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## **Sociolinguistic Variation In The Acquisition Of A Phonological Rule**

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**Abstract:** This paper examines the extent to which 1st to 2nd generation Koreans in the U.S. have acquired the norms for the distinctive North American English flapping rule. First, quantitative analyses are conducted to test the significance of sociolinguistic variables such as immigrant generation, length of stay in the U.S., age of arrival to the U.S., and sex. Second, stylistic variation in careful and casual speech is examined. Third, categorical flapping in individual words are looked at. Fourth, the results of a subjective reaction test are presented. Native English speakers were asked to identify the race, ethnicity, and nativeness of the speakers. In particular, test results from the perceptions of nativeness are then correlated with the results from the flapping analysis. The rate of word medial /t/ flapping appears to show a concurrent increase with perceptions of speakers' nativeness.

### The Study

Sociolinguistic studies over the past 30 years have revealed that each speech community shows distinctive linguistic patterns whether the demarcation is geographical (e.g., Philadelphia, NYC, etc.; Labov 1966; 1994) or ethnic (e.g., African-American, Hispanic-Americans, etc.; Labov 1966; Silva-Corvalan 1994). These speech communities form a subgroup whose language use might differ from other groups. Second language acquisition studies have addressed the identification of linguistic aspects which comprise a foreign accent (Ioup & Weinberger 1987; Munro & Derwing 1995 among others). However, there have been no previous studies which have utilized a synthesized approach at examining how the ethnic group of 'Korean Americans' behave and whether they acquire any particular norms.

This study is an exploratory attempt to examine the crucial problem of language acquisition by examining whether Korean Americans in the U.S. have acquired a native North American English speech norm. The feature examined is word medial /t/ flapping. Flapping is a process of lenition and a pervasive phenomenon in North American English which sets it apart from other varieties of English. It is also not explicitly taught through formal English instruction to both non-native and native English speakers. Flapping is a feature of colloquial spoken English of which successful acquisition is postulated to be dependent on informal face-to-face interaction with native speakers. Flapping is chosen to examine the gradual and probabilistic acquisition of English nativeness.

In addition to the production of flapping, the study looks at the perception of flapping. A subjective reaction test (Graff et al. 1986) is utilized. Subjective reaction tests are considered valuable because they mirror the social stratification of a speech community (Labov 1972:158). The objective of the test designed in this

study is to determine the degree of English nativeness of the speakers and to see whether judges can identify the speakers' race and ethnicity.

Lastly, the results from quantitative analyses of flapping and the non-linguistic perceptions of the judges from the subjective reaction test are examined for a possible correlation. A positive correlation suggests that production and perception increase in tandem.

**The Speakers** The study looked at 12 Korean speakers of English. The speakers were classified according to sex and immigrant generations. The following categories of generation were posited for sampling purposes. A speaker can only be 1st generation if s/he was born in their country of ethnicity while a 2nd generation speaker must be born in the U.S. However, immigrants arrive at different stages in their lives. These stages do not all fall into a two-way dichotomy. A third category based on a Korean folk term '1.5 generation' was created to fill the void. 1.5 generation designates speakers who were born in their country of ethnicity but came to the U.S. as a child or young adult. Generation is an indirect indicator of whether the subject is a native English speaker or not. If a speaker is 1st or 1.5 generation, s/he is a non-native English speaker. If a speaker is 2nd generation, s/he is a native English speaker.

(1) *1st generation*

Born in Korea and came to the U.S. after the age of 18.<sup>1</sup>

*1.5 generation*

Born in Korea and came to the U.S. before the age of 18.

*2nd generation*

Born in the U.S. of ethnic Koreans.

Table 1. displays the demographics of the speakers in the study.

Generation	Male	Female
1st generation	2	2
1.5 generation	2	2
2nd generation	2	2
TOTAL	6	6

Table 1. Demographic information

Age was controlled in the study. The range of the speakers is 21-35.

Word Medial /t/ Flapping

Flapping is a process of lenition of an intervocalic consonant /t/. This feature was investigated to see whether the speakers acquired the flapping rule and how much they conform to the native patterns if they do. One of the interesting consequences of flapping in American English is that it neutralizes some lexical distinctions (e.g., la[tɾ]er vs. la[dd]er). Flapping words in certain phonological contexts gives the speaker's English a native quality. On the other hand, the absence or incorrect placement of flapping is considered unnatural or an indicator to Americans of a foreign variety of English such as British English (Shockey 1984).

