Speaking Your Language: Adapting LLMs for Singlish Emotional Support Chatbots

A Singlish Case Study in
Culturally Grounded Conversational AI

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20 November 2025

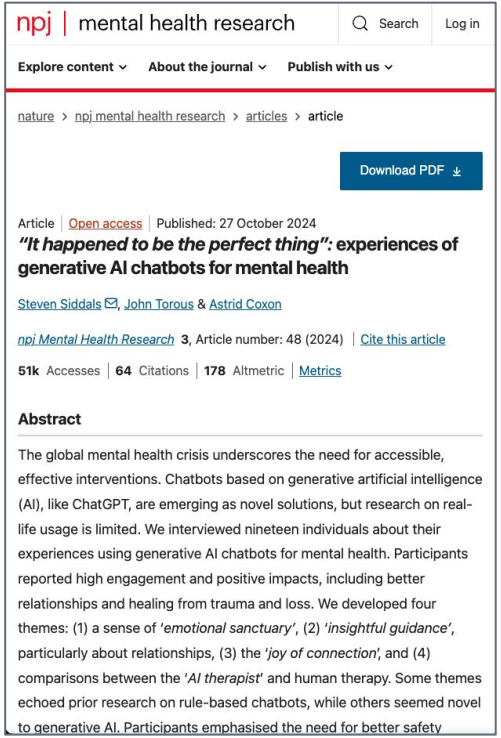
Agenda

1. Introduction
    a. Motivation
    b. Research questions
    c. Key contributions
2. Methodology
3. Results
4. Discussion, Design Implications & Future Work
5. Conclusion

Motivation

Motivation

- Emotional-support chatbots are increasingly used in sensitive domains (companionship, counselling, mental health)
- Research in counselling linguistics suggests that therapeutic rapport and perceived empathy are moderately strong predictors of positive mental-health outcomes
- In emotional support, language style can influence rapport, empathy, and trust
- The emotional resonance of an support AI system, depends not only on **what** they say but **how** they say it



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"It happened to be the perfect thing": experiences of generative AI chatbots for mental health

Steven Siddals, John Torous & Astrid Coxon

npj Mental Health Research **3**, Article number: 48 (2024) | Cite this article

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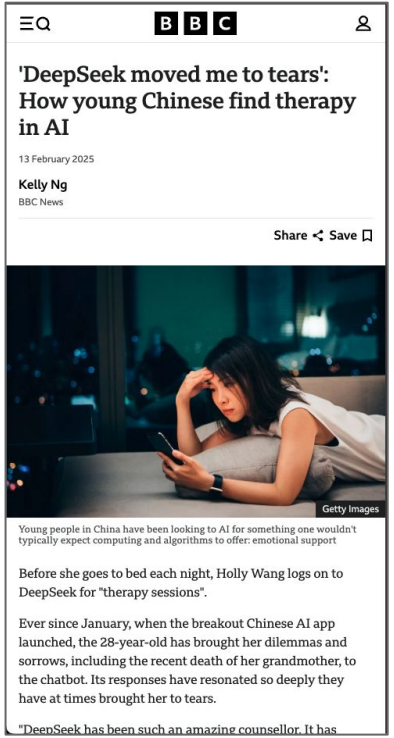
Abstract

The global mental health crisis underscores the need for accessible, effective interventions. Chatbots based on generative artificial intelligence (AI), like ChatGPT, are emerging as novel solutions, but research on real-life usage is limited. We interviewed nineteen individuals about their experiences using generative AI chatbots for mental health. Participants reported high engagement and positive impacts, including better relationships and healing from trauma and loss. We developed four themes: (1) a sense of '*emotional sanctuary*', (2) '*insightful guidance*', particularly about relationships, (3) the '*joy of connection*', and (4) comparisons between the '*AI therapist*' and human therapy. Some themes echoed prior research on rule-based chatbots, while others seemed novel to generative AI. Participants emphasised the need for better safety



BBC

'DeepSeek moved me to tears': How young Chinese find therapy in AI

13 February 2025

Kelly Ng

BBC News

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Getty Images

Young people in China have been looking to AI for something one wouldn't typically expect computing and algorithms to offer: emotional support

Before she goes to bed each night, Holly Wang logs on to DeepSeek for "therapy sessions".

