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Survey of American pronunciation preferences – a preliminary report

Note: Sadly, a ‘preliminary report’ is all Yuko Shitara ever produced. She later abandoned the PhD project for which this was the essential fieldwork.

Her findings are an important contribution to the documentation of phonetic variability in American English, and were incorporated into the second edition of my *Longman Pronunciation Dictionary*, 2000.

I am delighted to make her work known to a wider audience by putting it on the Web.

— John Wells, October 2003.

A SURVEY OF AMERICAN PRONUNCIATION PREFERENCES

Yuko SHITARA

1. Introduction

A few English dictionaries published in Britain incorporate American pronunciation as well as British, in order to cater for the needs of the not inconsiderable number of learners of English who take American English as their model. One such is a specialised dictionary on pronunciation, Wells (1990) (*Longman Pronunciation Dictionary (LPD)*). This dictionary often gives a word more than one variant of American pronunciation.

As for British pronunciation, *LPD* carries the result of a British "Opinion Poll" concerning ninety words that are known to have more than one pronunciation. This is used as evidence for the selection of a main pronunciation. As explained in Wells (1989a), the survey was conducted in order to correct, by asking representatives of the speech community, possible mistakes which might otherwise have resulted from impressionistic judgments of lexicographers. It would be of interest for learners of American English to have its comparable data: the present project is intended to supply such material for a future edition of the dictionary. The responses are analysed in this present paper to see if correlations can be established with the speakers' age and region of origin. Correlations with the speakers' ethnicity, education and occupation are also discussed briefly. These findings are to be compared in later reports with the attested variability within American English and with the observations on British English -American English differences.

2. Method

2.1 Procedure

Between July 1992 and February 1993 over four hundred people completed a postal questionnaire on pronunciation preferences for words selected in ways described below. The instructions at the beginning of the questionnaire are almost identical to those in the previous survey on British preferences described in Wells (1989a). In questions on consonants and vowels, phonetic transcriptions were supplemented by ordinary-language explanations and respelling as in the following sample:

9. exit

9-A / 'eks It/ (eks it) first part is like the name of the letter X 9-A[]

9-B / 'egz It/ (egz it) first part is like *eggs* 9-B[]

In questions on stress placement, two versions of ordinary spellings with different capitalisation of syllables (to show primary stress) were presented at the end of actual sentences, as in the following sample:

76. complex This machine is too *COMplex*. 76-A[]

This machine is too *comPLEX*. 76-B[]

By using actual sentences, meaning and word-class are made clear.

The respondents were native speakers of American English, many of them academics in the fields of phonetics and linguistics, language teachers or students. Questionnaires were sent to 236 people mainly drawn from membership lists of professional organizations. Some of them took the trouble to pass copies of the questionnaire on to other people, either after photocopying the questionnaire themselves or by requesting further copies. Professor J C Wells and Mr David Minugh kindly recruited informants in their summer classes in America. My personal contacts in America also had their friends fill in the questionnaires. As a result, 459 responses were obtained by the deadline of 15 February, producing the response rate of 194%. 64 responses were excluded from the sample because they were either responses made after a class discussion held by the person approached, or responses from people who did not specify where they were between the age of four and fourteen or had spent some of those years outside the United States. After eliminating these unwanted responses the final number of responses taken into account was 395.

On this basis, 136 persons (= 34.5%) are aged 25 or under, 130 persons (=33.0%) 26-45, 84 persons (=21.3%) 46-65 and 44 persons (=11.2%) 66 or over. (There was one null response to the question of age.) 179 (=45.5%) are male and 214 (=54.5%) are female. (There was one null response to the question of sex.)

The questionnaire asked the informants to tick in one of the 12 categories they belonged to: African-American, Anglo-Saxon/North European American, German-American, Greek-American, Hispanic-American, Irish-American, Italian-American, Jewish-American, Native American, Anglophone Canadian, Francophone Canadian and other. Canadians were excluded from this survey. There were 27 null responses. Out of the remaining 368, 216 (=58.7%) said they are Anglo-Saxon/North European Americans. Each of the other eleven categories had much fewer people in it, so the eleven categories are all classed into one group (152 (=41.3%) for this survey to see if those who regard themselves as Anglo-Saxon/North European Americans form one linguistic community or not.

