



Variation in multilingual communities: Rhythm and English-Mandarin code-switching in Singapore

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How does rhythm in StdE, Singlish, and SgM vary among Chinese Singaporeans in different code-switched environments?

Introduction

Pairwise Variability Index

- The Pairwise Variability Index (PVI) is a measure of speech rhythm that accounts for the degree of durational variability in acoustic data (Low, Grabe, & Nolan, 2000)
- We used normalized PVI (nPVI), which accounts for speech rate
- A useful shorthand for traditional rhythm classes: Higher nPVI correlates with more stress-timing, and lower nPVI correlates with more syllable-timing

Singapore English

- Singapore English (SgE) varies along a continuum with Standard Singapore English (StdE) on one end and Singlish on the other
- StdE is similar to other standard Englishes, except in its phonology (Gupta, 1989)
- Singlish is a colloquial variety of English with its own distinctive pronunciation, grammar, and vocabulary (Low & Brown, 2003)
- Both StdE and Singlish have been described with a syllable-timed rhythm that is even and staccato-like (Platt & Weber, 1980)

Singapore Mandarin

- Singapore Mandarin (SgM) is based on *Putonghua*, with a phonology similar to colloquial Mandarin spoken in Taiwan and Southern China
- SgM described as having a syllable-timed rhythm (Mok, 2009)

Methods

Participants

- 16 English-Mandarin bilingual Chinese Singaporeans between 21 and 25 years old
- Balanced for gender (male/female), secondary school rank (elite/non-elite), home language (English/Mandarin), and housing type (private/public)

Procedure

- Participants were recorded reading aloud five passages in randomized order
 - Three non-code-switched passages: StdE, Singlish, SgM
 - Two code-switched passages: StdE-SgM, Singlish-SgM
- Participants then completed a language background questionnaire

Analysis

Passage	# of IPs	Avg nPVI
StdE	275	39.85
Singlish	242	38.77
SgM	373	38.54
StdE-SgM	279	37.72
Singlish-SgM	294	37.51

nPVI

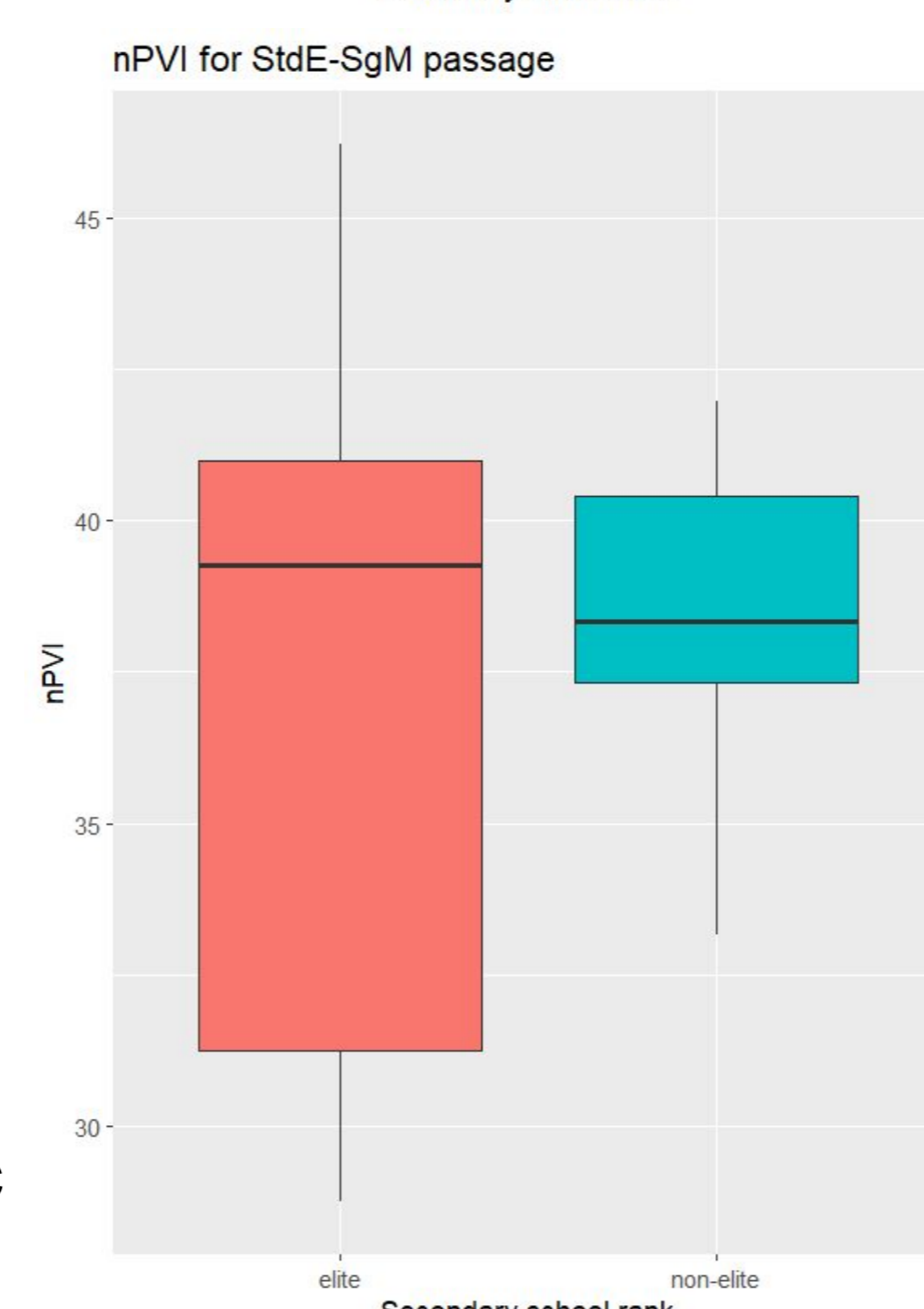
- Analyzed nPVI of each intonation phrase (IP) for each participant for each passage using linear mixed effects regression model in R
- Model with the most significant effects incorporated **passage type, secondary school rank, and interaction between passage and secondary school rank**
 - Significant effects were found for **SgM** and **StdE-SgM** passages

