Identifying the social meanings of Singlish

245B Methods in Psycholinguistics
Final Paper
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1 Introduction

Linguists have proposed different models to understand variation in how English is spoken in Singapore. Some classified the situation as a diglossia (Gupta, 1994), and others located Singlish, a local, colloquial variety of English, and standard Singapore English along two ends of a continuum (Alsagoff, 2010). Leimgruber (2012) advocated for an indexical, feature-based approach, which would require researchers to identify what linguistic features are relevant for an account of English in Singapore and what social meanings are indexed by them. This study aims to further such an indexical account of English in Singapore by examining the social correlates of Singlish. Specifically, we use an attribute rating task to investigate what social meanings are associated with speech that is perceived to sound more Singlish. The findings from this study contribute to sociolinguistic knowledge about Singapore and highlight the usefulness of perceptual methodologies for investigating sociolinguistic variation.

The pre-registration for this study can be found at https://osf.io/przmv. The Github repository can be found at https://github.com/yinlintan/social-singlish.

2 Background

2.1 English in Singapore

In Singapore, English is framed as a 'neutral' common language for the different racial groups (Dixon, 2005). English has been in use since the British arrived in the 19th century. Today, it is one of four official languages, alongside the 'mother tongue' languages of Mandarin, Malay, and Tamil, which are respectively allocated to the Chinese, Malay, and Indian racial groups. In 1966, one year after gaining independence from the British, the government adopted a bilingual education policy (Ng, 2014). Under this policy, school was conducted in English, and students took two compulsory language classes: English and a mother tongue, which was assigned to each Singaporean based on their race. On top of its role as a lingua franca for the racially diverse Singaporean community, English was thus also positioned as the language of education, trade, and industry (Alsagoff, 2010), while the mother tongues were positioned as the languages of culture and heritage (L. Wee, 2003).

The use of English as the main language of the household has increased rapidly over the past two decades. The proportion of households who indicated English as their primary language increased from 28.1% in 2005 to 48.3% in 2020 (Department of Statistics, 2005, 2020). This trend is closely tied to the ubiquity of Singlish, a colloquial variety of English that is used in Singapore. Singlish is often contrasted against Standard Singapore English (SSE), which is based off British English and described as similar to other 'standard' Englishes, except for in its pronunciation (Gupta, 1989). On the other hand, due to contact with local languages like Hokkien and Malay, Singlish has its own distinctive grammar, vocabulary, and phonology (Yeo, 2010). For example, discourse particles like *hor*, which originated from Cantonese, are widely used (Smakman & Wagenaar, 2013). Lexical borrowings from other local languages have been incorporated into Singlish; for instance, the Malay word *makan* refers to the act of eating, and the Hokkien word *ang moh*, which literally means 'red hair', refers to a Caucasian person. Several phonological features of Singlish have also been described, such as the realization of word-initial /θ/ as [f] (Deterding, 2007), lack of contrastive vowel length (L. Wee, 2008), and rising f0 over the phrasal unit (Chong & German, 2023).

2.2 A shift toward social meaning

Models that aim to explain variation in how English is used in Singapore often contrast SSE with Singlish. Gupta (1994) characterized the language situation as a diglossia, with SSE as the High (H) variety and Singlish as the Low (L) variety. Within a diglossic framework, the H variety is used in formal situations while the L variety is used in colloquial situations. However, the binary distinction between SSE and Singlish within a diglossic model does not provide an adequate account for situations where both varieties are simultaneously used.

Most linguists now acknowledge that the differences between SSE and Singlish are "more continuous than discrete" (Cavallaro & Ng, 2009, 146). This gradient nature of English in Singapore is reflected in Alsagoff (2010)'s cultural orientation model (COM). The COM is a continuum with two opposing ends: localism, which is associated with values like socio-cultural capital and group identity, and globalism, which is associated with values like economic capital and authority (Alsagoff, 2007). Singlish is associated with localism and SSE with globalism, but speakers can occupy multiple positions on this continuum at any one time. Thus, within the COM, the variable nature of English in Singapore is a "fluidity of movement rather than as binary code-switching" (Alsagoff, 2010, 345).

The challenges of explaining variation in Singapore English in terms of pre-determined distinctions between standard and colloquial have led linguists to propose an indexical, feature-based approach instead. Leimgruber (2012) explains that this variationist perspective places the focus on linguistic features and their social meanings, rather than on broad categories like formality and cultural orientation. This approach also does not require linguists to define a standard variety and a colloquial variety, and instead encourages an examination of relevant social meanings that might not neatly be categorized under such a binary.

An indexical approach is appealing because of its inclusivity and flexibility, in that it does not limit the researcher to pre-defined axes of variation. However, it requires linguists to identify exactly what linguistic features are relevant to the community, and what social meanings are indexed by them.

Some recent work has adopted this third-wave variationist approach. For example, Starr (2021) found that younger Singaporeans were using Singapore English vowels and post-vocalic rhoticity to index local identity and education. The extent to which they used these features were partly dependent on their relationship to the local character type of the Heartlander, which refers to someone with a positive orientation toward local culture and norms. By examining finer-grained social meanings instead of more coarse-grained dimensions of variation, Starr (2021) was able to provide a more nuanced look at how English is used in Singapore.