Ever since January, when the breakout Chinese AI app launched, the 28-year-old has brought her dilemmas and sorrows, including the recent death of her grandmother, to the chatbot. Its responses have resonated so deeply they have at times brought her to tears.

"DeepSeek has been such an amazing counsellor. It has

https://www.nature.com/articles/s44184-024-00097-4
https://www.bbc.com/news/articles/cy7g45g2nxno

Why Dialects for Emotional Support?

- Carries social functions such as expressing identity, solidarity, cultural belonging and social cohesion
- Dialects help express emotional nuance, intimacy, warmth
- Builds rapport and emotional resonance
- Reduce social distance by signalling familiarity and belonging

*'tak boleh tahan' made me smile. I hadn't heard it in awhile, but it was so fitting and light-hearted that **I felt understood and slightly more comforted***

- Study Participant

*I can talk about things like work or success in English, **but when it comes to love or sadness, I feel the need to switch to Urdu or Punjabi.** English doesn't give me the same emotional depth.*

- Fatima, Naeem & Afzaal, Dr & Hussain, Zubair & Sajid, Dr. (2024). Language and Emotion: A Study of Emotional Expression in Multilinguals. 2024.

Theoretical Framework

Communication Accommodation Theory (CAT)

- People adjust their language to manage social distance
- Convergence
  align word choice, syntax, accent
- Signal solidarity & empathy

Computers Are Social Actors (CASA)

- Users apply social norms to computers and chatbots
- Treat linguistic cues as if produced by a human

- CASA provides the bridge to extend CAT from between humans to human-chatbot interactions
- A chatbot that *converges* to the user's style can be judged as warmer, more empathetic

Features of Singlish

- Colloquial Singapore English (Singlish) is an English-based dialect with Malay, Mandarin, and Tamil influences among many others
- Important for expressing identity, solidarity, and informality
- Rich lexical and syntactic features (e.g., makan, kopi, already, also, code-switching)
    - Features for engineering
- Functions along a continuum from acrolect, mesolect and basilect, allowing for graded accommodation

Singlish slang makes an appearance in the National Day Parade 2015. (Photo: Xabryna Kek)

Also, *how would my fellow family members and students feel? How would we relate to one another in such an environment?*

I'm encouraged to see that community efforts have ***already*** *been gaining momentum.*

Ministerial Statement by Mr Chan Chun Sing, Minister for Education, for the Parliament Sitting on 27 July 2021

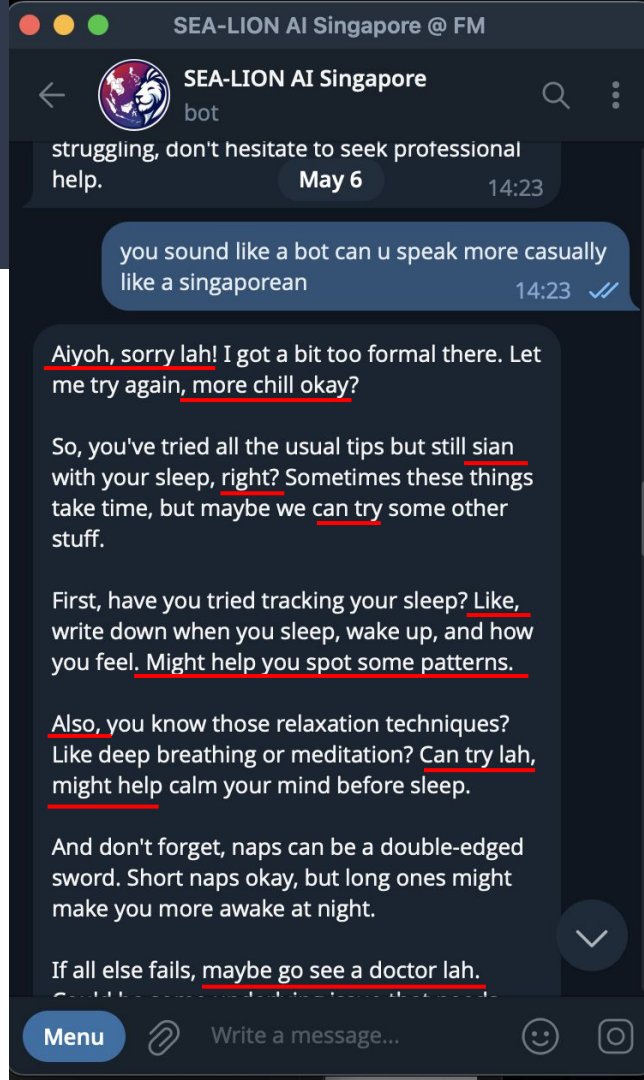
https://www.channelnewsasia.com/commentary/singlish-singapore-english-language-code-switch-uneducated-888886
https://www.moe.gov.sg/news/speeches/20210727-ministerial-statement-by-mr-chan-chun-sing-minister-for-education-for-the-parliament-sitting