However, whether you learn English as a native or non-native speaker, the flapping rule is not taught overtly in school. In particular for non-native speakers, flapping may be acquired unconsciously with a tendency for the overgeneralization of this rule in contexts where flapping does not occur for native speakers.<sup>2</sup> The flapping rule is dependent on stress and is posited as follows:

(2) Flapping rule (Kahn 1976:58)<sup>3</sup>

$$/t/ \rightarrow [D] / [-\text{cons}] - \begin{bmatrix} +\text{syllabic} \\ -\text{stress} \end{bmatrix}$$

The envelope of variation in the study based on Kahn's generalizations of flapping is shown in the following phonological environments in Table 2.

Environment	Example
1) v' _ v	wa t er
2) v' _ v	nega[t]ive <sup>4</sup>
3) v'l _ v	shel[t]er
4) v'n _ v	twen[t]y
5) v'r _ v	par[t]ly
6) v' _ l	li[t]le

Table 2. Environments for word medial /t/ flapping

The analysis focuses on flapping that occurs word-internally or at a morphological boundary in all the phonological environments 1-6, although this is not an exhaustive set. Kahn (1976:58) states that in environment 3) the production of /l/ must be non-consonantal to induce flapping. He also mentions that for most (but not all) speakers there is a tendency to maintain a consonantal pronunciation for /l/ and not flap. In addition, while there are many environments in which flapping can take place, all environments are by no means equally favorable for flapping. For native speakers, regardless of formality, flapping in environment 1) is almost categorical while 2)-5) do not show tendencies to be categorical.

It is expected that there will be cross-generational differences in the pattern of flapping. For non-native speakers, flapping appears to be a conscious effort while for native speakers it appears to be unconscious. In other words, both native and non-native speakers acquire the untaught rule of flapping. However, while native speakers are intuitively aware of the contexts where the rule is applied, non-native speakers are not. Although flapping may be variable in native speakers according to style, for both native and non-native speakers, some words such as 'water' are observed to be categorically flapped across all styles.

### Methodology

Following traditional sociolinguistic methods (Labov 1966) originally designed for monolingual speech communities, tokens were elicited in both careful and casual speech from the speakers. Careful speech was elicited through a reading passage, a word list, and semantic differentials while casual speech was elicited through sociolinguistic interviews.<sup>5</sup> In order to control the influence of the

interviewer on the interviewee, a non-ethnic Korean interviewer conducted the interviews so that the interviewer and the interviewee never shared the same ethnic language or background.<sup>6</sup>

The careful speech elicitation tasks included words with the potential environment for word medial /t/ flapping. The social variables chosen for examination were immigrant generation, length of stay in the U.S., age of arrival to the U.S., and sex. All of these variables were controlled in the sampling of speakers. A multivariate analysis, using GoldVarb Version 2.0, was run in order to test the significance of the external factor groups. Stylistic variation and categorical flapping were analyzed through quantitative analyses.

### Sociolinguistic Variation in Flapping

The GoldVarb run shows the effects of select sociolinguistic factor groups. GoldVarb is a multivariate analysis tool which analyzes the significance of independent variables in relation to a dependent variable. Each independent variable is then given a weight which indicates whether that particular variable is significant or not in relation to the dependent variable. If the weight is closer to '1' this indicates that the variable is strongly significant. If the weight is closer to '0' this indicates that the factor is not significant. Here, the dependent variable is word medial /t/ flapping while the independent variables are the sociolinguistic factors. In Table 3., tokens of flapping from casual speech were analyzed. The first column is the GoldVarb weight of the particular factor in terms of all the speakers. The second and third columns show the weight within the particular group of speakers.

