

**PAPER**

# Variation and change in English /r/ among Tamil Indian Singaporeans

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Email: rstarr@nus.edu.sg**Abstract**

Singapore's multiethnic population has historically been found to differ in their use of a range of English features. As English continues to eclipse the country's other languages, it gains potential as a site for the performance of ethnic identity. At the same time, English-dominant Singaporeans may be less likely to use features perceived as resulting from non-native transfer. Integration policies and transnational migration have also arguably reduced the salience of ethnicity in the local sociolinguistic landscape. This study investigates a feature linked to Indian identity, tapped and trilled pre-vocalic /r/, in the speech of 30 Tamil Singaporeans. A significant change in apparent time is observed, with younger speakers using almost entirely approximant /r/. Variation in /r/ also correlates with home language, cultural context, and phonological environment. We argue that, while non-approximant /r/ is becoming rarer among Tamil Singaporeans, it continues to serve as a means of indexing Indianness.

## 1 | INTRODUCTION

Schneider's (2007) dynamic model of postcolonial Englishes posits several phases of evolution in new English varieties that differ in multiple respects, including in degree of internal heterogeneity. While postcolonial Englishes are thought to begin their lives as highly variable, once a variety transitions into the phase of endonormative stabilization, local norms become conventionalized and heterogeneity is reduced across social groups. The variety then enters a final phase characterized by increased internal differentiation (by gender, ethnicity, and other factors), as the local English becomes a more salient way to mark intra-community social identities.

The Southeast Asian nation of Singapore has long been described as progressing through the endonormative stabilization phase of this model, resulting in increased homogeneity in the English spoken across ethnicities (Deterding, 2007; Platt & Weber, 1980; Schneider, 2007, p. 161). At the same time, scholars have explored the question of ethnic differences within Singapore English (SgE), adopting both production and perception perspectives (Deterding & Poedjosoedarmo, 2000; Lim, 2000, 2004; Lim & Tan, 2001; Tan, 2012a). While the majority of this work focuses on distinctions among the three major ethnic groups of Singapore (Chinese, Malay, and Indian Singaporeans), other research examines the language patterns of minority communities, such as Peranakans and Eurasians (Lim,

2010; Wee, 2010); another variant of this line of research has framed these differences as primarily a matter of native or heritage language, dividing speakers more finely by ethnolinguistic background (for example, Hokkien) (Ng, 2005).

Although older studies of SgE and ethnicity have identified widespread segmental and suprasegmental phonological differences in the English spoken by Singaporeans of different ethnolinguistic backgrounds (Tan, 1982; Lim, 2000), more recent work has not found comparably dramatic distinctions among younger Singaporeans (Deterding, 2007); this is particularly the case for research involving data elicited from university students, who are more likely to primarily or solely speak English at home (Singapore Department of Statistics, 2015). Notably, this difference is reflected not only in production, but also in perception. Tan (2012a) finds that younger Singaporeans are less proficient than older listeners at identifying the ethnicity of Singaporean speakers, even when exposed to the same stimuli. Specifically, Tan finds that younger listeners are likely to guess that all Singaporean speakers are Chinese. She suggests that the shift taking place in Singapore is not simply a matter of reduction in ethnically-differentiating linguistic features due to a decrease in the use of non-English mother tongues as first languages, but also results from an ongoing decrease in the salience of ethnic background as an identity marker in Singaporean society, and a rise in the assumption that 'Chinese' is the default sort of Singaporean (Tan, 2012a, p. 583). Building on this previous work, the present study examines change in SgE in apparent time from a quantitative variationist perspective (see Labov, 1972, p. 133–136), focusing on the realization of /r/ as a tap or trill, a phonological feature that, we will argue, is indexically linked to Indian identity. In addition to assessing whether this feature is shifting in its use across different age groups, we investigate how Indian Singaporeans—and, in particular, members of the Tamil community, who constitute the ethnolinguistic majority of this group—realize /r/ across various speech styles and conversational topics, to gain a clearer understanding of how /r/ functions as a resource in the performance of ethnic identity. Rather than characterizing Indian Singaporean use of English as a uniform ethnolect and framing this inquiry as an investigation of whether young Indian Singaporeans are still using 'Indian SgE', we instead adopt an 'ethnolinguistic repertoire' approach to language and ethnicity (Benor, 2010), meaning that the realization of /r/ is conceived of as part of a pool of linguistic features from which speakers may draw in the construction and performance of ethnic identity and other linked social meanings in various contexts. The following section introduces societal changes underway in Singapore that may shape ethnic differentiation and the performance of Indian identity in SgE. Section 3 outlines the distribution of rhotic sounds in SgE and other relevant heritage languages of Singapore, and briefly addresses prior research on ethnic differences in the realization of /r/ in SgE. In Sections 4 and 5, the methodology and findings of the current study are presented, followed by a discussion in Section 6 and conclusion in Section 7.