Problem Definition - Technical

- Generation Gap
  - LLMs can often recognise dialectal input but struggle to generate natural, context-appropriate dialect
  - Existing Singlish-finetuned models tend to over-perform basilectal forms and do not offer fine grained control over register

- Model development
  - Resource intensive to trian
  - Low resource language
  - - Lack of datasets (parallel or otherwise)

> “the super exaggerated Singlish
> in one of the responses was slightly cringeworthy.”
>
> Linguistic Bias in ChatGPT: Language Models Reinforce Dialect Discrimination (Fleisig et al., EMNLP 2024)



Problem Definition - Affect

- Gap in Understanding
  - Current body of work on English examines stylistic variation within Standard English
  - Lack of research on conversational agents using dialects
  - Lack of research connecting dialect use in conversational agents to perceptions of warmth, competence, closeness or affect

Research Questions

RQ1: How does dialectal accommodation in chatbot language influence users' perceptions of an emotional support chatbot's warmth, competence, closeness, humour, and the impact on their affect?

RQ2: How do users from different linguistic backgrounds interpret and evaluate dialectal chatbot language in terms of warmth, competence, closeness, humour and the impact on their affect?

Contributions

Conceptual	Dialectal accommodation as an explicit design consideration
Methodological	Experimental framework for controlled experimentation of linguistic adaptation conditions
Technical	Lightweight approaches for dialectical generations

Methodology

Study Design

CHATBOT STUDY RECRUITMENT

We are a group of social computing researchers from NUS, studying how AI-powered chatbots can provide emotional support over text to users.

LOOKING FOR

- Singaporeans
- Comfortable with texting in English

STUDY OVERVIEW

- Chat with an AI for around 10 minutes
- Complete a short survey afterwards

COMPENSATION: SGD **6**
SIGN UP: See Telegram Message

AI4SG This is a research project by the AI4SG Lab at NUS.

Enquiries: Yugin Tan
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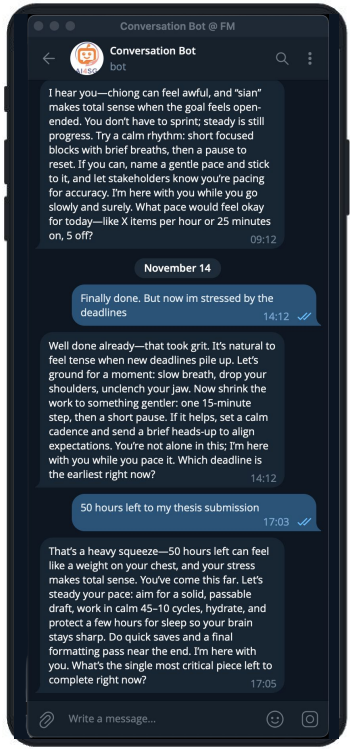
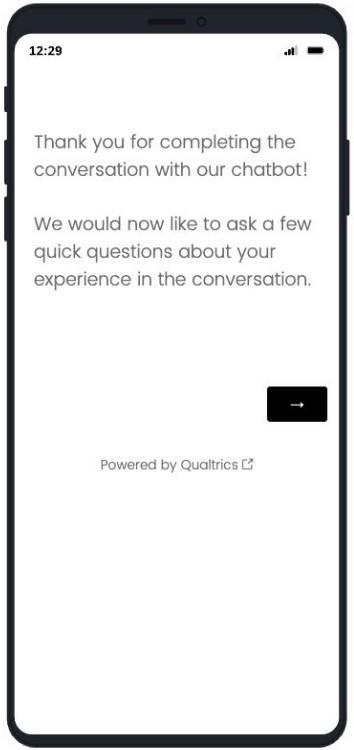
Study approved by NUS SoC IRB



