TO *r* OR NOT TO *r*: A SOCIOPHONETIC ANALYSIS OF /ɹ/ IN SINGAPORE ENGLISH

Ying Ying Tan

Division of Linguistics and Multilingual Studies, Nanyang Technological University, Singapore
yytan@ntu.edu.sg

ABSTRACT

This paper investigates the occurrences of postvocalic-*r*, intrusive-*r* and linking-*r* in Singapore English (SgE) from a sociophonetic perspective. This paper seeks to determine the correlation between the use of the different /ɹ/ and the users' education levels. This paper will also investigate the attitudes of SgE speakers to the use of postvocalic-*r* and intrusive-*r* in SgE. The results show a direct correlation between the speaker's education level and the production of postvocalic-*r* and intrusive-*r*, which is matched by the perception and attitudes towards /ɹ/ in SgE.

Keywords: postvocalic-*r*, intrusive-*r*, Singapore English, sociophonetics

1. INTRODUCTION

This paper investigates the occurrences of postvocalic-*r*, intrusive-*r* and linking-*r* in Singapore English (SgE) from a sociophonetic perspective. In rhotic varieties of English, /ɹ/ occurs wherever there is an <r> in the spelling in word final positions, e.g. *car* [kɑɹ] and before a consonant, e.g. *cart* [kɑɹt]. The /ɹ/ in rhotic varieties is referred to as the postvocalic-*r*. In contrast, non-rhotic varieties only allow /ɹ/ to occur before a vowel [1]. Intrusive-*r* and linking-*r*, often referred to as *r*-sandhi, are usually found in non-rhotic varieties, and are sometimes taken to be the same phenomenon. Intrusive-*r* occurs when there is no orthographic <r> present, e.g. *clawing* [klɔɹiŋ] and *ma* [mɑɹ] [4]. The use of intrusive-*r* is phonologically conditioned, usually occurring only after non-high monophthongs, or after diphthongs with non-high offglides. However, as Hay and Maclagan [4] observe, in New Zealand English, young speakers are also beginning to use intrusive-*r* after /au/, e.g. *now*-/ɹ/-*and then*, or *plough*/ɹ/*ing*. Linking-*r* is similar to the intrusive-*r* in its realization and vocalization. The difference being that in the case of the linking-*r*, the underlying /ɹ/ is assumed to be retained or inserted to either "serve as a hiatus-breaking element, or to provide a sufficient onset or coda to the following or preceding syllable, respectively" [3], e.g. *deer* [diə] → *deer is* [diəɹiz].

SgE has been described to be a non-rhotic variety of English e.g. [2, 6, 8]. As a result of an assumed "un-rhotic" nature of SgE, only three studies so far mention rhoticity in SgE. Salbrina and Deterding [8] for example, found SgE to be less rhotic than Brunei English, with only 8.3% of their SgE tokens showing features of rhoticity. Tan and Gupta [9] and Poedjosoedarmo [7], interestingly, observe some degree of rhoticity in SgE. Tan and Gupta in addition suggest that the use of postvocalic-*r* is a prestige feature for some speakers. Poedjosoedarmo [7] attributes rhoticity in SgE to be a result of American media influence, but did not have concrete phonetic evidence for it. It is unclear from these studies if there is any correlation between the socioeconomic status of the speakers and the use of postvocalic-*r* in SgE and as such, if one can see any correlation to Labov's classic 1966 work [5] on postvocalic-*r* in New York City. There has also not been any study so far on the occurrences of intrusive-*r* and linking-*r* in SgE. It is unclear if these three different *r*-s are occurring in complementary distribution, and if the occurrences are motivated by sociolinguistic factors. Furthermore, there is to date no information so far on the attitudes of SgE speakers to the use of postvocalic-*r* and intrusive-*r*.

This paper seeks to answer the following research questions:

1) Do speakers of SgE use postvocalic-*r*, linking-*r* and intrusive-*r*?
2) If so, who are the speakers, and is there a correlation between the speakers' educational level and the use of the different /ɹ/?
3) What are the attitudes of SgE speakers to the use of postvocalic-*r* and intrusive-*r* in SgE?

2. DATA COLLECTION

24 native SgE speakers were recorded. The speakers recorded are female and aged 18-25. The

participants are all Chinese-Singaporeans and are English-Mandarin bilinguals. All the participants were students in a post-secondary education institution in Singapore at the time of recording (Sep 2010). The 24 participants can be classified into three groups of 8 participants each, corresponding loosely to educational levels. The first group of participants consists of undergraduates at one of Singapore's universities. The second group consists of students from the polytechnic, which is an educational institution that provides more practical training for post-high school students who may not have qualified for university entrance. Polytechnic graduates receive a diploma instead of a degree. The third group of participants consists of students at the Institute of Education (ITE). The ITE is an institution that provides apprenticeship-like training to post-high school students, and students are trained for jobs such as secretaries, mechanics, nursing assistants or office assistants. This group of students can be said to be the least academically-inclined. The educational levels and occupations of the participants' parents were also considered. Table 1 shows the breakdown of the participants' background and respective groupings.