Results

- For the **SgM passage**, elite school (n=8) participants recorded significantly lower nPVI compared to non-elite school (n=8) participants ($p = 0.0385$)
 - Elite: 37.50
 - Non-elite: 39.58
- Generally, elite schools are presumed to reinforce more standard Mandarin norms
- But participants from non-elite schools were the ones who oriented toward standard Mandarin norms of higher nPVI



- For the **StdE-SgM passage**, elite school participants recorded significantly lower nPVI compared to non-elite school speakers ($p = 0.0245$)
 - Elite: 37.16
 - Non-elite: 38.29
- nPVI for SgM > StdE for elite school participants, even though StdE typically has a higher nPVI
- Participants from elite schools are presumed to have stronger standard English norms of higher nPVI that persist even in a code-switched environment
- However, the findings show that elite school participants recorded lower nPVI in the StdE-SgM passage participants



- Differences in nPVI for StdE/StdE-SgM and Singlish/Singlish-SgM were larger for elite school participants
- Any type of English-Mandarin code-switch may be linked with Singlish, leading to lower nPVI, even with StdE
- Presence of SgM may orient elite school participants toward Singlish-like, lower nPVI-like norms**
- Non-elite school participants may maintain clearer rhythmic distinctions between different codes when switching

Background and Motivation

Language	Variety	nPVI	Rhythm class
English	British English	57.2 (Grabe and Low, 2002)	Stress-timed
	StdE	52.3 (Grabe and Low, 2002)	Syllable-timed
	Singlish	44.2 (Deterding, 1994)	Syllable-timed
Mandarin	<i>Putonghua</i>	45.0 (Mok, 2009)	Syllable-timed
	SgM	27.0 (Grabe and Low, 2002)	Syllable-timed

Previous Studies of Rhythm in SgE and SgM

- Only used one to three speakers for each study
- Different types of stimuli were used, making it difficult to compare across studies
- Did not control for or examine social variables

Code-switching and Rhythm

- Lack of studies examining how rhythm is affected by code-switched environments
- Differing ideologies about maintaining distinct languages when code-switching

Present Study

- Production experiment involving a reading passage to avoid potential anomalies caused by spontaneous speech
- Identified locally relevant correlates of social class, i.e., secondary school rank, housing type, and home language
- Singlish and StdE were treated as separate codes; SgM treated as a single code
 - SgM has been posited to have High (H) and Low (L) varieties, but there is a lack of research on the distinctions between these two potential varieties

This study aims to investigate social variation in the rhythm of StdE, Singlish, and SgM among Chinese Singaporeans in both code-switched and non-code-switched environments.

Discussion

Methodological Considerations

- Compared to previous studies, we found lower nPVI for StdE and Singlish but higher nPVI for SgM; this may be due to having more speakers and using non-spontaneous speech
- Reading passages might be implicitly associated with StdE
 - StdE is more often found in written form, but Singlish is not
- Singlish usually associated with informal topics, and StdE used to talk about formal topics

Education, Social Class, and Language

- The present study found **significant effects of secondary school rank** on rhythm
- But participants who were categorized as coming from non-elite schools did not come from particularly low-ranked schools (i.e., ranked 1-20 versus ranked 21-51)
- Elite schools in Singapore attract students from upper and upper-middle social classes
 - More likely to use English as the home language
 - Private tutoring/private tutoring companies are commonplace and used to help students get into 'good' schools
- Schooling environment also affects degree of exposure to StdE, Singlish, and SgM
- Higher nPVI for SgM and StdE-SgM for non-elite school speakers might relate to social capital that is associated with rhythm
- Points to **fine-grained differences in schooling environment in the development of speakers' language practices**, at least when it comes to rhythm

Conclusion

Secondary school type had significant effects on rhythm

- Elite school speakers had lower nPVI for Mandarin and code-switched passages compared to non-elite school speakers
- Did not find effects for gender, housing type, and home language
 - Suggests that formative language practices in Singapore might be centered around the school rather than the home

Education may be a more nuanced indicator of social class for Chinese Singaporeans compared to other variables like housing type

- In Singapore, where education is highly prized and standard English is promoted, schooling environment plays a key role in speakers' language practices
- Even with a rough division between top twenty and non-top twenty secondary schools, effects were found
- Underscores the significance of fine-grained class differences in how English and Mandarin are spoken in Singapore

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Thank you! If you have any questions, please email Yin Lin at yltan@stanford.edu or yinlin@nus.edu.sg.