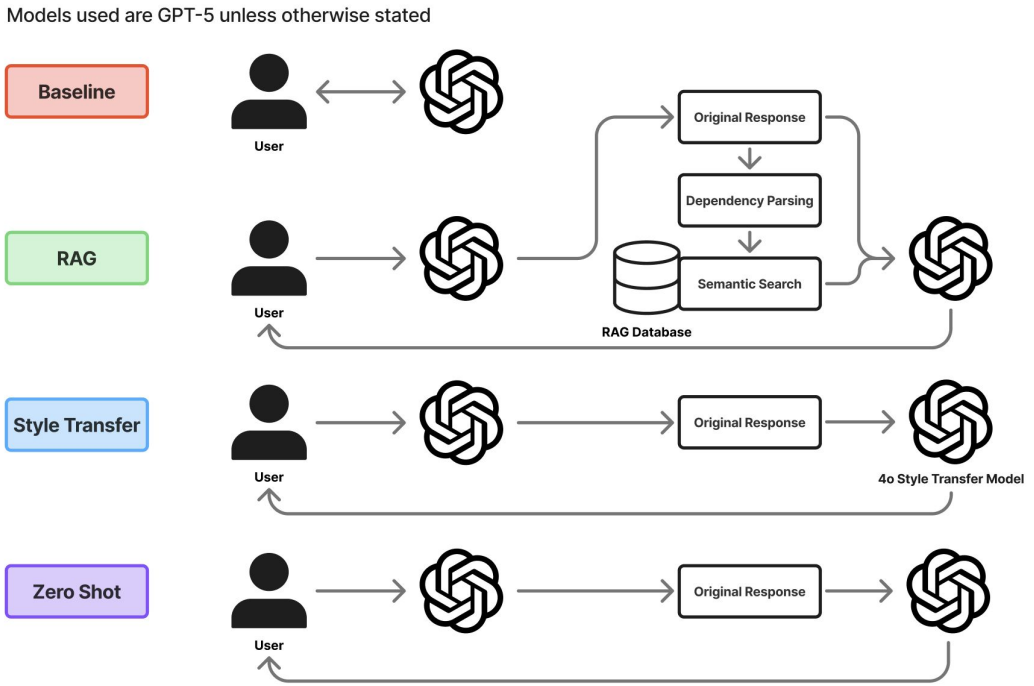


Mapping Singlish Features to NLP Methods

Characteristics	Example	Method
Lexical	Makan, kopi, boleh	Retrieval Augmented Generation (RAG)
Syntactic	**Also, already**	Style Transfer
Lexical + Syntactic	Both	Zero-Shot

Implementation Framework

- Isolation of empathic response through 2 pass method
- RAG:
  - Filter candidate words using dependency parsing
  - HNSW vector database
  - Singlish terms are concatenated to second prompt
- Style Transfer:
  - Supervised fine tuning with handcrafted dataset
- Zero Shot:
  - Prompt based



Measures

- Measured perception of chatbot after interaction
- Composite constructs for dependent variables (DVs)
- Background details

Manipulation Check

- Use

Linguistic Background

- Frequency of Use
- Frequency of Exposure
- Similarity of Use

Dependent Variables

- Warmth (WARM)
- Competence (COMP)
- Closeness (CLOSE)
- Humour (HUMR)
- Positive Affect (POS)
- Negative Affect (NEG)