A shift toward social meaning in Singapore English can be further advanced by an exploration of exactly what meanings are relevant for the notion of 'Singlish'. Given the language situation in Singapore, where different varieties are positioned as neatly compartmentalized into different domains of use, there is much debate and everyday discourse surrounding Singlish (Bokhorst-Heng, 2005; L. Wee, 2014, 2018). Therefore, an indexical analysis of Singlish can help disambiguate the locally relevant social meanings that are associated with Singapore English and demonstrate the usefulness of a third-wave variationist framework for understanding language use in Singapore.

2.3 Research aims

To further an indexical account of English in Singapore, this study aims to identify the social correlates of Singlish through an attribute rating task by asking the question: what social meanings are associated with speech that is perceived to be more Singlish?

Past studies have utilized attribute rating tasks, in the form of the matched guise paradigm, to investigate attitudes toward Singapore English (Cavallaro & Ng, 2009; Cavallaro, Ng, & Seilhamer, 2014). They found that Singlish was rated lower than SSE on solidarity-related traits, like Honest, Kind, and Friendly, despite participants' open-ended responses about the importance of Singlish for local identity. They also had participants rate guises based on a pre-determined list of ten attributes, instead of identifying specific attributes that might be more relevant for the sociolinguistic context in Singapore. Their guises also differed in terms of syntax, lexicon, and phonology, and were broadly classified into two types, i.e., Singlish and SSE.

This study thus also builds on Cavallaro and Ng (2009) and Cavallaro et al. (2014)'s work by incorporating attributes that have already been identified as salient in a previous study by Tan, Lin, and Sumner (2023). We will use stimuli that differs from standard English only in its phonology, i.e.,

the stimuli used are all grammatically and lexically standard. Instead of a strict binary distinction between Singlish and SSE, our study utilizes a continuum of 'Singlish-ness' instead, through the use of a Singlish score (see Section 2.4), which allows for a more detailed analysis of the notion of Singlish.

2.4 Tan et al.'s (2023) study

In Tan et al. (2023), participants engaged in a speeded-forced choice task to select which of two randomly selected clips sounded more Singlish. After completing all the trials, participants answered a follow-up questionnaire, which included the open-ended question "List three attributes to describe the speakers who sounded more Singlish". Six attributes were selected from these responses as potential relevant social meanings and included in the present study. These attributes are ROUGH, HONEST, CASUAL, EASYGOING, FAST-SPEAKING, and PROPER.

The degree to which a clip is perceived as Singlish was operationalized by calculating its Singlish score. A unique score for each of the 40 stimuli in Tan et al. (2023)'s study was generated using a Markov chain (Billingsley, 1961), which takes into consideration the different clips that a specific clip was matched up with across the various trials. This score is the probability of a clip being chosen as the more Singlish clip and accounts for the magnitude of difference between clips. A higher Singlish score represents a clip that is more likely to be chosen as more Singlish; therefore, a higher Singlish score represents a more Singlish clip.

2.5 Predictions

In this study, we investigate whether the attributes ROUGH, HONEST, CASUAL, EASYGOING, FAST-SPEAKING, and PROPER are relevant social meanings for Singlish. Based on participants' responses in Tan et al. (2023)'s study and previous literature on English in Singapore, we predict that speech that is perceived as more Singlish, i.e., clips with a higher Singlish score, will be rated as more ROUGH, more HONEST, more CASUAL, more EASYGOING, more FAST-SPEAKING, and less PROPER.

3 Methods

3.1 Participants

50 participants were hand-recruited via a Singapore-based research group chat, named "NTU/NUS paid survey", on the messaging app Telegram. All participants were either Singaporean citizens or Singapore Permanent Residents (PRs) and reported that they spoke Singlish. After excluding eight participants who failed attention checks, data from 42 participants (29 Female, 12 Male, 1 Prefer Not to Answer) was analyzed.

3.2 Materials

The stimuli comprised 40 natural-speech audio clips obtained from podcasts and were the same clips used by Tan et al. (2023). The clips were spoken by 10 Singaporean speakers (five male, five female), with four clips per speaker. The audio clips were obtained from podcasts so that the stimuli would be as natural-sounding as possible while retaining good audio quality. Each clip was one intonation phrase, between 1.4 and 2.6 seconds long, and syntactically and lexically similar to standard English. The stimuli were controlled for semantic content by excluding any clips which contained information which might bias participants' ratings. For example, an audio clip of speaker M2 was excluded because he was talking about how he used to gamble; participants may rate this clip more highly on HONEST because the speaker was being open about his past experience with a taboo subject. The clips were spliced, noise reduced, high-pass filtered, and loudness normalized in Audacity.

3.3 Procedure

The experiment was coded with jsPsych (de Leeuw, Gilbert, & Luchterhandt, 2023) and consisted of an attribute rating task and a follow-up questionnaire. In each trial, participants listened to a randomly selected clip. They were then presented with six statements in the form "This speaker is X",

where X was one of six attributes: ROUGH, HONEST, CASUAL, EASYGOING, FAST-SPEAKING, and PROPER. They were asked to rate how much they agreed or disagreed with each statement on a 7-point Likert scale, which ranged from Strongly Disagree to Strongly Agree. An audio player with the relevant clip was also provided in case participants wanted to play the clip again.

The experiment comprised 40 critical trials and four attention check trials. In the attention check trials, participants listened to clips with the statement: "For this trial, please select Strongly Agree/Somewhat Agree/Somewhat Somewhat Disagree/Strongly Disagree for all the statements". Participants had to rate the six statements based on the instructions provided in the clip. They were considered to fail an attention check if they made four or fewer correct ratings; they were considered to fail all attention checks if they failed two or more attention check trials.