## 2 | INDIAN SINGAPOREANS IN A SHIFTING SOCIOLINGUISTIC LANDSCAPE

Singapore's multiethnic population is generally divided into four major categories for administrative purposes: Chinese (approximately 75% of the citizen and permanent resident population), Malays (13%), Indians (9%), and Others (3%) (Singapore Department of Statistics, 2015). The Indian community was established in Singapore in the first years of the colonial period in the early 19th century; immigrants from a variety of regions in India were brought in by British administrators to serve in diverse roles, ranging from the civil service to construction labor (Rai, 2007). Due to the Tamil population's demographic majority and established literacy and education movements, Tamil was selected as the official language representing the Indian community at Singapore's independence in 1965; nevertheless, many other languages, including English, have historically been spoken by Singaporeans of Indian heritage (Mani & Gopinathan, 1983). When considering the phenomenon of ethnic differentiation in SgE, and how this may relate to the performance of ethnicity among Indian Singaporeans in particular, we must take into account the respective impacts of two major classes of change in Singapore's sociolinguistic landscape: changes arising from internal factors, including the country's

ethnic integration policies and ongoing language shifts, and changes arising from external factors, referring here to globalization and transnational migration.

Regarding internal societal changes, one key factor shaping the experience of ethnicity and language in Singapore is the nation's housing integration policy. Over 80% of Singaporean citizens and permanent residents live in public housing (Housing and Development Board, 2018). Since 1989, this housing has been administered using ethnic quotas; at the time of implementation, a single housing block was permitted to consist of a maximum of 87% Chinese, 25% Malay, and 13% 'Indian and Other' households (*The Straits Times*, 1989, p. 1). The housing integration measure is one of an array of policies and campaigns aimed at increasing ethnic cohesion in Singapore, which has long stressed the importance of multiculturalism and multiethnic integration in national rhetoric (Ng, 2017). The impact of these policies can be seen in attitudinal and behavioral changes among Singaporeans; the rate of interethnic marriages, for example, rose from 14.9% in 2005 to 21.5% in 2016 (Lee, 2016). At the same time, non-Chinese communities in Singapore continue to report societal inequity, with 63% of Malay and 62% of Indian Singaporeans agreeing that being of Chinese ethnicity in Singapore is an advantage (Yong, 2016). Activists have become increasingly vocal on the topic of non-Chinese marginalization in recent years; Sangeetha Thanapal's notion of 'Chinese privilege' in Singapore (an extension of the term 'white privilege', coined by anti-racist activists in the United States), has prompted extensive discussion and debate in both mainstream and social media (Koh & Thanapal, 2015; Yuen & Ng, 2018). Particularly relevant to the present study in this ongoing national discussion are complaints from Indian Singaporean actors that they have been asked to put on an exaggerated 'Indian' accent when auditioning for roles in Singaporean productions, as this manner of speaking is considered more comical (Koh, 2017; Sa'at, 2017). As a result of the juxtaposition of these attitudes and integration policies, Singaporeans of Indian heritage must navigate a sociolinguistic setting in which their exposure to non-Indian speakers of SgE is generally high, and certain phonological features associated with Indianness are stigmatized by the wider speech community. In other words, we observe both the means and the motive for a potential shift away from features enregistered as 'Indian.'

The multiple language shifts underway in Singapore also relate to ethnic differentiation in SgE in several respects. Most notably, as of 2015, English has become the primary home language of a majority of Singaporeans (Singapore Department of Statistics, 2015). In the Indian community specifically, the number of English-home individuals rose from 32.3% in 1990 to 44.3% in 2015; the number of Tamil speakers experienced a corresponding fall from 43.2% to 37.7% in the same time period (Singapore Department of Statistics, 2000, 2015). This shift can also be seen in apparent time, with 55.1% of Indians under 25 speaking primarily English at home, while only 39.6% of Indians 25 and older do so (Singapore Department of Statistics, 2015). Given the shift towards English as the primary L1 in the Indian Singaporean community, to the extent that ethnically-distinctive phonological features in SgE arise from transfer from a non-English L1 among individual speakers, we might predict that younger Indian Singaporeans are less likely to use such features. On the other hand, while some scholars have emphasized the role of transfer at the individual level in the distinctive features of indigenous varieties (Sridhar & Sridhar, 1986), other work on ethnicity-linked variation and indigenized varieties has convincingly argued that speakers do not necessarily use these 'non-native' features as a result of transfer from another language that they themselves speak, but rather acquire them because they are part of a conventionalized community norm (Fought, 2003; Hundt & Mukherjee, 2011; Penfield & Ornstein-Galicia, 1985; Sharma & Sankaran, 2011). For example, Penfield and Ornstein-Galicia (1985, p. 3), Fought (2003, pp. 1–2) and others have observed that Chicanos (Americans of Mexican heritage) who are English monolinguals nonetheless use Spanish-influenced features typical of Chicano English. It is therefore not the case that the rise in the use of English as an L1 in Singapore must necessarily trigger a decrease in ethnic differentiation in SgE. On the contrary, as English encroaches on domains that were formerly associated with non-English languages or code-switching, ethnic differentiation in SgE may become a more salient means of performing ethnic identity.

The link between ethnicity and language in Singapore is also influenced by changes in Singaporeans' degree of exposure to non-local speakers via media consumption, international travel, and transnational migration (see Starr, forthcoming a). Since the 1990s, the country has experienced a dramatic increase in transnational migration; recent estimates suggest that a majority of people living in Singapore today were not born there (*The Economist*, 2015).