Demographics

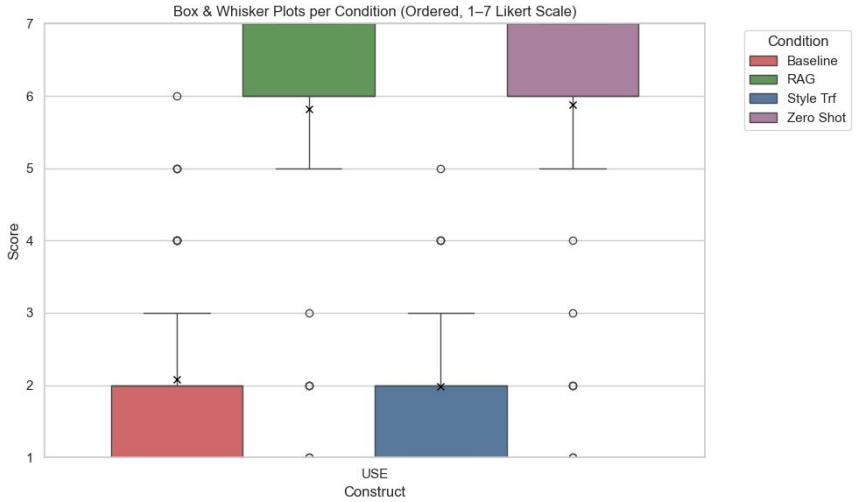
- Age

Results

Manipulation Check

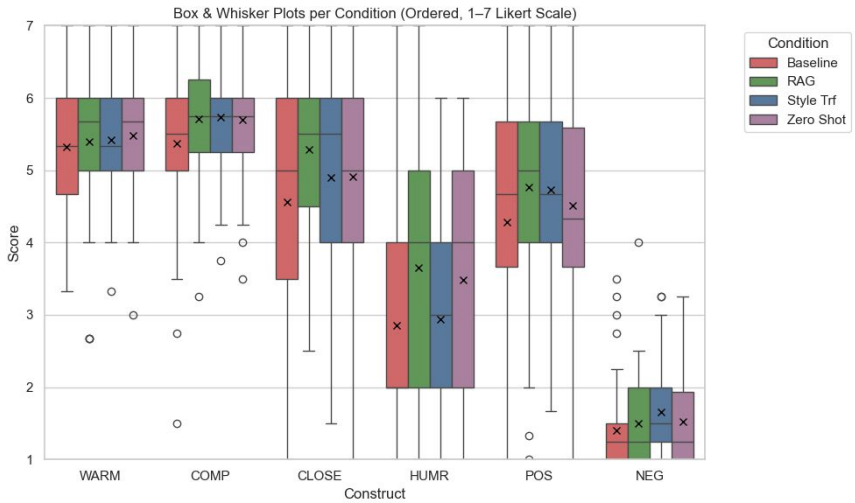
- Baseline (n=49), RAG (n=49), Style Transfer (n=45), Zero-Shot (n=66)
- Participants successfully distinguished RAG and Zero-Shot chatbots as using Singlish

Vs Baseline Condition	p-value
RAG	<0.001
Style Transfer	0.67
Zero-Shot	<0.001



RQ1: Singlish Features on DVs & Affect

DV	Comparison Vs Baseline	p-value	Effect size
COMP	Style Transfer	0.05	0.40
CLOSE	RAG	0.013	0.51
HUMR	RAG	0.017	0.49
HUMR	Zero-Shot	0.025	0.44

