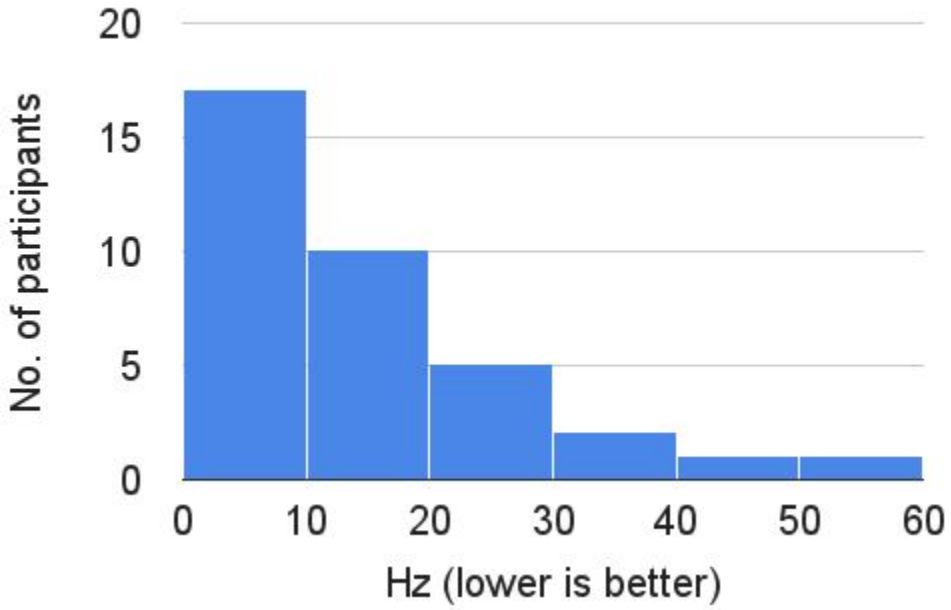
- musical experience
  - music school
  - private music tutoring
  - playing a musical instrument
  - playing in a band
  - singing

Acoustic analysis



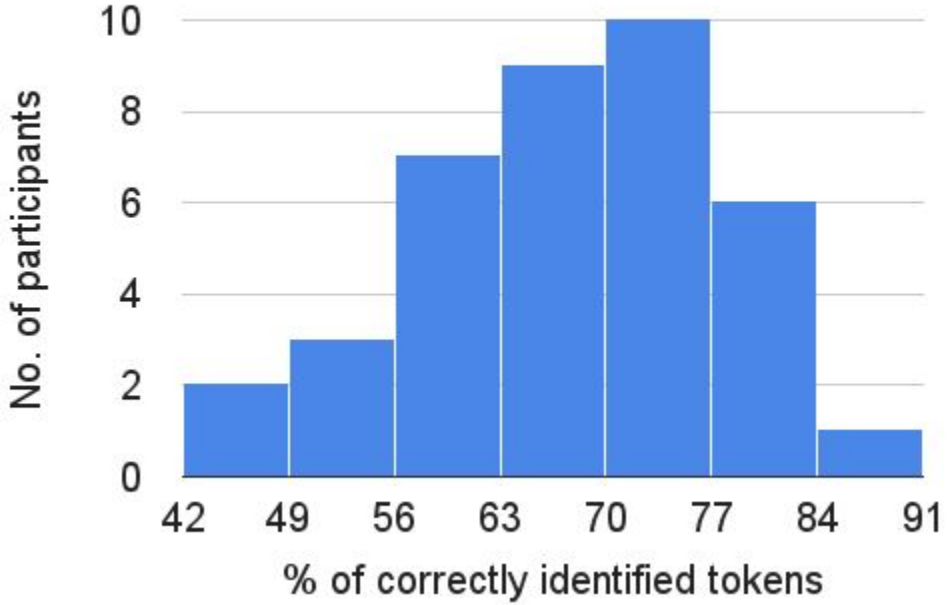
Data analysis – musical hearing tests

Pitch perception (F Avg. = 16.56, M Avg. = 7.89)