Crucially, this influx of international migrants has included those from China, Malaysia, the Malay archipelago, and South Asia. Therefore, ethnicity is not a characteristic that serves to distinguish Singaporeans from more recent arrivals. For Indian Singaporeans, phonological features linked to transfer from Indian languages, such as the /r/ feature under examination in the present study, are generally shared by new immigrants who speak South Asian Englishes. Avoidance of these features, then, may be interpreted as a 'negative identity practice' (Bucholtz, 1999) undertaken as a means of distancing oneself from this new migration wave.

Evidence suggests that Singapore's rising multinational character and outward-looking orientation has had significant impacts on the sociolinguistic knowledge held by the typical Singaporean. Starr et al. (2017), contrasting the findings of their study of children's ability to identify varieties of English with the results of Chen (1990), conclude that Singaporeans have become far more aware of non-local varieties of English than they were several decades ago. Starr (forthcoming a) also finds significant effects of foreign media consumption and overseas travel on Singaporeans' awareness of the phonological features of non-local English varieties. In light of these changes, one possible account for Tan's (2012a) observed decrease in sensitivity to intra-Singaporean ethnic differences in language is that the Singaporean sociolinguistic landscape has been ideologically reorganized into 'Singaporean' versus 'non-Singaporean', with greater emphasis placed on local identity than ethnicity. Thus, while SgE is arguably becoming a more salient site for the potential marking of ethnicity due to the increasing dominance of English over other languages, Singaporeans' desire to highlight ethnic identity, relative to local identity, may be waning.

### 3 | /r/ IN SINGAPORE ENGLISH

The patterning of rhotic sounds across the world's languages has attracted considerable interest among phoneticians and sociolinguists, due to the phonetic variability and instability of phones in this class (see Van de Velde & van Hout, 2001). While the behavior of postvocalic /r/ (as in *park*) is one of the most common variables studied in English sociolinguistics (Feagin, 1990; Labov, 1966; Stuart-Smith, 2007), variation in English prevocalic /r/ has received more limited attention (Foulkes & Docherty, 2001; Schützler, 2010). SgE is no exception to this pattern; rising postvocalic rhoticity in SgE has been the subject of several detailed quantitative studies (Starr, forthcoming b; Tan, 2012b; Tan & Gupta, 1992), but prevocalic /r/ has received only brief notes in previous work (Lim, 2004, 2010; Sng, 1986).

SgE is generally described as having developed via contact between an English superstrate and multiple substrates, including Malay-based contact languages (Baba Malay and Bazaar Malay) and southern Chinese varieties (most notably Hokkien, Cantonese, and Teochew) (Gupta, 2006, pp. 386–387). The English present in the formative period of SgE consisted primarily of dialects of British English and pre-existing colonial Englishes, particularly South Asian Englishes (Gupta, 2006). South Asian Englishes, which were spoken by a majority of the earliest English teachers in Singapore (Gupta, 2006, p. 386), are generally described as using a trilled or tapped realization of /r/ (Gargesh, 2008, p. 238; Wiltshire & Harnsberger, 2006, p. 93). Because British Received Pronunciation (RP) was originally (and has consistently remained) the target English variety promoted in Singapore (Gupta, 1988, p. 31; Rubdy, 2010, p. 218), the realization of prevocalic /r/ in 19th century RP also merits some discussion. Although the default realization of prevocalic /r/ in the RP of this time period was the approximant [ɹ], as it is today, evidence suggests that an alveolar tapped realization, [ɾ], was common in intervocalic and (certain) post-consonantal positions (*very, three*) (Cruttenden, 2014, p. 224; Wells, 1997). This tapped variant then fell out of mainstream use in the early 20th century, surviving in what is sometimes termed 'conservative RP' (Cruttenden, 2014, p. 224; Robinson, 2012; Wells, 1997). Tapped /r/ in intervocalic position continues to be associated with elite, older speakers of RP, as well as with stylized, 'theatrical' pronunciation (in which trilled /r/ is also occasionally used; Cruttenden, 2014, p. 224), although use of the tap by Standard Southern British English speakers today is minimal (Cruttenden, 2014, p. 83). Thus, given the realizations of /r/ in both South Asian Englishes and Received Pronunciation, it is highly likely that the variety to which early learners of English in Singapore were exposed in schools included tapped /r/, at least in intervocalic position.