Four classes of occupation are set up for this survey: academics (89 persons =22.7%), teachers (25 persons = 6.4%), students (140 persons = 35.7%) and other occupations (35.7%). There were 3 null responses to the question on occupation.

The informants who attended private prep schools are 58 (=15%) in number. Those who attended public high schools are 315 (81.8%). Twelve (=3.1%) attended both of these two types or attended private non-prep high schools. There were twelve null responses to the question of the high school type.

As their highest qualification, 77 informants (=21.2%) have a high school diploma, 33 (=9.1%) an associate's degree from community college, and 99 (=27.2%) a bachelor's degree. Other 155 people (=42.6%) have completed a postgraduate program. The remaining 31 people, many of whom are still in high school, had null responses to the question of educational qualifications.

The USA was divided into five areas for this survey: New England (Maine, Massachusetts, New Hampshire and Rhode Island), the Upper North (Vermont, Connecticut, New York, Michigan, Wisconsin and Minnesota), the Lower North (New Jersey, Pennsylvania, Ohio, Indiana and Illinois), the South (Delaware, Maryland, Virginia, West Virginia, Kentucky, the Carolinas, Tennessee, Georgia, Florida, Alabama, Mississippi, Louisiana and Arkansas) and the West (the other

states including Alaska) These areas are approximations by states to the major dialect regions in Carver (1987).

Another class was created for those who were brought up in more than one of these five areas. Washington, D C was conveniently included in this last class.

Nineteen (=4.8%) were between the age of four and fourteen in New England, 81 (=20.5%) are from the Upper North, 65 (=16.5%) from the Lower North, 40 (=10.1%) from the South and 106 (=26.8%) from the West. Those who moved around are 84 (=21.3%). Those who did not answer the question "Where did you live in between the ages of 4 and 14?" were excluded from the panel in this survey.

Ideally, each combination of the seven variables about the informants should have the same number of informants. If this condition is not met, we are more likely to have several factors associated with one form at the same time and it is not possible to pinpoint the strongest among them. Unfortunately, the probability figures calculated in chi square test were smaller than 0.05 between the following eight pairs of variables: age-and-region, age-and-occupation, age-and-sex, age-and-degree qualification, age-and-school type, degree qualification-and-sex, degree qualification-and-occupation and occupation-and-school type. (The only independent variable was ethnicity.) Among these pairs, age-and-occupation, age-and-degree qualification and degree qualification-and-occupation are expected to be related because young students, for instance, tend to have lower qualifications than old academics. But it is a weakness of the panel of this survey that age is related to region, sex and school type. Although the total numbers of the youngest group and the second youngest group are nearly the same (136 and 130 respectively), Southerners, Westerners and those who moved in the youngest group (32, 19, 60) are greater in number than those in the second youngest group (26, 11, 23). The youngest group has more females (91) than males (44). The second oldest group has more males (52) than females (32). The other age groups, 26-45 and 66-and-over, had nearly the same number of males (62 and 21 respectively) and females (68 and 23). Private school education is more popular as the age group gets younger (7%, 11%, 16% and 28% form the oldest to the youngest).

2.2 Selection of Words in the Questionnaire

American English is derived from the language which was spoken in southern England in the seventeenth century. Settlers from other parts of Britain than southern England joined the earliest settlers within the same century. The eighteenth century saw the beginning of a great influx of Scotch-Irish settlers. Thus seventeenth-century southern English modified by the English spoken in northern England, Scotland and Ireland may be regarded as the basis of American English.

It took some time for people in America to realise that they spoke a variety of English distinct from those in the mother country. During this time, the general trend of pronunciation changes in America, whether regular or irregular, was to diverge from British pronunciation in one of several ways: (1) through local innovations, (2) through local losses, (3) through failing to incorporate British innovations/losses, or (4) by generalising what used to be limited to a particular region/class in Britain.

Because no change in pronunciation occurs overnight, a change can only be observed as a state of variability at a particular point in time. Variability within America is attested in Wells (1982:488 - 489) on such words as *coop*, *cooper*,

hoop, broom, room, hoof, roof, root and *greasy*. Variability within American English may be traced back to that in Britain or may be the result of an independent development. What is thought of as British-American variation is potentially a variation within Britain and within America. Baugh and Cable (1978), Marckwardt (1980) and Pyles (1982) list British-American variations: all of these were adopted as candidate words for the questionnaires. These words were checked in such dictionaries as *American Heritage Dictionary (AHD)* and *Random House Dictionary of the English Language*, 2nd ed. (RHD²), to see if these sources list the variants without commenting on national differences. In fact, they list variants of such items as *either, process, room, aunt, and syrup* without national labels; accordingly, these items were included in the survey.