Trial order and statement order were randomized for each participant. After all trials were completed, participants answered a questionnaire, which collected information about their sociolinguistic background and language attitudes toward Singlish.

4 Results

The ratings were coded as follows: Strongly Disagree = 1, Disagree = 2, Somewhat Disagree = 3, Neutral = 4, Somewhat Agree = 5, Agree = 6, and Strongly Agree = 7. Figures 1, 2, 3, 4, 5, and 6 show the distribution of ratings for each attribute. Across all six attributes, Somewhat Agree made up the largest proportion of responses, and the most extreme ratings (i.e., Strongly Disagree, Strongly Agree) constituted the smallest proportion of responses.

To test whether Singlish scores affected the ratings for each attribute, Bayesian ordinal mixed effects regression models were fit to the dataset using the `brms` package in R (Bürkner, 2017; Bürkner & Vuorre, 2019). A cumulative link model was chosen because of the assumption that our outcome variable, i.e., participant's response to how much they agree with the provided attribute-linked statement, originates from an underlying variable that is continuous, rather than categorical. To check this assumption, we fit a cumulative link model and an adjacent category model to the ROUGH dataset. The leave-one-out Information Criterion (LOOIC) difference between the two resulting models was more than twice the standard error (SE), indicating that the model with a lower LOOIC value, i.e., the cumulative link model, was a better fit (Table 1).

Model	LOOIC	SE
`m.logit`	4840.9	62.4
`m.acat`	4881.2	60.9
`m.logit - m.acat`	-40.3	4.6

Table 1: Model comparisons of cumulative link model (`m.logit`) and adjacent category model (`m.acat`).

Models were then generated for each of the six attributes. For each model, the outcome variable was the participant's response to the provided statement, i.e., the ratings. Singlish score was centered and included as a fixed effect. By-participant random slope for Singlish score and random intercepts of clip and speaker were also included. No priors were specified for the models. Rhat was approximately 1 for all parameters across the models, which demonstrates that all the models converged. The remainder of this section describes the ratings for each attribute and the results obtained for each model.

4.1 ROUGH

The distribution of ratings for ROUGH indicate that most participants selected Somewhat Agree (Figure 1). However, while the other attributes demonstrate a single peak at Somewhat Agree, the ratings for ROUGH appear to have two peaks: Somewhat Agree and Somewhat Disagree. This indicates that more participants selected Somewhat Disagree than Neutral; for all the other attributes, this was not the case. This observation suggests that ROUGH may be a more polarizing social meaning that elicits fewer Neutral responses from participants compared to other social meanings.

From the model, the 95% credible interval for Singlish score was between 17.15 and 64.87 and did not include 0 (Table 2). The point estimate for this parameter was 40.15, indicating that clips with

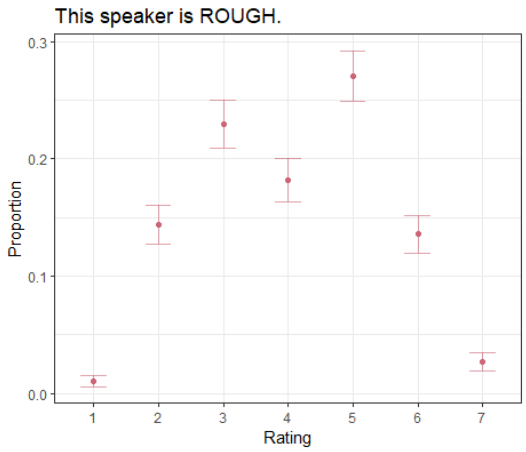

Figure 1: Distribution of ratings for ROUGH across all clips. Error bars indicate 95% confidence intervals.

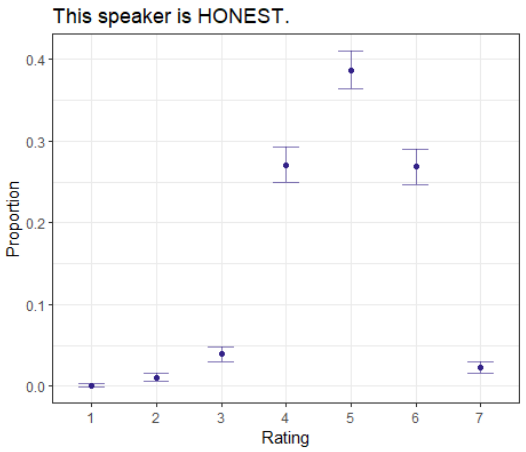

Figure 2: Distribution of ratings for HONEST across all clips. Error bars indicate 95% confidence intervals.

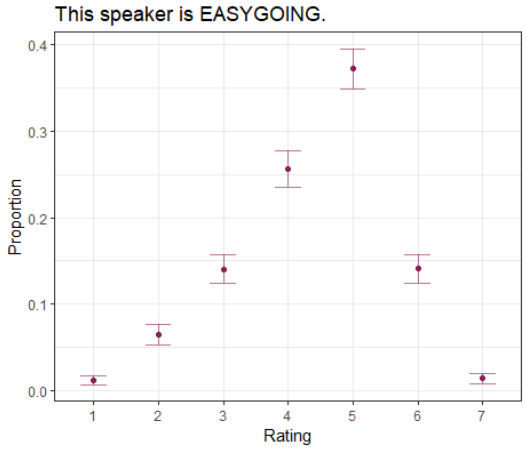

Figure 3: Distribution of ratings for EASYGOING across all clips. Error bars indicate 95% confidence intervals.