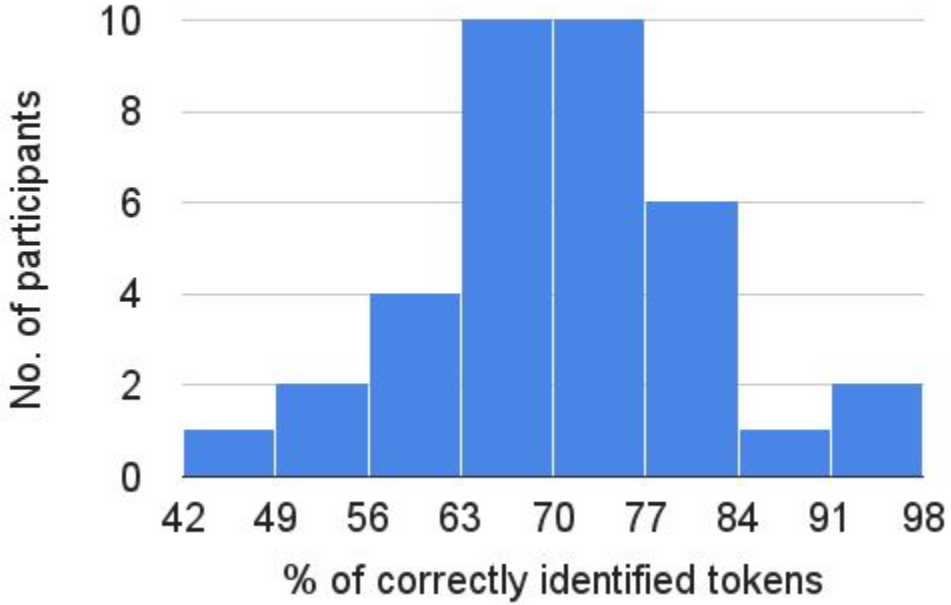
Data analysis – musical hearing tests

Melodic memory (F and M Avg. = ~67.5)



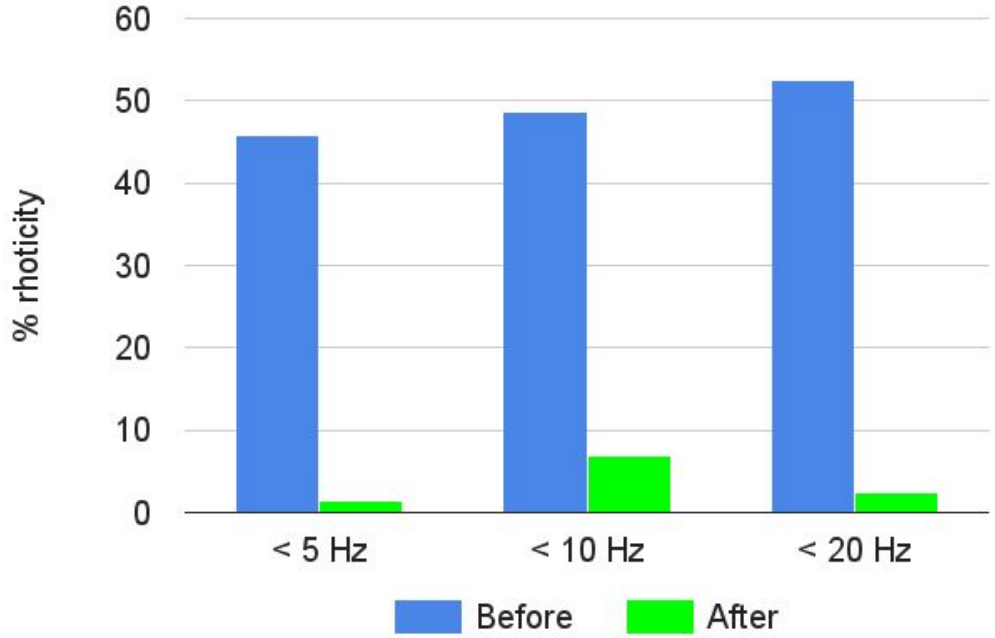
Data analysis – musical hearing tests

Musical rhythm (F Avg. = 70.06, M Avg. = 72.00)