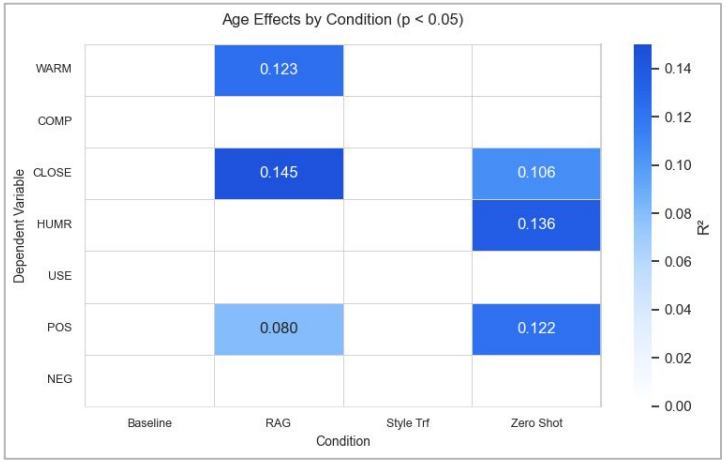


The effect of Age

- Linear regressions was conducted to examine the relationship between the age of the participants and each DV under the four conditions.
- Age is a significant moderator

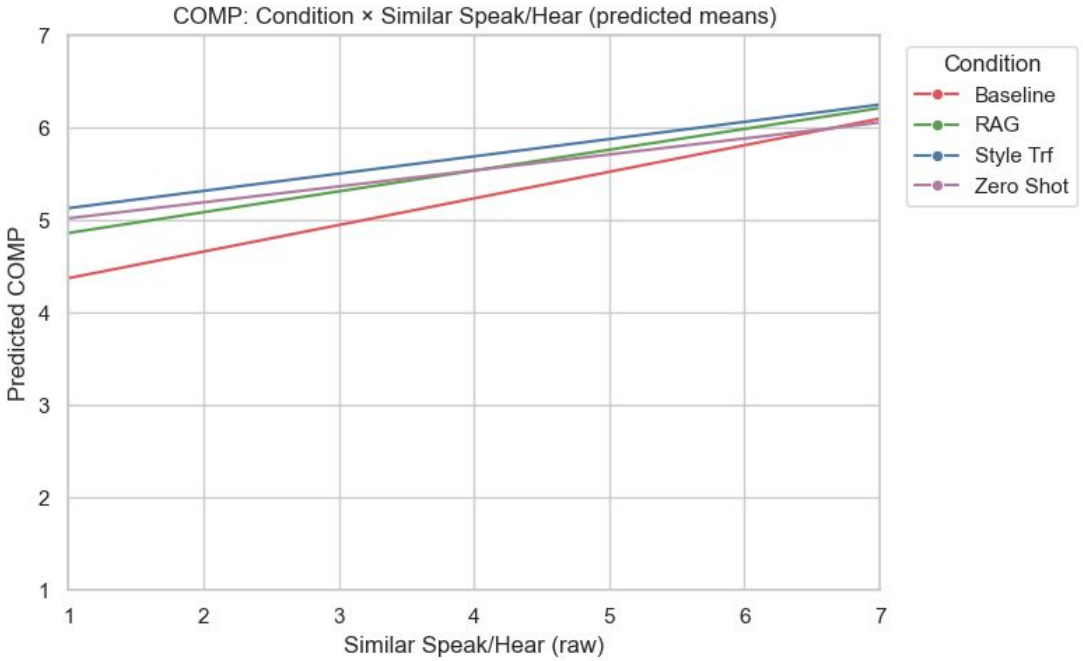
Variable	Condition	Coefficient	R^2	p
WARM	RAG	0.043	.123	.013*
CLOSE	RAG	0.052	.145	.007**
CLOSE	Zero Shot	0.046	.106	.008**
HUMR	Zero Shot	0.051	.136	.003**
POS	RAG	0.042	.080	.049*
POS	Zero Shot	0.046	.122	.004**

Note: * $p < .05$, ** $p < .01$



RQ2: Linguistic Background on DVs & Affect

- Examined two indices:
  - Speak/Hear (similarity to spoken language)
  - Write/Receive (similarity to written language)
- Conducted simple-slope tests for each DV across conditions



RQ2: Linguistic Background on DVs & Affect

- Higher similarity scores were linked to more positive outcomes, including higher WARM, COMP, CLOSE, and POS ratings.
- **Mimicry trumps all factors**
- When participants experienced greater overlap between their habitual way of communicating and how the chatbot “sounded” to them, they were more likely to evaluate the chatbot more favourably.
- Stronger for Speak/Hear reflecting the CAT grounding

Qualitative Themes

Expectations of Chatbot Language

I do not find it appropriate at all, and in fact was annoyed at the use of Singlish. It made the conversation much less formal and less “serious” … I think the chatbot should use standard English.