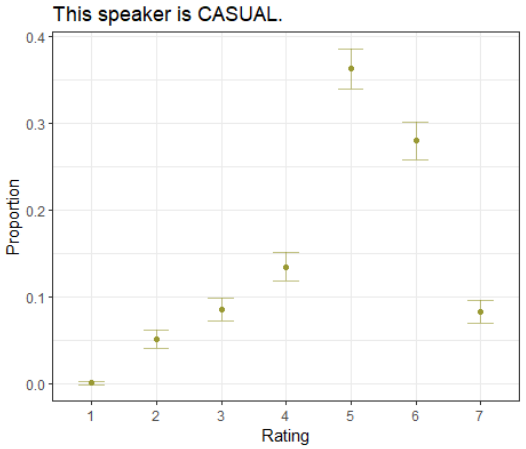

Figure 4: Distribution of ratings for CASUAL across all clips. Error bars indicate 95% confidence intervals.

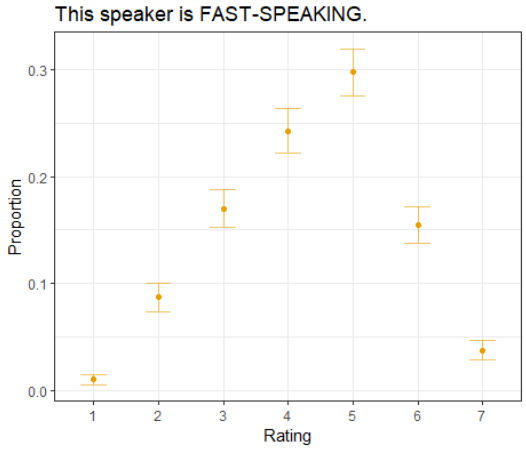

Figure 5: Distribution of ratings for FAST-SPEAKING across all clips. Error bars indicate 95% confidence intervals.

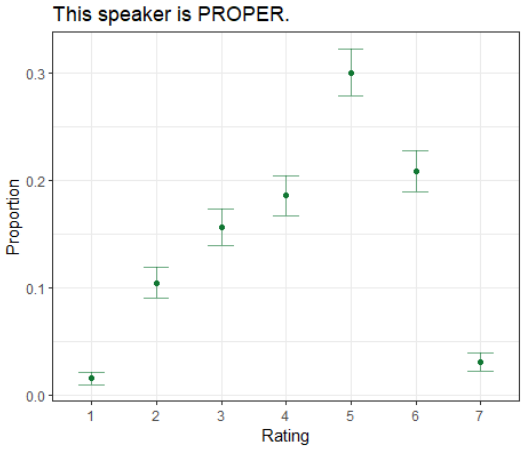

Figure 6: Distribution of ratings for PROPER across all clips. Error bars indicate 95% confidence intervals.

higher Singlish scores were 40.15 *SD* more likely to have their speakers rated as being rough. Thus, we can conclude with 95% probability that more Singlish clips are also rated as more rough.

The null model (`m.rough.null`) was then compared with the full model (`m.rough`) using the `bayes_factor()` function, and a Bayes factor of 7317 favoring the full model over the null model was obtained. Taken together, the findings for ROUGH suggest that there is strong evidence that more Singlish clips are rated as more rough (Figure 8).

Predictor	Estimate	95% credible interval
First threshold (coded as `Intercept[1]`)	-5.90	[-6.68, -5.13]
Second threshold (coded as `Intercept[2]`)	-2.45	[-3.07, -1.83]
Third threshold (coded as `Intercept[3]`)	-0.63	[-1.23, -0.03]
Fourth threshold (coded as `Intercept[4]`)	0.45	[-0.16, 1.06]
Fifth threshold (coded as `Intercept[5]`)	2.36	[1.75, 2.97]
Sixth threshold (coded as `Intercept[6]`)	4.73	[4.08, 5.43]
Singlish score (coded as `c.clip_score`)	40.15	[17.15, 64.87]

Table 2: Summary of regression coefficients for cumulative link model fitted to responses to the statement *This speaker sounds ROUGH.*

4.2 HONEST

Somewhat Agree responses made up the largest proportion of ratings for HONEST (Figure 2). The model showed that the 95% credible interval for Singlish score was between -22.17 and 4.09 and included 0 (Table 3). A Bayes factor of 59.76 in favor of the null model (`m.honest.null`) over the full model (`m.honest`) was obtained. Taken together, these results do not provide sufficient evidence to support the claim that more Singlish clips are rated as more honest (Figure 9).

Predictor	Estimate	95% credible interval
First threshold (coded as `Intercept[1]`)	-7.82	[-9.54, -6.48]
Second threshold (coded as `Intercept[2]`)	-5.41	[-6.11, -4.73]
Third threshold (coded as `Intercept[3]`)	-3.89	[-4.45, -3.34]
Fourth threshold (coded as `Intercept[4]`)	-1.13	[-1.64, -0.61]
Fifth threshold (coded as `Intercept[5]`)	1.35	[0.86, 1.88]
Sixth threshold (coded as `Intercept[6]`)	4.80	[4.22, 5.42]
Singlish score (coded as `c.clip_score`)	-9.24	[-22.17, 4.09]

Table 3: Summary of regression coefficients for cumulative link model fitted to responses to the statement *This speaker sounds HONEST.*

4.3 EASYGOING

Like with most other attributes, Somewhat Agree made up most of the responses for EASYGOING (Figure 3). From the model, we see that the 95% credible interval for the Singlish score was between -15.38 and 22.96 and included 0 (Table 4). A Bayes factor of 30.55 in favor of the null model (`m.easygoing.null`) over the full model (`m.easygoing`) was obtained. These results show that there is insufficient evidence to show that more Singlish speech is rated as more easygoing (Figure 10).