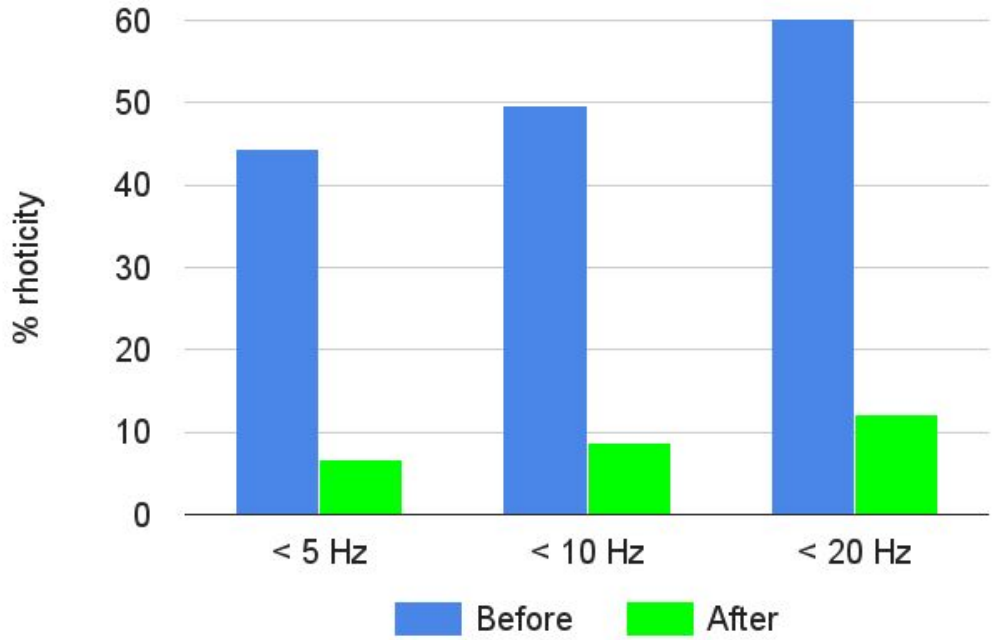
Data analysis – pitch perception vs rhoticity

Reading passage



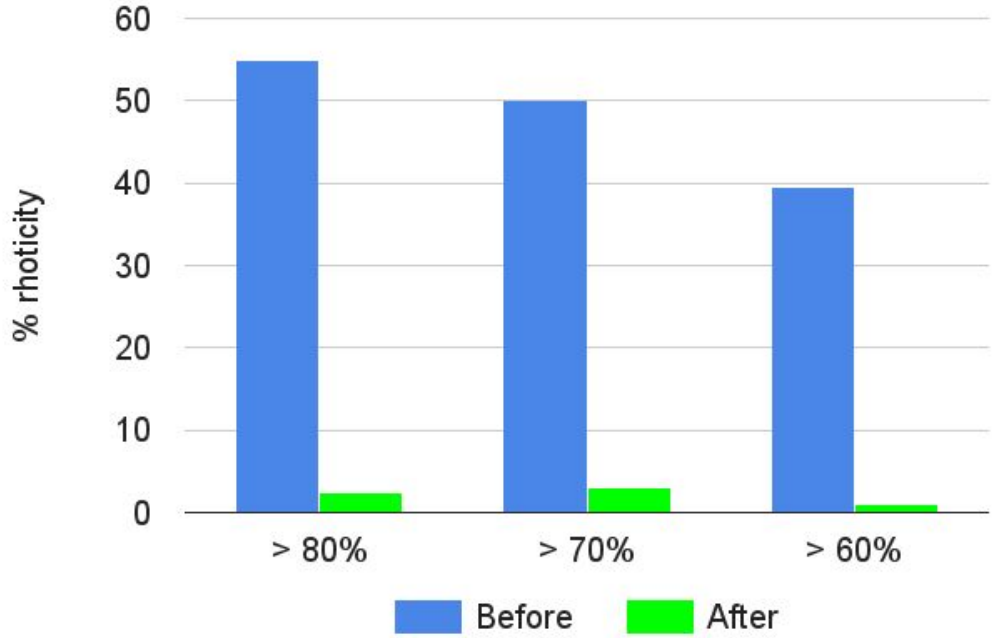
Data analysis – pitch perception vs rhoticity