In previous descriptions of SgE, the realization of /r/ is characterized as generally conforming to the phonological pattern typical of non-rhotic dialects of English, with /r/ deleted in postvocalic environments and realized as

**TABLE 1** Summary of rhotic phonemes and their phonetic realizations (given in parentheses) in major non-English languages of Singapore

Language Group	Language	Rhotic phonemes
Chinese	Cantonese	Nil (Bauer & Benedict, 1997, p. 17)
	Hokkien	Nil (Tay, 1968, p. 25)
	Teochew	Nil (Xu, 2013, pp. 224–225)
	Mandarin	/z/ ([z] ~ [ɹ] ~ [l] ~ [dz] ~ [z] ~ [j] ~ others) (Lock, 1989, p. 267–8) (prevocalic only) /ɻ/ ([ɻ] ~ ∅) (Lock, 1989, p. 198) (postvocalic only)
	Malay	/r/ ([r] ~ [ɹ]) (Clynes & Deterding, 2011)
	Baba Malay	/r/ ([r] ~ [ɹ]) (Lee, 2014, p. 35, p.c.)
	Bazaar Malay	/r/ ([r]) (Aye, 2013)
Indian	Tamil	/r/ ([r] ~ [ɹ])/r/ ([ɹ]) (Keane, 2004, p. 113)
Other	Kristang (Malaccan Creole Portuguese)	/r/ ([r] ~ [ɹ]) (Baxter, 1988, p. 23)

approximant [ɹ] elsewhere (Leimgruber, 2011, p. 66; Lim, 2004, p. 31). Research on the increase in postvocalic rhoticity in SgE also indicates that approximant [ɹ] is the variant used in this environment, as it is in US English and other rhotic dialects (Starr, forthcoming b; Tan, 2012b; Tan & Gupta, 1992). The fact that approximant [ɹ] is the default realization of /r/ in SgE is somewhat noteworthy, given that this phone does not occur in any of the substrate languages that contributed to the development of SgE, or in the non-English languages present in Singapore today (see Table 1). The closest phones to [ɹ] are perhaps the retroflex approximant [ɻ] and rhotic coda [ɻ] in Standard Mandarin, as indicated in Table 1. In the Singapore dialect of Mandarin, however, these rhotic phonemes are generally deleted or realized as non-rhotic (Lock, 1989); more importantly, Mandarin was rarely spoken as a native language in colonial Singapore and is thought to have had little impact on the phonology of SgE (Gupta, 2006, pp. 386–387; Lim, 2004, p. 145). In fact, one possible explanation for the adoption of RP-like approximant [ɹ] in SgE is that the languages spoken by the Chinese majority (Hokkien, Cantonese, and Teochew) included no rhotic sounds to map to English /r/. The characterization of SgE as using approximant [ɹ], however, becomes problematic when we examine accounts of SgE as spoken by non-Chinese Singaporeans. In a 1986 undergraduate thesis, Sng reports that, in the English of Tamil Singaporeans, /r/ is 'almost always' produced as a tap or trill (Sng, 1986, pp. 38–39). As indicated in Table 1, these tapped and trilled realizations of /r/ appear to be a straightforward case of transfer from Tamil; indeed, tapped and trilled /r/ is also observed in the English spoken by Tamil L1 speakers in India (Wiltshire & Harnsberger, 2006). Similarly, Lim (2004, p. 31) observes the variable tapped realization of /r/ among Malay Singaporeans in environments that extend beyond those observed for tap in RP. She also notes a variable tap occurring intervocalically among Peranakan Chinese speakers, whose heritage language is Baba Malay (Lim, 2010, p. 339). More broadly, we have observed instances of variable intervocalic tap use among older, educated Singaporeans of all ethnicities; we propose that this is not necessarily due to direct transfer from a heritage language in all cases, but rather may result from the indexical associations of the tap, in an earlier era, with English-educated elites, the prestigious Peranakan Chinese community, and RP.

While the use of tapped and trilled /r/ is associated with several ethnic backgrounds in speech production data, community ideologies regarding the relationship between this feature and ethnicity are a different matter. Perhaps as a result of the salience of South Asian Englishes in Singaporean society due to transnational migration, or because of the higher frequency of non-approximant variants produced by speakers of Indian heritage, the use of tapped/trilled /r/ by Singaporeans is often linked specifically to Indianness in local discourse. This phenomenon even extends to cases in which the speaker is clearly not of Indian heritage. For example, in an online discussion of a YouTube clip featuring a 1967 interview with Singapore's founding father Lee Kuan Yew, a user notes, 'I doubt any Singaporean alive today, younger than 70, and not as well-educated as he was, has his accent any more. He had a very British accent with a strong Indian influence, for some reason; his rhotic sounds were trills rather than approximants.' Another commenter

**TABLE 2** Participant distribution by generation and dominant home language(s)

Generation	Age Range	Dominant home language(s)			Total
		Tamil	Tamil & English	English	
Younger	21–31	2	0	13	15
Older	45–55	8	4	3	15

agrees, 'I hear more Indian, less RP' (Reddit, 2017). While these commenters are likely to be aware that Lee, one of the most well-known public figures in Singapore's history, was not of Indian ethnicity, but rather was of Chinese and Peranakan descent and was a native speaker of Malay and English, they nonetheless believe that his use of tapped /r/ (for that, and not the trill, is the realization in fact used in the interview clip in question) sounds 'Indian.' This discussion also reflects the belief that tapped/trilled /r/ is a marked variant no longer used by most speakers of SgE.