Table 1: Breakdown of the participants' background and respective groupings.

Group	*Participant's education*	*Parents' education*	*Parents' SES*	*Langs spoken at home*
1 High	University	University	High/High-middle class	English, Mandarin
2 Middle	Polytechnic diploma	Polytechnic diploma	Low-middle class	Mandarin only
3 Low	ITE (apprentice-ship)	High school/no formal education	Working-class/ Low-income	Mandarin or other Chinese languages

For ease of reference, I will refer to the group with the highest educational level as Group H, the middle-class group as Group M, and the last group as Group L.

The university students were recorded in the Linguistics laboratory at the researcher's university. All other participants were recorded either in a quiet room in their homes or schools. Recordings were done using the Marantz solid-state recorder (PMD660).

The participants were asked to read aloud a set of 50 sentences which were designed with phonological environments for the occurrences of postvocalic-*r*, intrusive-*r* and linking-*r*. The target words chosen varied in terms of the preceding vowels (/ɑ/, /ɔ/, /ɛ/, /ə/, /o/, /u/, /iə/ or /ɑiə/), and /ɹ/ was positioned in both simple and complex codas. Within these 50 sentences, there were 60 target words to elicit the postvocalic-*r*, making it a total of 1440 tokens. Half of these target words have the structure V(r), and the other half V(r)C.

25 target words were chosen to elicit intrusive-*r*, making it a total of 600 tokens. Some of these target words are nonsense words, as /ɹ/-intrusion is relatively difficult to elicit in spontaneous speech. These words are adapted from Hay and Maclagan [4], but modified for use in the Singaporean context. The following table shows the target words used to elicit the intrusive-*r*.

Table 2: Target words to elicit intrusive-*r*.

Base	-ify	-ish	-ing	-y
claw /ɔ/	*clawify*	*clawish*	*clawing*	*clawy*
crow /o/	*crowify*	*crowish*	*crowing*	*crowy*
glue /u/	*gluify*	*gluish*	*gluing*	*gluey*
grandma /ɑ/	*grandma -ify*	*grandma -ish*	*grandma -ing*	-
plough /ɑu/	*ploughify*	*plough-ish*	*plough-ing*	*ploughy*

The sentences were designed also to provide for occurrences of linking-*r*. 20 sentences have environments for linking-*r* to occur, half of them having a word with an orthographic *r* preceding *is*, e.g. *mother is*. The other 10 utterances have words without the orthographic *r* preceding *is*, e.g. *grandma is*, which would provide evidence for the occurrences of intrusive-*r* as well as linking-*r*.

Each utterance recorded was given a binary analysis, indicating whether /ɹ/ was produced in the target word or not. For those tokens which were analyzed as containing an intrusive, linking or postvocalic-*r*, acoustic analysis using Praat was carried out to measure the lowest point of F3 in /ɹ/ to confirm the auditory analysis.

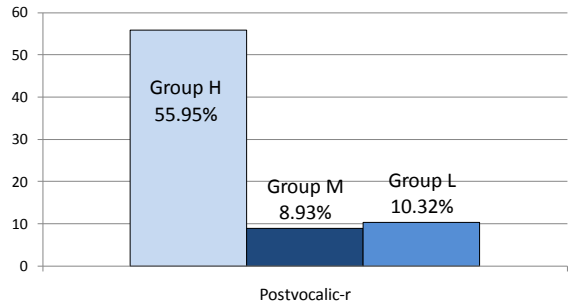
3. RESULTS

3.1. Postvocalic-*r*

Figure 1 shows the percentage of occurrences of postvocalic-*r* across the three groups of speakers. The group with the highest education level – Group H (i.e. the university students) produces the highest percentage of postvocalic-*r*, whereas the other two groups of lower education levels (Groups M and L) produce postvocalic-*r* with much lower frequency. Group H speakers have 55.95% of postvocalic-*r*, whereas Group M and Group L speakers only produce 8.93% and 10.32% of postvocalic-*r*, respectively. The difference

between Group H to Groups M and L is statistically significant at $p<0.001$ (N=504). This seems to suggest that postvocalic-*r* production is directly correlated to high education level. The results seem to corroborate with Labov (1966) on the use of postvocalic /r/ by Americans of high socioeconomic status in New York City.

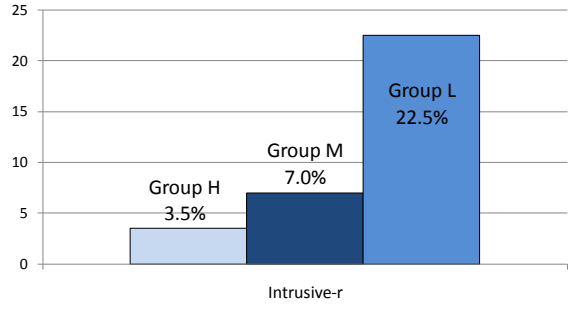
Figure 1: % of occurrences of postvocalic-*r* across the three groups of speakers.



3.2. Intrusive-*r*

The group with the lowest education level – Group L produces the highest percentage of intrusive-*r*, whereas the other two groups of higher educational level (Groups M and H) produce intrusive-*r* with much a lower frequency. Figure 2 shows the percentage of occurrences of intrusive-*r* across the three groups of speakers.