4.4 CASUAL

Ratings for CASUAL skewed positive, with many participants selecting Somewhat Agree and Agree (Figure 4). However, Somewhat Agree still made up the largest proportion of responses. From the model, the 95% credible interval of the Singlish score parameter was between 40.42 and 80.77; this interval did not include 0 (Table 5). The point estimate for Singlish score was 60.72. This shows that clips with higher Singlish scores were 60.72 *SD* more likely to have the speakers rated as casual. We can conclude with at least 95% probability that more Singlish clips are rated as more casual. A Bayes

Predictor	Estimate	95% credible interval
First threshold (coded as `Intercept[1]`)	-5.47	[-6.20, -4.74]
Second threshold (coded as `Intercept[2]`)	-3.19	[-3.75, -2.64]
Third threshold (coded as `Intercept[3]`)	-1.66	[-2.19, -1.13]
Fourth threshold (coded as `Intercept[4]`)	-0.13	[-0.66, 0.39]
Fifth threshold (coded as `Intercept[5]`)	2.25	[1.72, 2.78]
Sixth threshold (coded as `Intercept[6]`)	5.15	[4.50, 5.83]
Singlish score (coded as `c.clip_score`)	3.82	[-15.38, 22.96]

Table 4: Summary of regression coefficients for cumulative link model fitted to responses to the statement *This speaker sounds EASYGOING.*

factor of 61822158 favoring the full model (`m.casual`) over the null model (`m.casual.null`) was also obtained. Given that the 95% credible interval of Singlish score did not include 0 and the large Bayes factor favoring the full model, these results provide sufficient evidence for the claim that Singlish clips are rated as more casual (Figure 11).

Predictor	Estimate	95% credible interval
First threshold (coded as `Intercept[1]`)	-7.71	[-9.45, -6.43]
Second threshold (coded as `Intercept[2]`)	-3.68	[-4.18, -3.20]
Third threshold (coded as `Intercept[3]`)	-2.46	[-2.93, -1.99]
Fourth threshold (coded as `Intercept[4]`)	-1.39	[-1.85, -0.93]
Fifth threshold (coded as `Intercept[5]`)	0.71	[0.26, 1.17]
Sixth threshold (coded as `Intercept[6]`)	3.39	[2.91, 3.91]
Singlish score (coded as `c.clip_score`)	60.72	[40.42, 80.77]

Table 5: Summary of regression coefficients for cumulative link model fitted to responses to the statement *This speaker sounds CASUAL.*

4.5 FAST-SPEAKING

As with the other attributes, Somewhat Agree comprised the largest proportion of responses for FAST-SPEAKING (Figure 5). Tht model showed that the 95% credible interval for Singlish score was between -0.71 and 69.92 and included 0 (Table 6). A Bayes factor of 307.3 favoring the full model (`m.fastspeaking`) over the null model (`m.fastspeaking.null`) was obtained, suggesting that the full model may be a better fit for the data. However, given that the 95% credible interval for the Singlish score included 0, the model with only Singlish score as a predictor does not show that more Singlish clips are rated as more fast-speaking (Figure 12).

Predictor	Estimate	95% credible interval
First threshold (coded as `Intercept[1]`)	-5.73	[-6.66, -4.83]
Second threshold (coded as `Intercept[2]`)	-3.09	[-3.89, -2.28]
Third threshold (coded as `Intercept[3]`)	-1.47	[-2.26, -0.70]
Fourth threshold (coded as `Intercept[4]`)	0.06	[-0.73, 0.83]
Fifth threshold (coded as `Intercept[5]`)	2.15	[1.37, 2.94]
Sixth threshold (coded as `Intercept[6]`)	4.60	[3.77, 5.45]
Singlish score (coded as `c.clip_score`)	34.30	[-0.71, 69.92]

Table 6: Summary of regression coefficients for cumulative link model fitted to responses to the statement *This speaker sounds FAST-SPEAKING.*

Next, we ran another model to control for the effects of articulation rate, i.e., to test whether more Singlish clips were rated as more fast-speaking, above and beyond the effects of objective articulation rate. Articulation rate was operationalized as the number of syllables per second for each clip. This model incorporated main effects of Singlish score, articulation rate, and their interaction; we also

included random intercepts for clip and speaker, as well as random by-participant slope for Singlish score, articulation rate, and their interaction.

Predictor	Estimate	95% credible interval
First threshold (coded as `Intercept[1]`)	-6.03	[-6.85, -5.18]
Second threshold (coded as `Intercept[2]`)	-3.26	[-3.93, -2.59]
Third threshold (coded as `Intercept[3]`)	-1.55	[-2.19, -0.89]
Fourth threshold (coded as `Intercept[4]`)	0.04	[-0.59, 0.69]
Fifth threshold (coded as `Intercept[5]`)	2.19	[1.54, 2.87]
Sixth threshold (coded as `Intercept[6]`)	4.73	[4.01, 5.45]
Singlish score (coded as `c.clip_score`)	28.17	[2.54, 54.42]
Articulation rate (coded as `c.syllablespersec`)	0.90	[0.57, 1.22]
Interaction between Singlish score and articulation rate (coded as `c.clip_score:c.syllablespersec`)	-8.31	[-23.79, 7.13]