Variable	All Speakers Weight	NN Speakers Weight	N Speakers Weight
<i>Generation</i>			
2nd G.	.96	N/A	N/A
1.5 G.	.09	.18	
1 G.	.25	.28	
<i>Age of Arrival (in years)</i>			
0-10	.61	.81	N/A
11-15	.94	.94	
16-20	.31	.23	
21-25	.26	.28	
26-30	.11	.16	
<i>Length of Stay (in years)</i>			
0-5	.36	.29	N/A
6-10	.67	.72	
11-15	.80	.60	
21+	.27	.01	
<i>Sex</i>			
Male	.38	.30	*
Female	.62	.71	*

LEGEND: NN=non-native, N=native, G=generation, N/A=non-applicable, \*=insignificant

Table 3. Social variation in casual speech

Of the external variables, the 'Generation' of the speaker was the most significant with 'Age of Arrival,' 'Length of Stay,' and 'Sex' following. Within the 'Generation' factor group, it is clear that the rate of flapping gradually increases along the generational continuum so relatively the 2nd generation flaps the most. However, some unexpected results were found in the GoldVarb run. The 1.5 generation Koreans showed less tendency to flap than 1st generation Koreans. A possible explanation would be that the 1st generation speakers are indeed making a more conscious effort to flap which in turn lessens the possibilities for variation. For the factor group 'Age of Arrival,' the group of '11-15 years' shows a considerably high weight. Again, initial speculation suggests an explanation may be found in second language acquisition research concerned with critical age hypotheses. From the 'Sex' category, it can be determined that females flap more than males. An explanation that can be offered rests on the sociolinguistic findings that support the view that women are more aware of language and prestige variables than men (Labov 1994). Here, this can translate into a more acute consciousness of flapping as an indicator of English nativeness.

### Stylistic Variation in Flapping

Style was examined in four different contexts varying in formality or the amount of attention paid to speech: (1) word list, (2) reading passage, (3) semantic differentials, and (4) spontaneous speech. The average score of flapping for each speaker in each context was compared. Figure 1. presents the stylistic variation found in all of the speakers. Although a GoldVarb analysis was run on style, the results turned out to be insignificant.

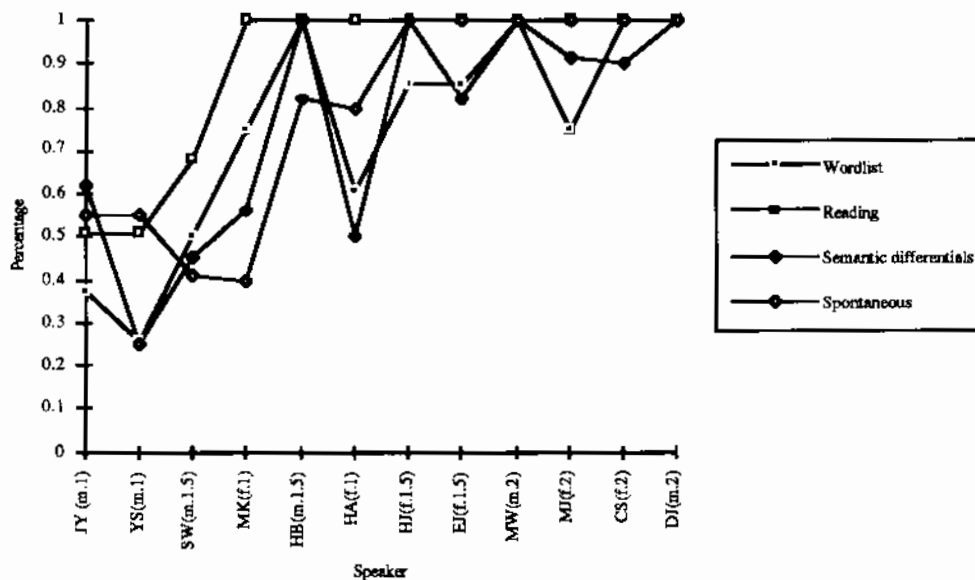


Figure 1. Stylistic variation across speakers

Flapping does not seem to vary much across the contexts. While it is expected that the highest rate of flapping will be found in spontaneous speech and least

amount of flapping in word list, a clear stratification of style along the formality scale did not emerge. For the majority of the cases except for a few speakers, the amount of flapping across different contexts is almost uniform. In particular, the 2nd generation speakers show the same amount of flapping in each context. This confirms the view that flapping is a pervasive phenomenon in American English, and is not a characteristic of particularly conversational or fast speech. In addition, it may be of interest to note that non-native speakers may attempt to flap more when they are conscious of their pronunciation as in word list or reading passage, while they may forget to flap in their spontaneous speech. For these speakers, it is conceivable that flapping has become a conscious target to sound more like a native speaker of American English. This finding reinforces the view that flapping may be an indicator of nativeness and not of social stratification or even regional variation.