Dialogues



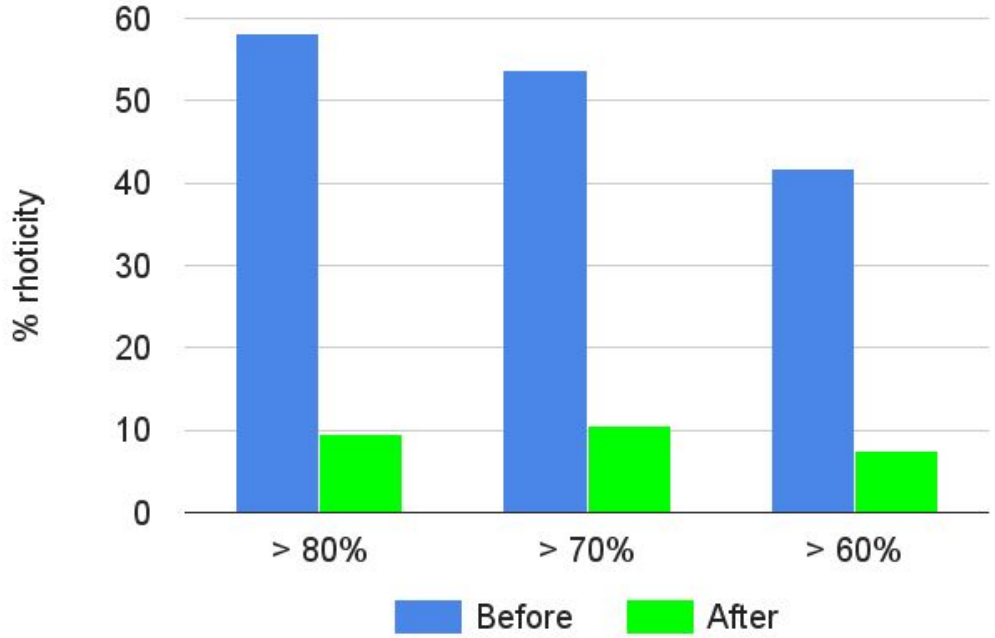
Data analysis – melodic memory vs rhoticity

Reading passage



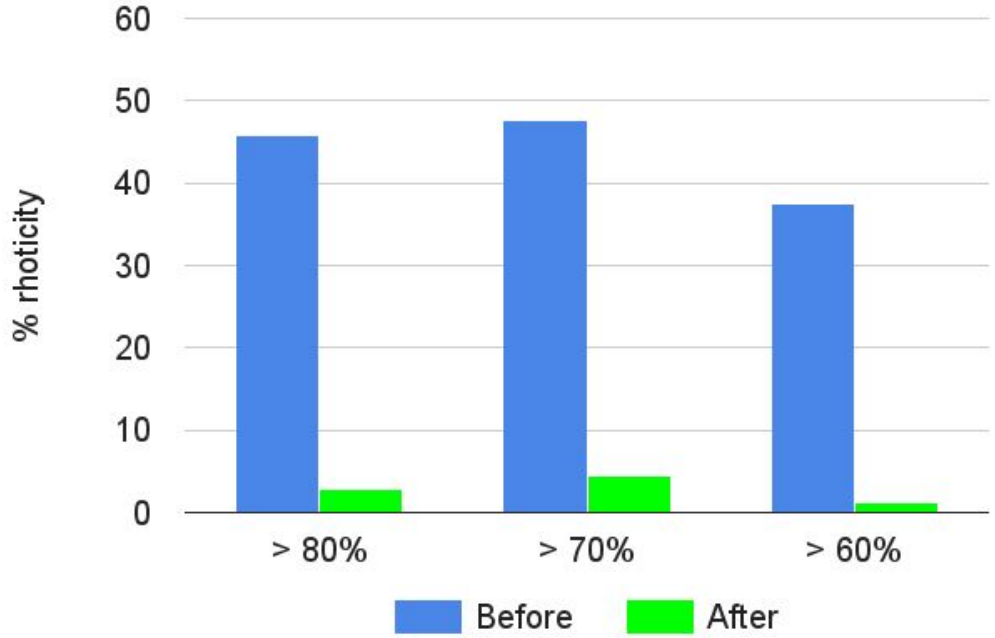
Data analysis – melodic memory vs rhoticity