Table 7: Summary of regression coefficients for cumulative link model incorporating articulation rate fitted to responses to the statement *This speaker sounds FAST-SPEAKING.*

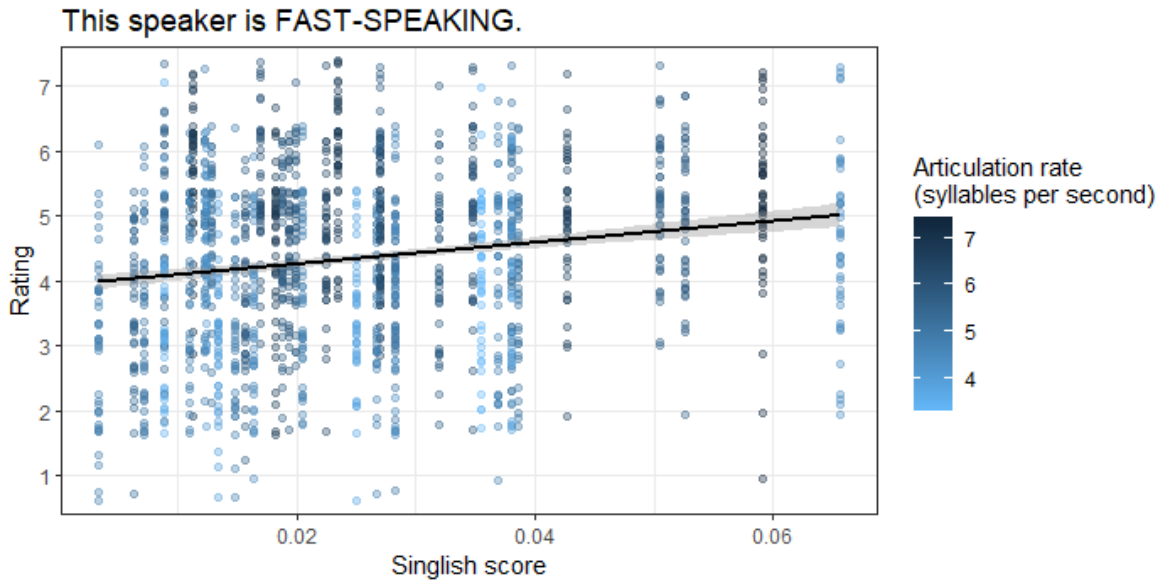

Figure 7: Ratings versus Singlish score for FAST-SPEAKING. Darker data points indicate ratings for clips with a faster articulation rate. Ribbon indicates 95% confidence interval.

From the model incorporating articulation rate as a predictor (Table 7), the 95% credible interval for Singlish score was between 2.54 and 54.42 and did not include 0. The point estimate for Singlish score was 28.17. The point estimate for articulation rate was 0.90 and its 95% credible interval was between 0.57 and 1.22, which did not include 0. Therefore, we can conclude with 95% probability that clips with higher Singlish scores were 28.17 *SD* more likely to be rated as more fast-speaking, and that clips with a faster articulation rate were 0.90 *SD* more likely to be rated as more fast-speaking. However, the 95% credible interval of the interaction between Singlish score and articulation rate was between -23.79 and 7.13 and included 0. Thus, more Singlish clips were rated as more fast-speaking, and clips with a higher articulation rate were rated as more fast-speaking, but there was not enough evidence to demonstrate a clear relationship between Singlish scores and articulation rate (Figure 7).

A Bayes factor of 4718386034 favoring the full model with articulation rate as a predictor (`m.fastspeaking.sr`) over the null model (`m.fastspeaking.sr.null`) was obtained. Moreover, a Bayes factor of 56292694363007600 favoring the model with articulation rate (`m.fastspeaking.sr`) over the model without articulation rate (`m.fastspeaking`) was obtained. Taken together, these results suggest that when articulation rate was accounted for, more Singlish clips, as well as clips with a higher articulation rate, were rated as more fast-speaking.

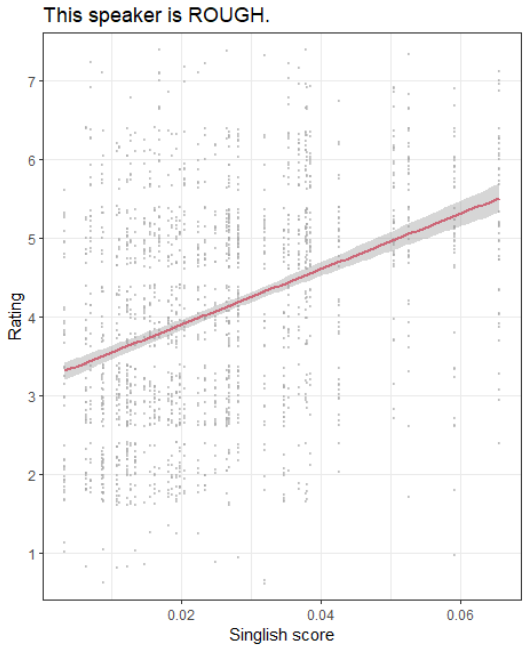

Figure 8: Ratings versus Singlish score for ROUGH. Ribbon indicates 95% confidence interval.