### Categorical Flapping

Results from the formal speech elicitation task show that some words exhibit almost categorical flapping. Six words included in the semantic differentials task are analyzed for the occurrence of flapping. The words are:

(3) personality, individuality, liberty, anxiety, writer, water

In the semantic differential task, a speaker is asked to explain the difference in meaning of two semantically close words. This task diverts their attention from pronunciation of the words. The purpose of this task is to elicit casual speech.

The overall average of flapping in the six words was 71.8%. The first graph shows the percentages of the rate of flapping in each individual word. In terms of number of syllables and stress placement, the shorter the word and where the word has primary stress appears to be a favorable context for flapping. A word such as 'water' which has a high occurrence rate also shows almost categorical flapping.

Cross-generational Differences Figure 2. shows the cross-generational differences found across all six words.



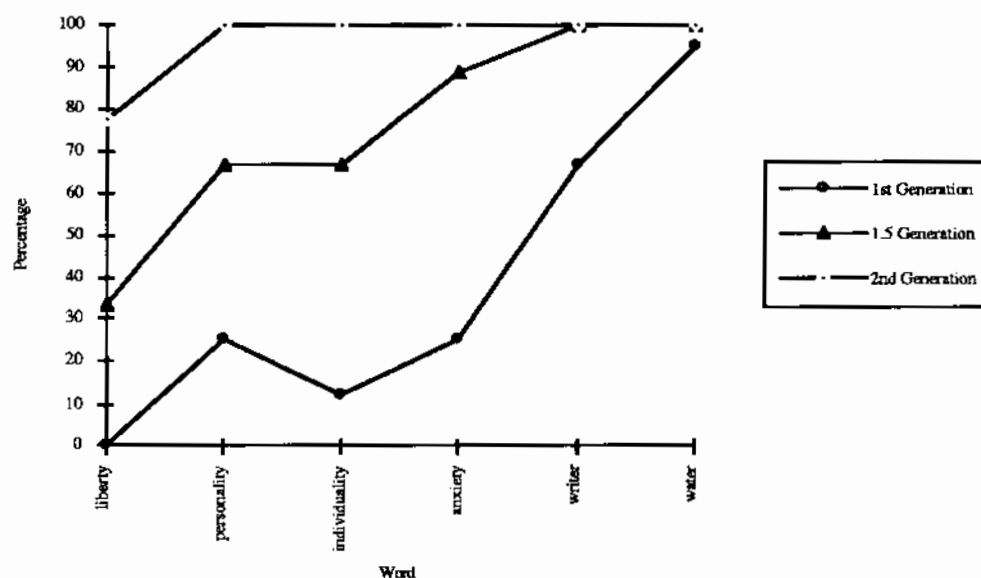


Figure 2. Cross-generational differences in individual words

In all of the generations, the word 'water' was almost consistently flapped. For the 2nd generation native-English speakers, the only word which did not exhibit categorical flapping was 'liberty.' The formality the word entails may have been a factor and may have caused the speakers to pay more attention to their speech when uttering this word. Figure 2. also shows that there is an increase in categorical flapping as generation increases. Thus, it appears that 'common' words are almost lexicalized in the speech of both native and non-native speakers and trigger automatic flapping in these contexts.

Intraspeaker/interspeaker Variation In general, the 1st generation speakers exhibit the largest range of variation. The 2nd generation show the least with the 1.5 generation in between. Figure 3. shows the intraspeaker/interspeaker variation found.