Another source is Elster (1988, 1990), who offers guidance to an American readership on the pronunciation of various words about which people are unsure. Many of them proved to be learned words which people encounter first in writing. These were not seen as suitable for the selection for the present questionnaire, but such commonly used words as *address, ally, aunt, baptize, because, confiscate, drama, forehead, garage, incomparable, luxury, malpractice, measure, patronize, research, route* and *suggest* were selected.

Dgpot comes from Marckwardt (1980) and *Massachu[s/z]etts* and *citi[z/s]en* come from personal observations by J C Wells and S. Takebayashi respectively. According to Takebayashi (p.c.) the pronunciation *citi[s]en* is to be heard in speeches by certain American statesmen including the inaugural address by J F Kennedy. These words are also shown to have two pronunciations in *Webster's Ninth New Collegiate Dictionary (Coll9+)*. [ʃ / tʃ] *icago* comes from my own observation of the speech of my personal acquaintances, but [tʃ] is not attested in dictionaries.

Other words were collected unsystematically by consulting *Webster's Third International Dictionary (W3)*, *Webster's Ninth New Collegiate Dictionary (Coll9+)* and *A Pronouncing Dictionary of American English (K+K)*. *Herb, semiformal, inquiry, falcon, covert* and *calm* were selected in this way.

The question of merger of the vowels in *cot* and *caught* and some words with potential /j/ dropping were included in the questionnaire to see to what extent people would treat the words in the same group regularly.

An extensive list of words from all the above groups was reduced to a final total of 102. As far as possible, words that are in common use were selected, with care being taken not to have too many words beginning with the same letter. Although little can be seen apparently of any overarching principle in the kinds of variability observed, even irregular phenomena of the type explored here constitute a part of the reality of the language.

3. Results in Percentage

After disregarding those who offered no preference or no response, the percentage for each word was calculated among those who selected a particular preference.

3.1. Consonants / Semivowel

abgorb	/s/ 25%	/z/ 75%
citizen	/s/ 36%	/z/ 64%

greasy	/s/ 86%	/z/ 14%
Massachussetts	/s/ 87%	/z/ 13%
newspaper	/s/ 32%	/z/ 68%
visa	/s/ 45%	/z/ 55%
diagnose	/' - - -s/ 32%	/' - - -z/ 7%
	/, - - '-s/ 58%	/, - - '-z/ 11%
coupon	/ju:/ 48	/u:/ 52

(82 questionnaires accidentally lacked the second alternative of this question. These figures are counted within 313 responses, instead of 395 (- null responses) for the other questions.)

due	/ju:/ 9%	/u:/ 91%
new	/ju:/ 14%	/u:/ 86%
tube	/ju:/ 9%	/u:/ 91%
student	/ju:/ 12%	/u:/ 88%
attitude	/ju:/ 12%	/u:/ 88%
costume	/ju:/ 25%	/u:/ 75%
forehead	0 13%	/h/ 88%
herb	0 90%	/h/ 10%
vehicle	no h-sound, /' - - - /	62%
	with an h-sound, /' - - - /	33%
	with an h-sound, / - '- - - /	5%
baths	/θs/ 50%	/æz/ 50%
youths	/θs/ 61%	/æz/ 39%
with	/θ/ 84%	/ɜ/ 16%
Asia	/ʃ/ 9%	/ɜ/ 91%
equation	/ʃ/ 10%	/ɜ/ 90%
luxury	/kʃ/ 48%	/gɜ/ 52%
luxurious	/kʃ/ 21%	/gɜ/ 79%
congratulate	/tʃə/ 42%	/dɜə/ 58%
exit	/ks/ 48%	/gz/ 53%
Chicago	/tʃ/ 3%	/ʃ/ 97%
garage	/ɜ/ 52%	/dɜ/ 49%
February	/bju/ 64%	/bru/ 36%
often	0 78%	/t/ 22%
suggest	/gdɜ/ 77%	/dɜ/ 23%

shutter and shudder	sound the same 57%	sound different 43%
palm	/pɑ: m/	37%
	no l-sound, does not rhyme with Tom	10%
	/pɑ: lm/	53%
falcon	/ɔ: l/ 13%	/ɔ: / 3%
		/æ l/ 84%