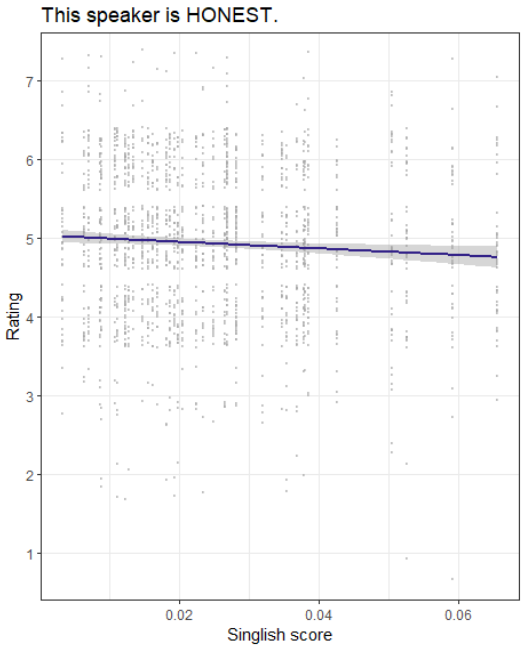

Figure 9: Ratings versus Singlish score for HONEST. Ribbon indicates 95% confidence interval.

4.6 PROPER

Somewhat Agree made up the largest proportion of responses for PROPER (Figure 6). The model showed that the 95% credible interval for Singlish score was between -125.02 and -70.15 and did not include 0 (Table 8). The point estimate for Singlish score was -97.43, which indicates that clips with higher Singlish scores were 97.43 *SD* less likely to have their speakers rated as being proper. We can conclude with at least 95% probability that more Singlish clips are rated as less proper. A Bayes factor of 25309286913 favoring the full model (`m.proper`) over the null model (`m.proper.null`) was obtained. Therefore, the findings show strong evidence that more Singlish clips are rated as less proper (Figure 13).

Predictor	Estimate	95% credible interval
First threshold (coded as `Intercept[1]`)	-6.83	[-7.63, -6.09]
Second threshold (coded as `Intercept[2]`)	-3.23	[-3.71, -2.73]
Third threshold (coded as `Intercept[3]`)	-1.49	[-1.96, -1.01]
Fourth threshold (coded as `Intercept[4]`)	-0.13	[-0.59, 0.34]
Fifth threshold (coded as `Intercept[5]`)	1.98	[1.51, 2.47]
Sixth threshold (coded as `Intercept[6]`)	5.12	[4.53, 5.72]
Singlish score (coded as `c.clip_score`)	-97.43	[-125.02, -70.15]

Table 8: Summary of regression coefficients for cumulative link model fitted to responses to the statement *This speaker sounds PROPER.*

5 Discussion

This study investigated what social meanings are associated with speech that is perceived to be more Singlish. The results showed that more Singlish speech was rated as more rough, more casual, and less proper. More Singlish speech was rated as more fast-speaking, but only when objective articulation rate was controlled for. There was insufficient evidence to support the predictions that more Singlish speech was rated as more honest or more easygoing.

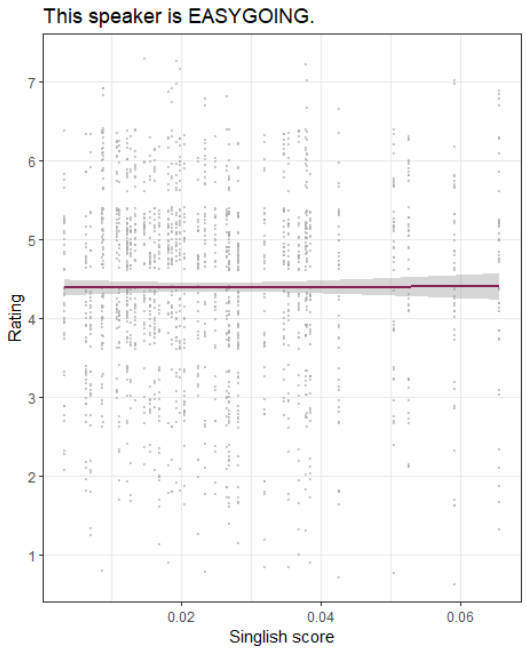

Figure 10: Ratings versus Singlish score for EASYGOING. Ribbon indicates 95% confidence interval.

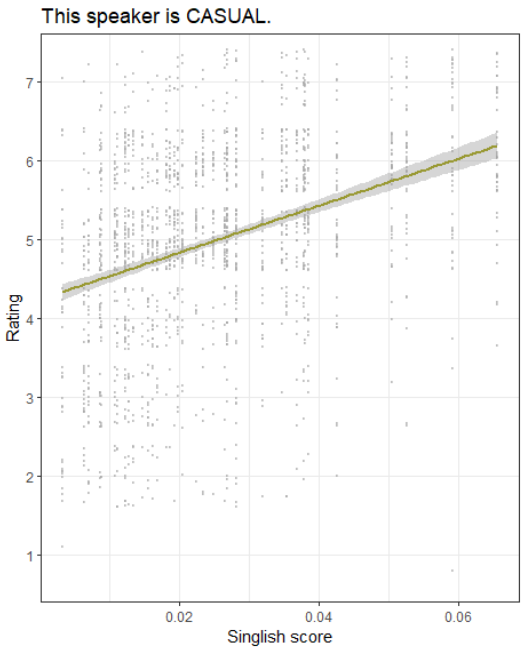

Figure 11: Ratings versus Singlish score for CASUAL. Ribbon indicates 95% confidence interval.