Dialogues



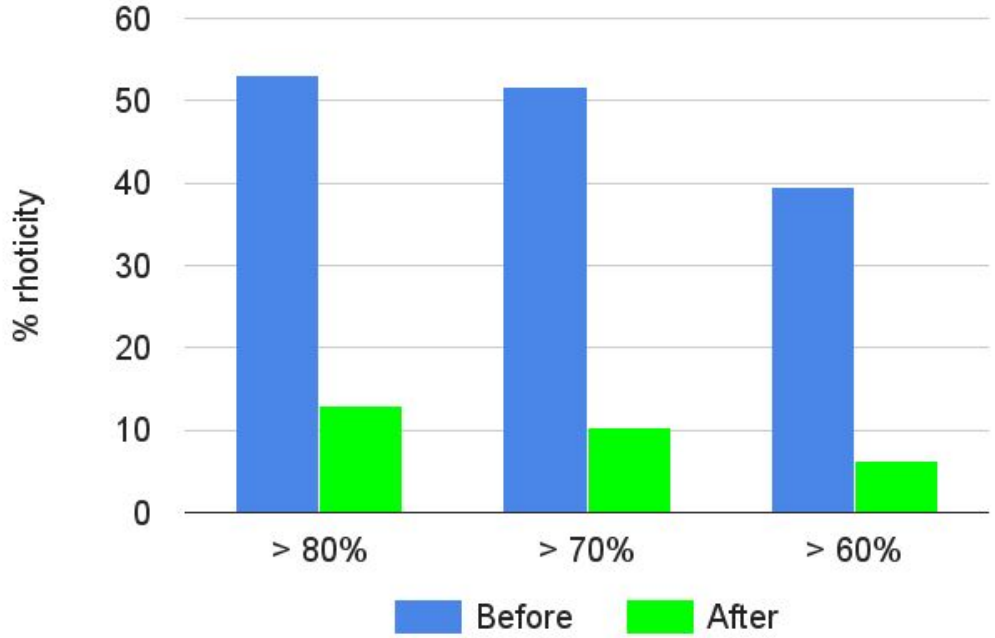
Data analysis – musical rhythm vs rhoticity

Reading passage



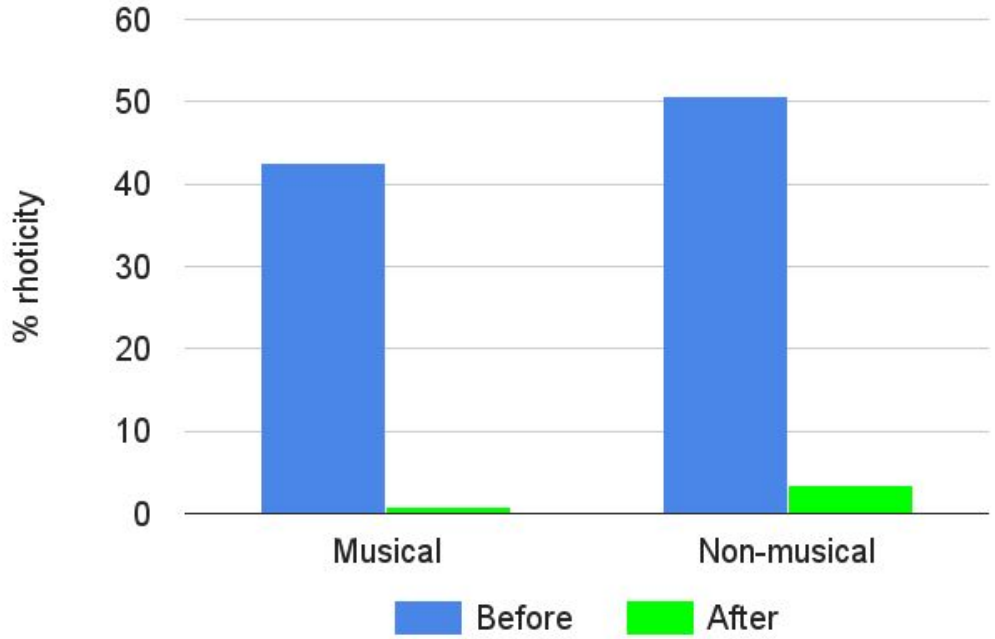
Data analysis – musical rhythm vs rhoticity