Figure 2: % of occurrences of intrusive-*r* across the three groups of speakers.



Group L speakers have 22.5% of intrusive-*r*, whereas Group M and Group H speakers only produce 7.0% and 3.5% of intrusive-*r*, respectively. The difference between Group L to Groups M and H is statistically significant at $p<0.001$ (N=200). The results seem to suggest that intrusive-*r* production is inversely correlated to the speaker's education level.

3.3. Linking-*r*

All three groups produce linking-*r* rarely, with percentages of occurrence for each group below 10%. The differences are also statistically not significant. Group M, especially, only had 2 instances of linking-*r*, out of a possible 160 instances. This seems to suggest that the linking-*r* is operating on a different basis to the intrusive-*r*, and perhaps is evidence to a different phonological process at work.

4. ATTITUDES TO /ɹ/

A perception test was also carried out to determine the attitudes of SgE speakers on the use of the postvocalic-*r* and intrusive-*r*. Since, as mentioned earlier, the linking-*r* occurs less frequently, it has been left out of the perception test. 50 participants at the researcher's university were played 12 utterances, selected from the recordings done earlier. 4 utterances had the postvocalic-*r*; 4 had the intrusive-*r* and the other 4 utterances had neither instances of intrusive-*r* nor postvocalic-*r*, to be referred to as *r*(0). For each utterance, the participant was asked a series of questions to elicit judgments on the speaker's localness, desirability, intelligence and educational level.

4.1. To *r* = local?

The presence or absence of *r* has no major effect on the perceived localness of the speaker, with most of the utterances judged to be sounding local.

Table 3: Judgments of localness to the use of the postvocalic-*r*, intrusive-*r* and *r*(0).

	Postvocalic *r*	Intrusive *r*	*r*(0)
Local	67.5%	56.0%	76.5%
Not local	32.5%	44.0%	23.5%

While there is no significant difference between the perceived 'localness' of the postvocalic-*r* and *r*(0), the judgments of localness to the use of intrusive-*r* is found to be significantly different from that of the postvocalic-*r* at $p<0.05$ and that of *r*(0) at $p<0.001$ (N=600).

4.2. To *r* = desirable?

91% of the respondents find the intrusive-*r* undesirable, while 61% of the participants find the use of postvocalic-*r* desirable.

Table 4: Judgments of desirability to the use of the postvocalic-*r*, intrusive-*r* and *r*(0).

	Postvocalic *r*	Intrusive *r*	*r*(0)
Desirable	61.0%	9.0%	51.5%
Not desirable	39.0%	91.0%	48.5%

While there is no significant difference between the desirability of the postvocalic-*r* and *r*(0), the

desirability of the intrusive-*r* is found to be significantly different to that of the postvocalic-*r* at p<0.001 and that of *r*(0) at p<0.001 (N=600).

4.3. To *r* = intelligent?

76% of the informants feel that speakers who use the postvocalic-*r* are intelligent, as compared to speakers who do not, with only 61.5% of the informants judging *r*(0) to be intelligent. This difference is significant at p<0.001 (N=600).

Table 5: Judgments of intelligence to the use of the postvocalic-*r*, intrusive-*r* and *r*(0).

	Postvocalic *r*	Intrusive *r*	*r*(0)
Intelligent	76.0%	23.0%	61.5%
Not intelligent	24.0%	77.0%	38.5%

What is even more striking is that 77% of the informants perceive speakers who produce the intrusive-*r* to be unintelligent. This difference is statistically significant at p<0.001 (N=600).

4.4. To *r* = highly educated?

Speakers using postvocalic-*r* are believed to be university-educated. In addition, unanimously, all the informants feel that speakers who use intrusive-*r* have no university education. The differences are significant across all three groups at p<0.001 (N=600).

Table 6: Judgments of education level to the use of the postvocalic-*r*, intrusive-*r* and *r*(0).

	Postvocalic *r*	Intrusive *r*	*r*(0)
University	71.5%	0.0%	47.5%
Poly	23.5%	44.0%	43.0%
ITE & below	5.0%	56.0%	9.5%

5. DISCUSSION

There is clearly a direct correlation between education level of the speaker and the production of postvocalic-*r* and intrusive-*r* in SgE. Speakers of higher education levels have a tendency to produce the postvocalic-*r*, and speakers of low education levels have a tendency to produce the intrusive-*r*. And this is matched by the perception and attitudes towards /ɹ/ in SgE. The postvocalic-*r* is associated with high education, intelligence and is highly desired, while the intrusive-*r* is associated with low education, low intelligence and is not desirable.

The findings also point to the need to treat the linking-*r*, postvocalic-*r* and intrusive-*r* as distinct phenomena in SgE, as the speakers who produce them are in complementary distribution. The production of /ɹ/ in this non-rhotic variety of English is also not due to hypercorrection, as if so, intrusive-*r* speakers should also produce postvocalic-*r*, but that is not the case. All these perhaps imply that SgE may be moving towards becoming a rhotic variety of English.

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