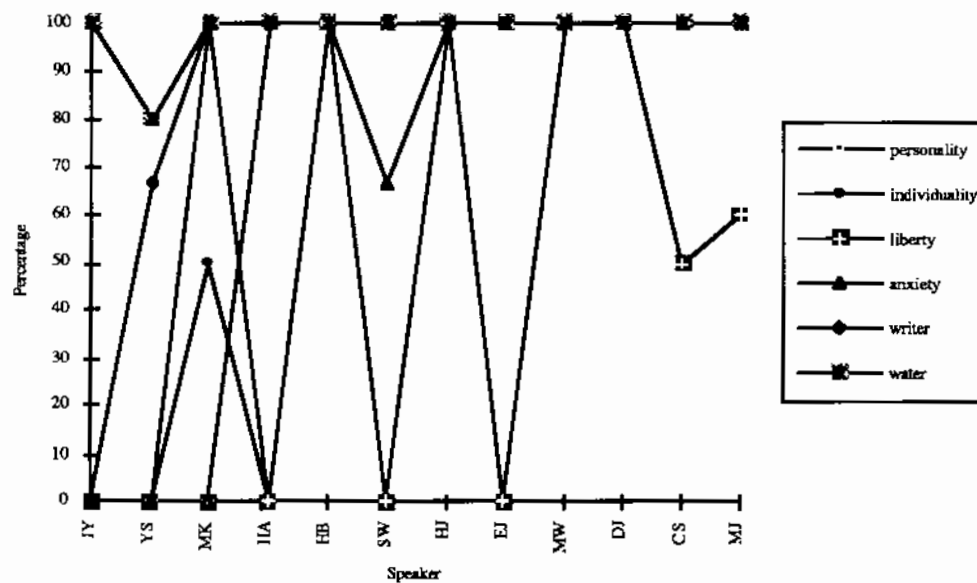


Figure 3. Intraspeaker/interspeaker variation in individual words

The expositions on flapping indicate that flapping is not completely categorical even for native-English speakers. The findings tentatively suggest that word frequency in terms of familiarity and high usage rate of a word may effect the occurrence of flapping.

#### The Perception Dimension of Flapping

The Subjective Reaction Test A subjective reaction test was designed and administered to 54 American university students. The judges were all native English speakers. The tape included the splices of the 12 Korean Americans plus 8 distracters<sup>7</sup> of non-Korean ethnicity. The first five sentences of the reading passage from the formal speech elicitation task were used. The reading text mode was chosen in order to eliminate any influence intonation, other prosodic factors, or topic may have had in identifying speakers. The judges were asked for their perceptions on how native the speakers on the tape sounded and to identify the race and ethnicity of each speaker. The following are the questions asked of the judges.

#### (4) Questionnaire sample

a. Does this speaker sound like a member of a certain ethnic group?

White     Black     Hispanic     Asian     Other  
 British     African-     Cuban     Chinese  
 American     American     Mexican     Japanese  
 Don't know     African     Puerto Rican     Korean  
 Don't know     Don't know     Don't know

b. Do you think this speaker is a native speaker of English?     Yes     No

Nativeness Perceptions The results of the subjective reaction test clearly indicate that nativeness of the speaker was accurately perceived by judges. Non-native

speakers relatively were judged as non-native while native speakers were all accurately perceived to be native. Micro-analysis shows that judges perceived Koreans as sounding Asian 53.1% of the time. However, judges showed much less accurate identification of specific ethnicity; Koreans could be identified only by 9.8%. Figure 4. shows the speakers on a nativeness scale. The scale reinforces the concept of generation and nativeness regarding the speakers.