Dialogues



Data analysis – musical experience vs rhoticity

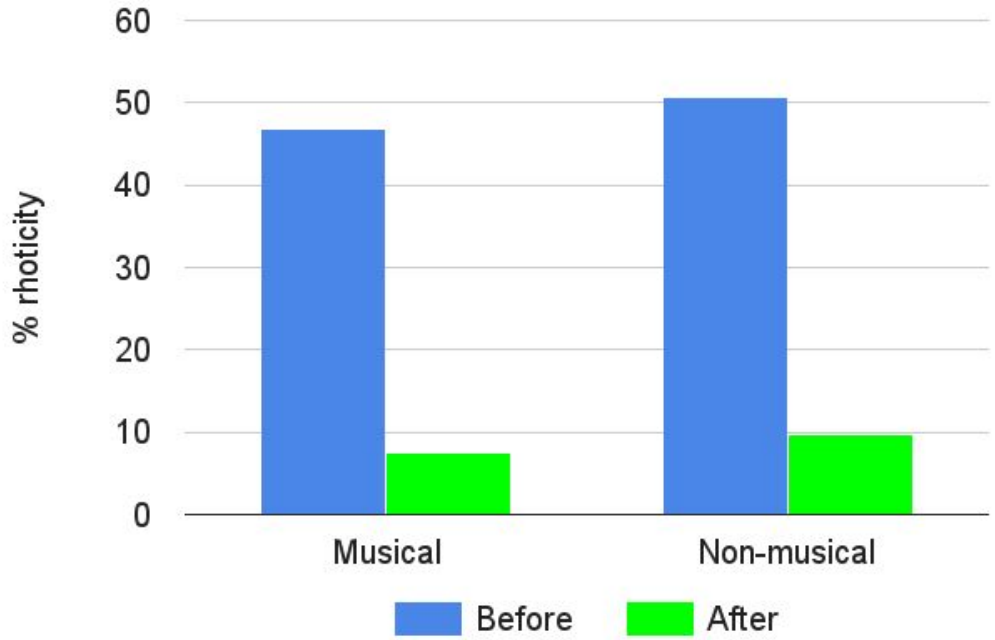
Reading passage



Data analysis – musical experience vs rhoticity

Uniwersytet im. Adama Mickiewicza w Poznaniu

Dialogues



Conclusions

- some correspondence for musical hearing – non-rhoticity
- stronger effect of accent training on the acquisition of non-rhoticity
- pitch perception can play a role in acquiring salient phonetic features
- no effect for melodic memory and musical rhythm perception
- musical experience can have a positive effect

Discussion

- weak statistical power of the correlations
- initial scores for rhoticity possibly due to lack of awareness
- lexical incidence
- differences between reading tasks and spontaneous speech
- one more year until end of project

References

Brown, S. 2001. “The “musilanguage” model of music evolution”, in: Nils Wallin et al. (eds.), *The Origins of Music*, Cambridge: MIT Press, 271-301.

Carlton, E. 2000. “Learning through music: The support of brain research”, *Child Care Exchange* 133: 53-56.

Fadiga L., Craighero L. and A. D'Ausillo. 2009. “Broca's area in language, action, and music”, *Annals of the New York Academy of Sciences* 1169: 448-458.

Fonseca-Mora, M., Toscano-Fuentes, C. and K. Wermke. 2011. "Melodies that help: The Relation between Language Aptitude and Musical Intelligence", *Anglistik International Journal of English Studies* 22, 1: 101-118.

Franklin, M., Moore, K., Yip, C. and J. Jonides. 2008. “The effects of musical training on verbal memory”, *Psychology of Music* 36, 353-365.

Mandell, J. 2009. Electronic Music and Medical Education. (http://jakemandell.com) (date of access: 9 November 2014).

Mithen, S. 2005. *The Singing Neanderthals: The Origins of Music, Language, Mind and Body*. London: Weidenfeld and Nicolson.

Pastuszek-Lipińska, B. 2008. "Musicians outperform nonmusicians in speech imitation", *Lecture Notes in Computer Science* 4969: 56-73.

Patel, A. 2008. *Music, Language, and the Brain*. New York: Oxford University Press.

Strait, D., Parbery-Clark, A., Hittner, E. and N. Kraus. 2012. “Musical training during early childhood enhances the neural encoding of speech in noise”, *Brain and Language* 123: 191-201.

Zatorre, R. and S. Baum. 2012. "Musical melody and speech intonation: singing a different tune", *PLoS Biology* 10, 7: e1001372.