The Effects of Visual Cues on Speech Intelligibility of accented Cantonese

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LabPhon18

Introduction

➢Previous studies have found that social-indexical cues such as **face**, **ethnicity** and **identity** can affect speech processing, perception (Hay, Nolan and Drager, 2006), comprehension (Hanulikova, 2021) and intelligibility (McGowan, 2015; Babel and Russell, 2015).

➢Two effects

- **Enhancement:** ↗ the activated episodic memories which associated with social-indexical groups would facilitate intelligibility.
- **Inhibition:** ↘ reverse linguistic stereotype or inaccurate ethnicity expectation would reduce intelligibility of accented speech.

➢ **Research question**

- **Do visual cues (i.e. face) influence intelligibility of accented Cantonese speech?**

Study Design

Participants:

180 native Hong Kong Cantonese speakers
(20 ppl X 9 groups; 90 males + 90 females)

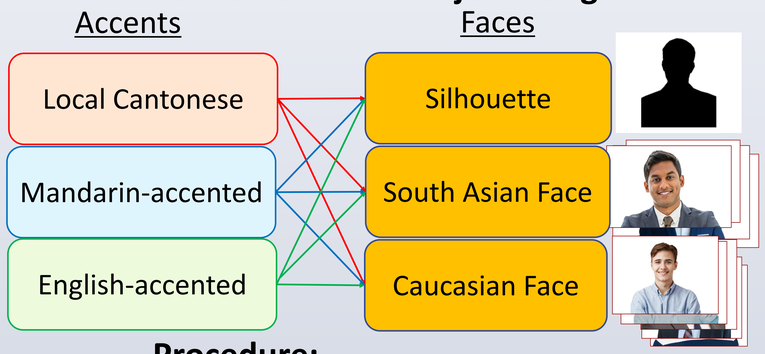
Material:

	Jack	drew-PST	a mountain
E.g.	阿杰	畫咗	一座山
	黑記	畫左*	一座山
	✗✗	✓✓	✓✓✓

Score: 5/7

*Characters which do not have a consensus on transcription are marked the same. E.g.左-咗

3 X 3 between-subject design



(5 different faces)

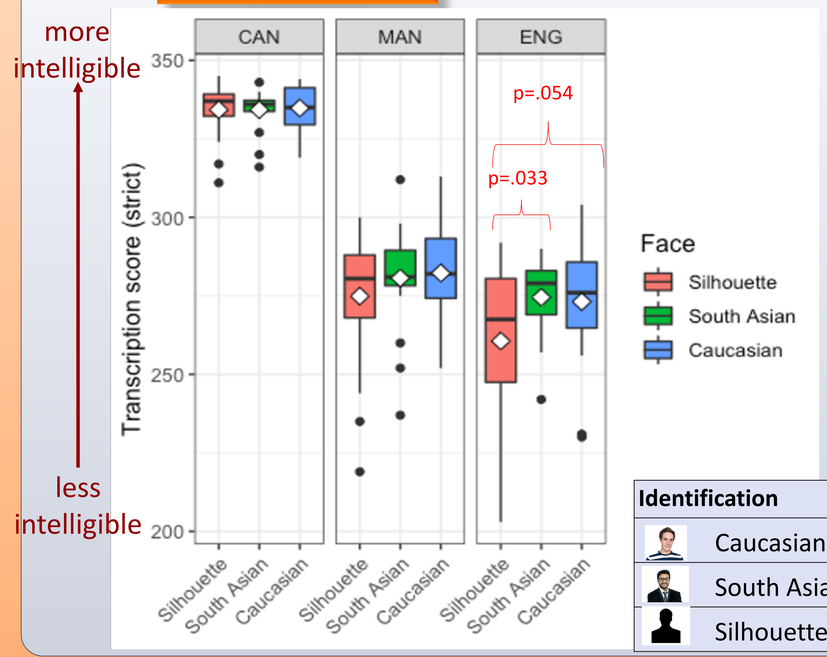
- In unpredictable contexts
- 45 sentences/accent
- 7-8 characters/sentence
- 1 point/character
- In total, 346 points for each participant

Procedure:

Intelligibility test → **Identification** → **Background & Attitudes**

- Transcribe Cantonese recordings
- Identify the Cantonese accent
- Attitudes towards the Cantonese accent

Results



Findings:

- In ENG, when the accent **matches** the face: visual cues significantly improve intelligibility due to the audio-visual benefits (Yi et al.,2013).
- When the accent **mismatches** the face: Intelligibility also improved → WHY?

Identification	CAN	MAN	ENG
Caucasian	90%	55%	80%
South Asian	65%	15%	35%
Silhouette	85%	90%	50%

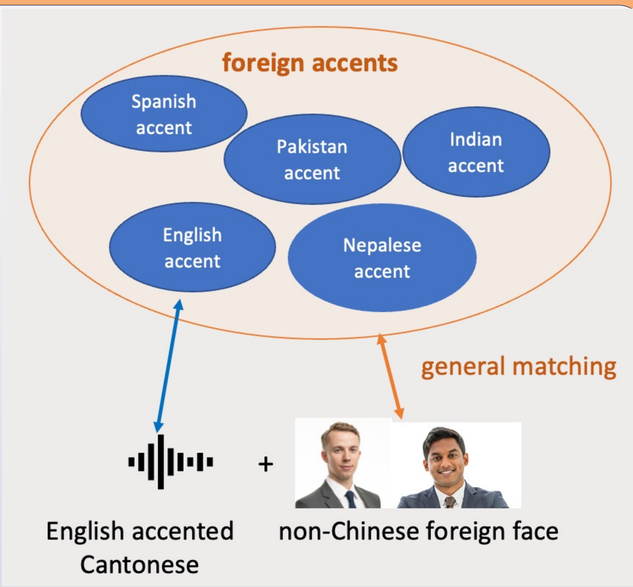
Discussion

Explanations:

- Both a Caucasian face and a South Asian face might activate a higher level of social-indexical category called **"non-Chinese foreign speakers (鬼佬/老外)".**

Why is there no effect of face on MAN?

- **Similar phonological features** between Cantonese and Mandarin;
- HK participants are more **familiar** with the MAN accent than South Asian accents and English accents.



Take home message

The matching between FACE and accents might be at a more general level, affected by experience and familiarity of the accents.

References: Babel, M., Russell, J. (2015). Expectations and speech intelligibility. Journal of Acoustical Society of America, 137(5), 2823–2833.
Hanulikova, A. (2021). Do faces speak volumes? A life span perspective on social biases in speech comprehension and evaluation. [Paper Presentation]. AISV 2021: Speaker individuality in phonetics and speech sciences: speech technology and forensic applications, Zurich, Switzerland.
Hay, J., Nolan, A., and Drager, K. (2006). From fush to feesh: Exemplar priming in speech perception, Ling. Rev. 23, 351–379.
McGowan, K. B. (2015). Social expectation improves speech perception in noise. Language and Speech, 58(4), 502–521.