- RAG Condition

Relatability through Local Lexical Items

‘tak boleh tahan’ made me smile. I hadn’t heard it in awhile, but it was so fitting and light-hearted that I felt understood and slightly more comforted

- RAG Condition

Contextual Appropriateness

While talking about a distressing issue, I understand the bot’s programming to appear warm; however, use of Singlish (pek cek, use of ‘already’ at the end of sentences) felt strange.

- Zero Shot Condition

Discussion

Age and Changing Language Preferences

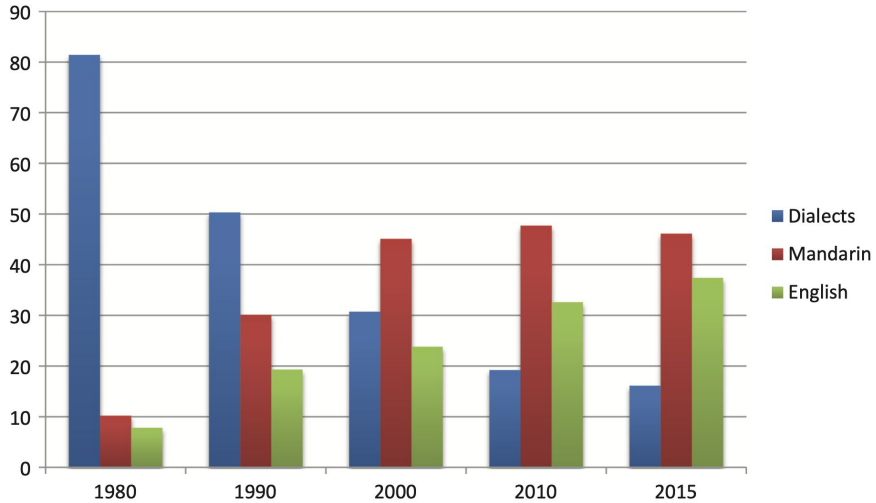


Figure 1: Language most frequently spoken at home by Chinese Singaporeans. Sources: Khoo (1980), Singstat (2000, 2010, 2015)[4]

- As a colloquial dialect, Singlish acquisition is strongly shaped by speakers' immediate environments, including family, peers, and community networks
- Vocabulary acquired by multilingual children is a direct function of quantity of input exposed to
- Historical language-shift trends in Singapore, such as the marked decline in home use of Chinese dialects between 1980 and 2015, have likely reduced younger Singaporeans' exposure to dialect-derived loanwords that older speakers encountered more regularly

Bokhorst-Heng, W. & Silver, R. (2017). Reconsidering language shift within Singapore's Chinese community: A Bourdieusian analysis. *International Journal of the Sociology of Language*, *2017*

Design Implications

Development and Use cases

- No one size fits all strategy
  - Aim for convergence with the user's linguistic style
- Chatbots for older adults
  - Lexicon more representative of their language history
- Context dependent
  - Less emotional scenarios

Future Work - Technical Improvements

Part-of-Speech Parsing

- Utilised spaCy
- Move to Singlish parser by DSO/Wang et al (2017)

Supervised Fine Tuning

- Develop a larger dataset for fine tuning (currently n=74)
- Include other Singlish particles from literature (one, got, can, etc)

Contingent Accommodation

- Real time adaptation to user's linguistic style
- Requires
  - Fast identification of dialectal markers
  - Decision mechanism for switching
  - Graded accommodation

Conclusion

Dialectal accommodation is a targeted rather than global lever

How well the chatbot's language matched the user's own linguistic history influences perceptions and affect

Future work should explore dynamic adaptation of language to match the user's in real time

Thank You.