In sum, although Singaporeans from a range of ethnic backgrounds have been found to make variable use of tapped/trilled /r/, initial evidence suggests that this variant has moved out of mainstream SgE, and that it is ideologically linked with Indian identity. Taking into account the social factors reviewed in the previous section, we therefore anticipate that younger Tamil Singaporean speakers, who have grown up with racially-integrated housing and are less likely to speak Tamil in the home, use less tapped/trilled /r/ than older speakers do. We also predict that, while home language is likely to correlate with rate of tapped/trilled /r/, this change in apparent time cannot be wholly accounted for via home language, due to the utility of sociolinguistic variation in SgE as a resource for the performance of ethnic identity. In terms of intra-speaker stylistic variation, as tapped/trilled /r/ is not 'enregistered' as a feature of mainstream SgE (Agha, 2003), we anticipate that speakers will avoid this variant in more careful speech contexts. Finally, given the link between tapped/trilled /r/ and Indianness, we expect speakers to use tapped/trilled /r/ more extensively in contexts that highlight Indian culture. These predictions are tested in the study of Tamil Singaporean speakers described below.

## 4 | METHODOLOGY

### 4.1 | Participants

30 Singaporeans of Tamil Indian ethnicity were recruited via personal contacts and participated in data collection between September, 2017 and January, 2018. Following Tan (2012b) and Starr (forthcoming b), to limit the possible dimensions of socially-constrained variation, all participants in the study were female. Speakers were recruited in two age groups: 15 speakers belonged to the younger generation (referred to henceforth as Younger), ranging from 21 to 31 years old, and 15 were members of the older generation (henceforth Older), between 45 and 55 years old. These age ranges were selected to capture the impacts of the different sociolinguistic experiences of Tamil Singaporeans growing up in the 1960s and 1970s versus the 1990s and 2000s, following the implementation of housing integration policies and amid rising transnational migration, among other societal changes (see Section 2). All participants reported fluency in both English and Tamil. In addition to their language proficiencies, participants provided information on their dominant home language(s), as well as the language(s) they generally used outside the home. The distribution of reported dominant home languages among the two generation groups is given in Table 2. In interpreting these data, it is necessary to bear in mind that they are based on self-report and rely on subjective measures of language dominance. Nonetheless, the levels of self-reported home language use observed here are consistent with larger patterns found in national census data (Singapore Department of Statistics, 2015); far fewer Younger participants report using Tamil as their primary home language. This pattern makes teasing apart the impact of age and home language somewhat challenging. As there are a few participants who are exceptions to the general trend, however, we can nonetheless attempt to examine whether age has an effect on /r/ variation independent of home language use. Regarding language use outside the home, participants generally reported using only English, with a handful claiming some use of Tamil.

Specifically, one Younger and three Older participants, all of whom also reported using mainly Tamil at home, said that they used both Tamil and English outside the home. The factor of language use outside the home will therefore not be considered in subsequent analysis.

## 4.2 | Data collection

Participants were recorded individually in sessions conducted by the second author, who is a member of the Tamil Singaporean community. Data collection was divided into two blocks: the non-Indian culture condition, followed by the Indian culture condition. Each condition consisted of a picture-naming task, a wordlist-reading task, and a passage-reading task. In the Indian culture condition, each task was slightly modified to prime Indian identity; these changes will be detailed in the following paragraphs. In the picture-naming tasks, participants were asked to identify two practice images followed by 15 test images in sequence via PowerPoint slides presented on a laptop. In the Indian culture condition, these images were of Indian culture-related items, such as earrings of Indian design. As performance on the picture-naming task was inconsistent, with many participants failing to produce the target words, data from only the wordlist-reading and passage-reading tasks are included in this analysis. In the wordlist-reading tasks, participants read two practice words followed by 15 test words, also presented individually on PowerPoint slides. To elicit data on differences in /r/ realization by phonological environment, the 10 target items included words with word-initial /r/ (as in *rock*), word-medial /r/ (as in *diary*), and /r/ in onset clusters (as in *crayon*) (see Appendix for complete item list); the remaining five items were fillers that did not include /r/, to distract participants from the feature of interest in the study. In the Indian cultural condition, both practice items, one of the filler items, and three of the 15 test items were related to Indian culture (*curry*, *sari*, *rangoli*). In analyzing these data, we will explore whether priming Indian culture is enough to significantly alter the pronunciation of non-Indian culture-related words in the Indian culture condition, or whether such an effect only holds for explicitly Indian words (such as *sari*). Finally, in the reading tasks, participants read two brief passages, titled 'Garage Scientist' and 'My Hero', adapted from the 'R words' section of Home Speech Home, a website created by speech-language pathologists that provides resources related to language development (Home Speech Home, 2018). Participants read one passage per condition; each contained 18 test items that included /r/ (see Appendix). For the Indian cultural condition, the passage was slightly modified to give the main character the Indian name 'Rani,' which was presented twice in the text. No other alterations were made to highlight Indian culture in the passage. Participants' speech was recorded using a Zoom H4n recorder and then coded perceptually by the second author, using guidance from the spectrogram in Praat (Boersma & Weenink, 2016).