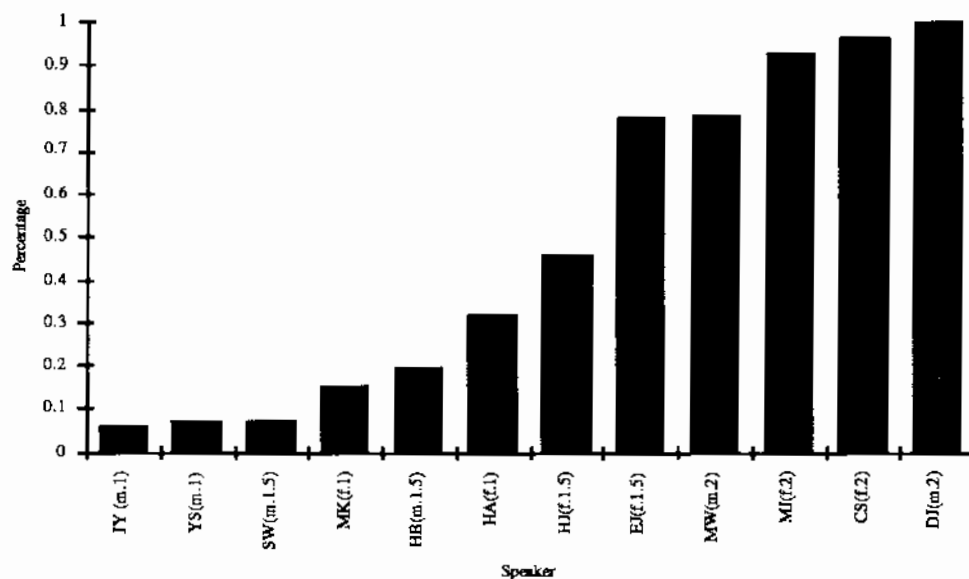


Figure 4. English nativeness scale based on perception

Figure 5. shows the perceptions of nativeness, ethnicity, and race. The results clearly indicate that the less native-English like the speaker sounds, the more judges are able to identify the ethnicity (i.e. 4a.) if not the race (i.e. 4b.) of the speaker. On the other hand, the more native-English like the speaker sounds, ethnicity and race become more transparent.

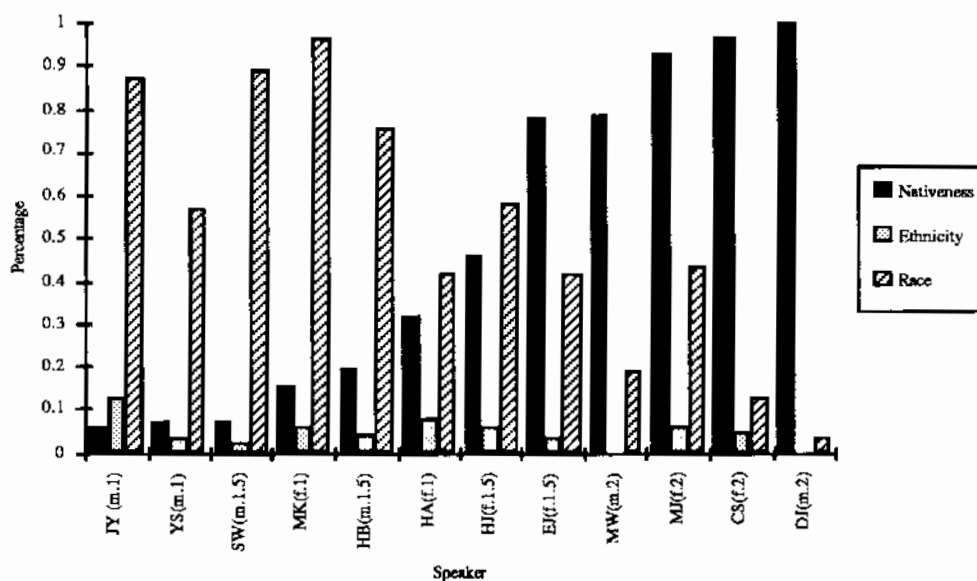


Figure 5. Perceptions of nativeness, ethnicity, and race

### Correlation

A major finding of the study was the correlation between the perceptions of nativeness of the speakers and the occurrence of flapping in the reading passage. The subjective reaction test used the same sentences from the reading passage and thus the frequency of flapping in the same tokens could be compared. Correlating the frequency rates of a linguistic feature with perceptions of nativeness provides a way to measure the rate of acquisition of each speaker.

Figure 6. presents the perceptions of the speakers' nativeness and the rate of flapping. Although it is an amalgamation of several acoustic features and not solely word medial /t/ flapping which triggers judgments of nativeness, the positive correlation found suggests evidence that the rate of acquisition of a linguistic feature can reflect nativeness to a certain degree.<sup>8</sup>