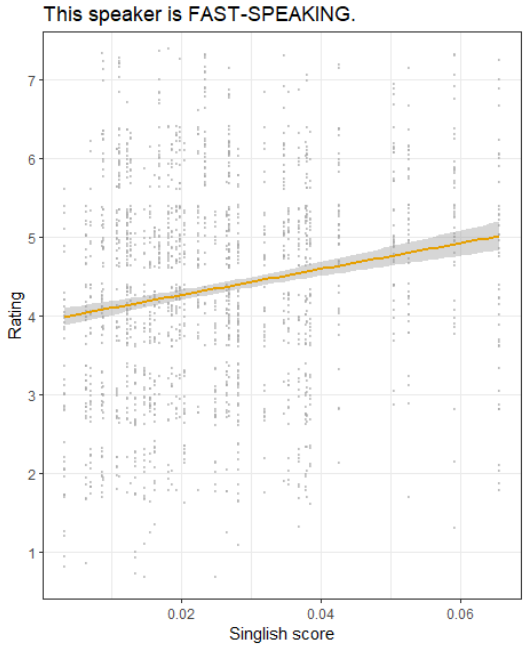

Figure 12: Ratings versus Singlish score for FAST-SPEAKING. Ribbon indicates 95% confidence interval.

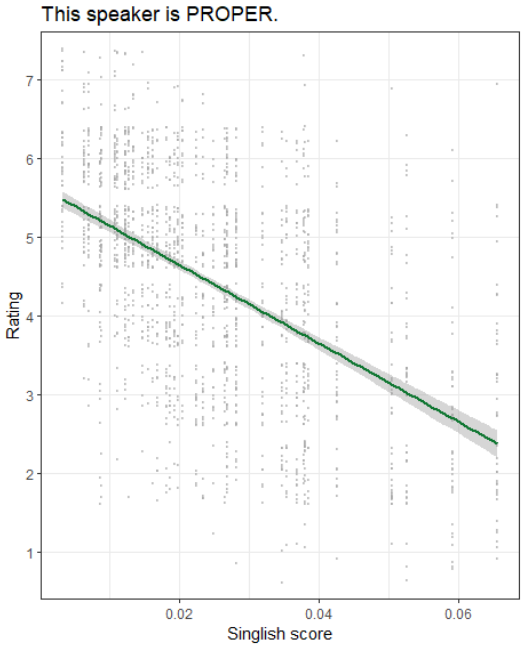

Figure 13: Ratings versus Singlish score for PROPER. Ribbon indicates 95% confidence interval.

Both CASUAL and PROPER are closely tied to notions of standardness and correctness; speech that is more casual is less standard and less correct, whereas speech that is more proper is more standard and more correct. The observation that these two attributes correlate with a clip's Singlish score aligns with how Singlish is positioned within Singapore's broader sociolinguistic environment. Government discourse locates Singlish within informal domains of use, such as at home or with friends, whereas SSE is assigned to more formal domains, like at school or the workplace (Chng, 2003). This framing of language use is exemplified through the government-initiated Speak Good English movement (*Speak Good English Movement*, n.d.). Launched in 2000, this movement aims to promote the use of standard English in Singapore through yearly campaigns and encourages Singaporeans to correct cases of "bad English" (L. Wee, 2014, 94). An individual's ability to speak SSE, rather than Singlish, is viewed as critical to the country's economic development and global competitiveness (C. J. Wee & Wan-Ling, 2007). The prevailing discourse that juxtaposes Singlish against SSE, standardness, and correctness is thus intertwined with the social meanings of CASUAL and PROPER.

The attribute ROUGH was also positively correlated with Singlish scores. This may arise from a general association of colloquial, working class language varieties with toughness and roughness (Cheshire, 2008). In his seminal study, Trudgill (1972) found that language use among men in Norwich was linked with their orientation toward qualities of "roughness and toughness supposedly characteristic of [working class] life" (Trudgill, 1972, 182). We might then expect Singlish, the variety that is more emblematic of working class Singaporeans and local identity, to be linked with roughness. However, whether this indexical association between roughness and Singlish emerged because Singlish is a colloquial variety, or via some other indexical pathway, warrants further investigation. Future work should also identify the specific linguistic features that give rise to the social meaning of ROUGH.

More Singlish clips were rated as more FAST-SPEAKING, but only when objective articulation rate was controlled for and included as a predictor in the model. Although not much research has been conducted on articulation rate in Singapore English, metalinguistic commentary often portrays Singaporeans as very fast speakers, such that it is hard for non-Singaporeans to understand what is being said (SGAG, 2022; Starscreamprime21, 2022); this feature has also been identified as an obstacle to communication (Zhang, 2014). The relationship between Singlish and articulation rate can be expanded on in future studies by using synthesized stimuli instead of natural speech, which can be more precisely controlled for speech rate.

HONEST and EASYGOING were not found to correlate with Singlish scores. In their matched guise experiments, Cavallaro and Ng (2009) and Cavallaro et al. (2014) also found that Singlish was not rated more highly on Honest compared to SSE. This observation suggests that honesty might not be a relevant social meaning for Singlish. Likewise, despite Tan et al. (2023)'s participants describing more Singlish-sounding speakers as such, there was insufficient evidence that EASYGOING is relevant for Singaporeans' conceptions of Singlish.

In conclusion, this study found that the attributes ROUGH, CASUAL, PROPER, and FAST-SPEAKING were relevant social correlates of Singlish. The findings from this study help disambiguate the relevant social meanings of Singlish and provide a starting point for further variationist work on English in Singapore. Future studies that analyze language variation in Singapore through the lens of social meaning can incorporate or consider analyses of roughness, casualness, properness, and articulation rate.

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