## 5 | FINDINGS

1,680 tokens from the 30 speakers were coded and analyzed in total. All but one of the speakers used multiple variants of /r/; speaker rates ranged from 12.5% to 100% approximant /r/, with an overall mean of 77.4% approximant /r/. Each of the test items also varied in its realization, with distributions ranging from 93% approximant (*rainbow*, *rich*, and others) to 46% approximant (*sari*). The extent to which this variation is accounted for by phonological environment, cultural context, and other factors is considered in the statistical analysis below.

The distribution of /r/ variants by generation is shown in Table 3. Only three tokens of trilled [r] were produced in the study overall; that being the case, subsequent analysis will merge tapped and trilled /r/ into the category of non-approximant /r/. While Sng (1986, p. 38) asserted that Tamil Singaporeans almost always use a tap or trill for /r/, here we see a rather different picture: for both generations, the approximant is the dominant variant. As no previous study offers quantitative data on Tamil Singaporean speakers' use of /r/, it is unclear whether this previous characterization was an exaggeration, or whether a change has occurred in the three decades between Sng's claim and the time of the present data collection. What we can concretely observe is a change in apparent time, meaning a change between the two generation groups, such that the Younger speakers use far fewer non-approximant variants of /r/. To assess whether this change in apparent time is statistically significant when controlling for other effects, generalized linear

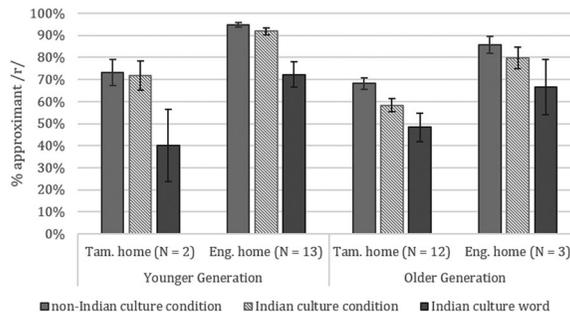
**TABLE 3** Overall distribution of /r/ variants by generation group

Generation	/r/ variant			Total
	Approximant [ɹ]	Tapped [r]	Trilled [r̥]	
Younger	745	94	1	840
Older	556	282	2	840
Total	1,301	376	3	1,680

**TABLE 4** Fixed effects in generalized linear mixed-effects model incorporating random effects of word (random intercept) and participant (random slope by style), and fixed effects of age, cultural context, style, and cluster environment

Factor	Estimate	Std. Error	z value	p value
(Intercept)	-1.1814	0.4683	-2.523	0.01164*
Age (Young)	-2.1648	0.6068	-3.568	0.00036***
Culture condition (Indian)	0.7983	0.2585	3.088	0.00201**
Cluster (yes)	-0.6577	0.3144	-2.092	0.03645*
Style (wordlist)	-0.1188	0.3606	-0.330	0.74175

Notes: Positive z value indicates more use of tapped/trilled /r/. Number of observations = 1680, AIC = 1284.2. \*\*\* indicates  $p < 0.0001$ , \*\* indicates  $p < 0.01$ .

**FIGURE 1** Rate of approximant /r/ use by Younger and Older speakers according to dominant home language and culture condition

mixed-effects modeling was carried out in R using the glmer function of the lme4 package (Bates, Maechler, Bolker, & Walker, 2015). Participant and word were incorporated as random effects; fixed effects tested included age (Younger vs. Older), culture condition (non-Indian vs. Indian), style (wordlist vs. reading passage), /r/ position (word-initial vs. word-medial), and /r/ cluster environment (cluster vs. no cluster). /r/ position did not have a significant effect in the model ( $z = 0.697$ ,  $p = 0.485523$ ) and thus was excluded in favor of /r/ cluster environment. As shown in Table 4, style is not found to be a significant predictor of /r/ realization. Age and culture condition, however, are both highly significant: tapped/trilled /r/ is used more often in the Indian culture condition, and more by the older generation. /r/ appearing in clusters, as in *brain*, is also significantly less likely to be tapped or trilled than /r/ in simple onsets, as in *rich*. No significant interactions were found between these effects.

Before drawing any conclusions from this statistical model, two additional factors must be considered: the relationship between age and dominant home language, and the distinction between words in the Indian culture condition that are explicitly linked to Indian culture, and those that are not. Figure 1 illustrates the impacts of these factors by breaking down rates of approximant /r/ use along several dimensions. Speakers are divided into four classes: Younger speakers who use Tamil as a primary home language, Younger speakers who use English at home, Older speakers who

**TABLE 5** Fixed effects in generalized linear mixed-effects model incorporating random effects of word (random intercept) and participant (random slope by style), and fixed effects of age, home language, cultural context, style, and cluster environment

Factor	Estimate	Std. Error	z value	p value
(Intercept)	-5.00272	0.91956	-5.440	<.0001***
Age	0.05660	0.02613	2.166	0.03033*
Home language (Tamil)	1.25560	0.69907	1.796	0.07248·
Culture condition (Indian)	0.79901	0.25883	3.087	0.00202**
Style (wordlist)	-0.13385	0.35908	-0.373	0.70934
Cluster (yes)	-0.65578	0.31472	-2.084	0.03719*

Notes: Higher z value indicates more use of tapped/trilled /r/. Number of observations = 1680, AIC = 1280.7. \*\*\* indicates  $p < 0.0001$ , \*\* indicates  $p < 0.01$ , \* indicates  $p < 0.05$ , · indicates  $p < 0.1$ .

use Tamil at home, and Older speakers who use English at home. As we are interested in the potential effects of transfer from Tamil, participants who indicated that they speak Tamil and English equally at home have been grouped with the Tamil respondents.