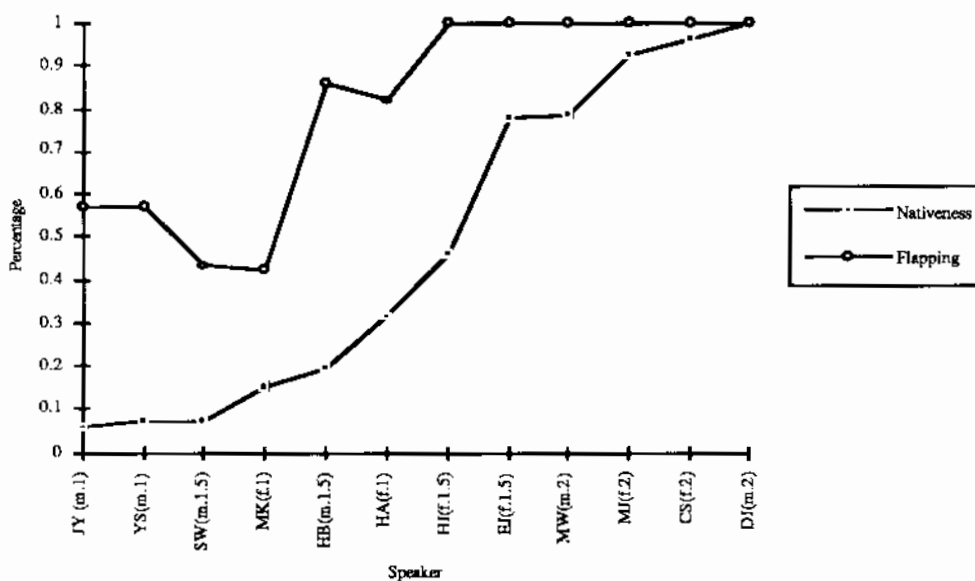


Figure 6. Correlation between nativeness and flapping

As can be seen in Figure 6., a positive correlation was found between the actual linguistic performance of the speakers and social judgments.

### Summary and Implications

The present study was an investigation of how word medial /t/ flapping is manifested in Korean speakers. The study was two-fold. The first part dealt with the social and stylistic dimensions of the acquisition of a colloquial English feature. The second part examined through a subjective reaction test the perceptions of native speakers of Korean speakers. The two parts were fused by correlating one linguistic variable with social judgments of speakers.

The findings concerning social variables indicated that as generation and length of stay in the U.S. increased the speakers showed a concurrent increase in the approximation of word medial /t/ flapping. The quantitative analysis of sociolinguistic factors of the speakers illuminates the extent of variable influence from exposure to English. The speakers showed variable behavior in terms of the probabilistic and gradual acquisition of the native North American English flapping rule. The results of the analysis on stylistic variation indicate that flapping is not sensitive to context. In addition to the production aspect of flapping, the subjective reaction test examined the perception aspect. The results of the test suggest that nativeness of non-native and native English speakers can be accurately determined. In addition, ethnicity was more readily identifiable than race. The highlight of the present study was the correlation found between the production and perception of flapping. Production and perception appear to increase in tandem showing a positive correlation.

The present study has several interdisciplinary implications. From a linguistic perspective, the present study is the first attempt to correlate a linguistic feature of word-medial /t/ flapping to the degree of English nativeness. The results reinforce the importance of interaction with native speakers in language acquisition. This in turn has several pedagogical implications for learning English. The acquisition of a colloquial feature such as flapping is dependent on informal face-to-face interaction not found in a classroom setting. Sounding 'native' entails one step further than proficiency gained through formal instruction. It requires the acquisition of norms of the particular variety of English the speakers are exposed to. Although it is a combination of linguistic cues which render a speaker as sounding 'native' this study has shown that the rate of acquisition of one particular feature correlates positively with perceptions of nativeness.

#### NOTES

\* I wish to thank Megumi Kobayashi, William Labov, Gillian Sankoff, Stephanie Strassel, Laura Siegel, Anita Henderson, and Miraim Meyerhoff for their assistance throughout various stages of this paper.

<sup>1</sup> The age of 18 was chosen as a cut-off point because this is the age when high school education is completed. It is also the turning point at which people choose to continue education or obtain jobs.

<sup>2</sup> An account is given by one non-native speaker of English, who overgeneralized the flapping rule by pronouncing 'mo[D]el' for 'mo[t]el.'

<sup>3</sup> For simplified expository purposes, the symbol used to refer to flapping will be [D] and ['] will indicate stress. When the syllable /t/ is situated in a [+stress] syllable, flapping does not occur (egs. a[tt]ack).

<sup>4</sup> The generalization of [-cons] includes /l,n,r/. The difference between environments 1) and 2) is the number of syllables in the word.

<sup>5</sup> A sociolinguistic interview is comprised of several interview modules aimed at eliciting the most vernacular speech possible. The goal is to elicit oral narratives where the speaker becomes unconscious about formal interview conditions.

<sup>6</sup> Megumi Kobayashi, a native-Japanese speaker, was the interviewer.

<sup>7</sup> The ethnicities of the distracters were: 2 whites, 2 African-Americans, 3 Hispanics, and 1 Chinese.

<sup>8</sup> The bar graph in Figure 4. has been reproduced as a line graph for purposes of exposition.

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