Figure 1 gives the /r/ rates for three contexts, as indicated in the legend: words produced in the non-Indian culture condition, words produced in the Indian culture condition that did not in themselves relate to Indian culture (labeled here as 'Indian culture condition', which included words such as *rainbow*), and words produced in the Indian culture condition that inherently index Indian culture ('Indian culture words', such as *curry*). This distinction allows us to assess whether simply highlighting Indian culture generally is enough to trigger the use of more tapped/trilled /r/, or whether the use of taps and trills is limited to words that are more explicitly associated with Indian culture. As shown in the figure, several factors appear to simultaneously shape the rate of approximant /r/ use. While the statistical model given in Table 4 indicated a large impact of age on /r/ realization, Figure 1 makes clear that at least some of this effect is not directly generational, but in fact results from home language use differences among the two age groups: both Younger and Older speakers who use Tamil in the home use far lower rates of approximant /r/ than Younger speakers who use English. Indeed, if we slot home language into our statistical model in place of age, the model stays essentially the same, with home language significant at a comparable level ( $z = 3.714$ ,  $p = 0.000204$ ). Comparison of the two models via ANOVA reveals no significant advantage of one over the other, meaning that both factors are equally good predictors of /r/ realization. To address the question of whether age has a significant impact on /r/ realization independent of home language, an additional model was generated, incorporating both effects simultaneously (Table 5). Because the factors of age and home language are highly collinear, these two effects have a tendency to statistically cancel each other out, reducing their individual significance; nonetheless, as indicated in Table 5, age (modeled here as a continuous effect, rather than by generation, to capture more fine-grained differences) survives as a significant effect in this model, even when controlling for home language. Evidence from these speakers therefore suggests that the shift taking place in /r/ in the Tamil Singaporean community cannot be entirely accounted for by the shift away from speaking Tamil in the home, although home language is one important factor in this change.

Finally, returning to Figure 1, we observe that words directly linked to Indian culture in the Indian culture condition show a far lower rate of approximant /r/ than non-Indian-related words that were presented in the Indian culture condition. Given that these words (such as *sari*) are also used in Tamil, is the intra-speaker variation by culture condition we find in these statistical models actually a matter of code-switching, rather than style-shifting primed by an Indian cultural context? Removing explicitly Indian-linked words from the model reveals that the remaining words produced in the Indian culture condition are still significantly more likely to be produced with a tapped/trilled /r/ ( $z = 2.099$ ,  $p = 0.0358$ ). In other words, it is in fact the case that simply highlighting Indian cultural identity, via the use of Indian cultural images in the picture-naming task and Indian-related words in the wordlist and passage-reading tasks, is enough to prime speakers to produce significantly more tapped/trilled variants of /r/, even when producing words not directly linked to Indian culture.

## 6 | DISCUSSION

This investigation of prevocalic English /r/ among Tamil Singaporeans has considered the potential effects of age, home language, cultural context, style, and phonological environment. We find strong evidence of a change in progress in this community with regard to /r/, with use of the tapped and trilled variants reducing in apparent time in favor of the approximant [ɹ] associated with mainstream SgE. Moreover, home language plays a role in this change; speakers who use Tamil at home use significantly more tapped/trilled /r/. /r/ was also found to vary by phonological environment, with /r/ in clusters more likely to be realized as an approximant than /r/ in simple onsets. While /r/ did not vary significantly by style, speakers were found to use tapped/trilled /r/ at higher rates when Indian culture was highlighted via visual and lexical cues, both in their pronunciation of words that were directly related to Indian culture and words that had no relationship with Indian culture.

One striking finding of this study is the rarity of trilled /r/ in the data, despite the fact that this variant is stereotypically associated with Indian Singaporean speakers. Tapped /r/, for that matter, was also not the default variant among these participants; even the older speakers were found to primarily use approximant /r/. Despite its rarity, however, the variation observed by cultural context in the study suggests that tapped/trilled /r/ persists within the ethnolinguistic repertoire of Tamil Singaporeans and serves as a salient resource for the performance of Indian ethnic identity. Parallels may be drawn between these findings and those of previous work in other contexts. Gafter (2016), for example, examines pharyngeal pronunciation in Modern Hebrew, a rare but nonetheless salient and stigmatized phonological feature that indexes Mizrahi Jewish identity in Israel, concluding that Mizrahis continue to occasionally draw upon this feature to index authenticity and a range of other social meanings associated with Mizrahi ethnicity. Along similar lines, assuming that this change in /r/ continues to progress in Singapore and tapped/trilled /r/ becomes increasingly rare, it may nonetheless survive as a salient feature indexing Indian identity and ideologically linked social meanings and stances. Further investigation of the use of /r/ in spontaneous speech and interaction would shed further light on the sociolinguistic functions of tapped and trilled variants of /r/ in everyday life among Tamil Singaporeans. Another key pattern identified in the data is that, although all participants were proficient in Tamil and English, those who reported using Tamil as a primary home language were significantly more likely to use tapped/trilled /r/. A similar pattern has been observed in another South Asian diaspora community; frequency of Punjabi use was found to predict use of retroflex [ɻ] in English by Sharma and Sankaran (2011, p. 418) in their study of British Asians. One account for these findings is that this is essentially a 'degree of bilingualism' effect, and that these phonological features arise via transfer from a dominant non-English L1 on the level of individual speakers. Another possible explanation is one related to identity; speakers who are more Indian identity-oriented are both more likely to use Tamil at home and to make use of English phonological features that index Indianness. Of course, both of these factors may underlie the relationship between home language and /r/ observed in these data.

Finally, contrary to our predictions, no difference was observed in /r/ realization between the wordlist and the reading passage. This result is strikingly different from the findings of Starr (forthcoming b) regarding postvocalic /r/ among SgE speakers, in which wordlist speech differed significantly from reading passage speech. The lack of distinction between these speech styles in the present study suggests that, for Tamil Singaporean speakers, 'correctness' and 'formality' are not saliently indexed by the approximant /r/. This finding illustrates a limitation of models of SgE that arrange varieties of English in Singapore by standardness (Gupta, 1994; Platt & Weber, 1980); there is evidently more to social meaning and variation in SgE than distance from the standard. Instead, our results underscore the utility of an indexical approach to social meaning in SgE, as advocated by Leimgruber (2012), in which individual variants are linked to a range of possible social meanings in an indexical field (Eckert, 2008).

## 7 | CONCLUDING REMARKS

Despite the predictions of Schneider (2007) that English in Singapore is on the cusp of entering a phase of increased internal differentiation, the findings of this study indicate that, consistent with Tan (2012a), intra-Singaporean ethnic

distinctions in SgE are continuing to weaken. What Schneider's model perhaps fails to take into account, in the case of Singapore, is that, due to transnational flows from other parts of Asia into the country, the local sociolinguistic landscape has been dramatically reshaped, with non-local varieties of English becoming increasingly salient at the same time as endonormativity is rising among native-born Singaporeans. One outcome of this transnational migration, in combination with Singapore's longstanding ethnic integration policies, is the decreasing relevance of ethnic identity relative to the local versus non-local dichotomy. Thus, while realizations of /r/ that index Indian identity are still available to Tamil Singaporeans as part of their ethnolinguistic repertoire, speakers are increasingly not making use of these variants, but rather opting for the /r/ variant associated with mainstream SgE; this practice serves to affiliate themselves with Singaporean identity and distance themselves from non-Singaporean speakers of Tamil English. At the same time, Tamil Singaporeans continue to use trilled and tapped /r/ in contexts that specifically highlight Indian culture, suggesting that this feature will persist as a linguistic resource in the performance of ethnic identity.

As suggested in the discussion, follow-up work on the everyday speech practices of Tamil Singaporeans would be a crucial next step in enhancing our understanding how SgE features are recruited in identity performance within this community. Another fruitful direction for further research would be a broadening of the scope of this investigation to include Singaporeans of other ethnicities. While the informal observation has been made that older, educated Singaporeans across ethnic backgrounds make variable use of tapped /r/, more rigorous study of how realization of prevocalic /r/ in SgE has changed in real and apparent time, and how Singaporeans of different ages evaluate variation in /r/, would shed more light the behavior of this feature. More generally, further exploration of a wider range of English features indexing ethnicity in Singapore may clarify how links between language and ethnic identity have shifted over time, as the linguistic backgrounds, socioeconomic conditions, and societal attitudes of Singaporeans have evolved.

## ACKNOWLEDGMENTS

Preliminary findings of this research were presented at the 2018 New Ways of Analyzing Variation Asia-Pacific conference in Brisbane, Australia, and the 2018 Sociolinguistics Symposium in Auckland, New Zealand. The authors wish to thank Shobha Satyanath, Victoria Rau, and Roey Gafter for their helpful comments.

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**How to cite this article:** Starr RL, Balasubramaniam B. Variation and change in English /r/ among Tamil Indian Singaporeans. *World Englishes*. 2019;1–14. <https://doi.org/10.1111/weng.12357>

## APPENDIX

List of /r/ items by task and culture condition. Complete reading passages, titled 'Garage Scientist' and 'My Hero', may be found on 'R words' website of Home Speech Home (2018).

Task	Condition	/r/-initial	/r/-medial	/r/ cluster
Word list	Indian culture	radio, rainbow, Rangoli, respect, wrinkle	curry, sari	grapes, grass, prince
	non-Indian culture	race, rake, rich, rock, wrap	January, camera, diary	crawl, crayon
Reading passage	Indian culture	Rani, read, real, recycles, ribbons, road, role, rubbish	classroom, hearing, stories	drowning, everything, hundreds, improve, strength, try
	non-Indian culture	radical, radio, rainbows, raisins, rats, read, really, recharge, right	experiment, experiments, forest	batteries, brain, fireproof, trees, trying