3.2. Vowels

cot and caught
coffee

sound the same 37% sound different 63%

Among those whose answered that cot and caught sounded different (Only those who did were asked to answer this question.):

/ɑ: / 9%(22) /ɔ: / 91%(221)

gone

Among those whose answered that cot and caught sounded different (Only those who did were asked to answer this question.):

/ɑ: / 24%(58) /ɔ: / 76%(184)

sorry and starry	rhyme perfectly	68%	
	do not rhyme perfectly	32%	
orange	first vowel sound is same as <i>knot</i>		20% (77)
	first vowel sound is different from that of <i>knot</i>		80% (314)
	(See Section 4.1. for detailed account of this question.)		
tomorrow	first vowel sound is same as <i>knot</i>		65% (254)
	first vowel sound is different from that of <i>knot</i>		35% (135)
	(See Section 4.1. for detailed account of this question.)		
hurry	first vowel is the same as <i>hum, cut</i>	13%	
	first vowel is the same as <i>her, purr</i>	87%	
syrup	/ɪr /	50%	/ɜː / 50%
he and he(ro)	sound the same	57%	sound different 43%
Mary and marry	sound the same	68%	sound different 32%
marry and merry	sound the same	53%	sound different 47%
room	/u: /	93%	/ʊ / 7%
soot	/u: /	10%	/ʊ / 89% /ʌ / 1%
again	/e /	97%	/eɪ / 3%
aunt	/æ /	70%	/ɑ: / 30%
because	/ɔ: z /	41%	/ʌz / 57% /ɔ: s / 2%
covet (adj)	/'kɒʊv - /	53%	/'kɒʊ - / 40% /'kʌv - / 7%
creek	/ɪ /	2%	/i: / 98%
prestigious	/ɪ /	36%	/i: / 64%
depot (in the sense of 'bus station')	/i: /	95%	/e / 5%
direct (both as adjective and verb)	/ə /	78%	/aɪ / 22%
data	/eɪ /	64%	/ɑ: / 1% /æ / 35%
drama	/eɪ /	1%	/ɑ: / 88% /æ / 11%
patronize	/eɪ /	64%	/æ / 36%
deprivation	/,di: p r aɪ ' - - /	3%	
	/,dep r ə ' - - /	93%	
	/,di: p r ə ' - - /	4%	
semiformal	/aɪ /	40%	/i / 60%
juvenile	/n aɪ l /	70%	/nɪ / 30%
either	/i: /	84%	/aɪ / 16%
palm	/pɑ: m /		37%
	no l-sound, does not rhyme with <i>Tom</i>		10%
	/pɑ: l m /		53%
falcon	/ɔ: l /	13%	/ɔ: / 3% /æɪ / 84%
ideology	/aɪ /	64%	/i: / 1% /ɪ / 35%
measure	/eɪ /	5%	/e / 95%
predecessor	/'pri: d - - - /	3%	/'pred - - - / 88%
	/, pred - ' - - /	9%	
process (n)	/'prɑ: s ə s /	7%	/'prɒʊs ə s / 1%
	/'prɑ: s ə s /	86%	/'prɒʊs ə s / 6%

route	/ u: / 68%	/ aU / 32%
vacation	/ eI / 91%	/ e / 9%

3.3. Word Stress

applicable	' - - - - 64%	- ' - - - 36%	
formidable	' - - - - 68%	- ' - - - 32%	
incomparable	- ' - - - - 76%	- - - ' - - - 24%	
justifiable	' - - - - 18%	- - - ' - - - 82%	
baptize	' - - 92%	- ' - 8%	
capsize	' - - 93%	- ' - 7%	
create	' - - 13%	- ' - 87%	
donate	' - - 88%	- ' - 12%	
translate	' - - 83%	- ' - 17%	
confiscate	' - - - 94%	- ' - - 6%	
illustrate	' - - - 92%	- ' - - 8%	
address (noun)	' - - 42%	- ' - 58%	
research (noun)	' - - 78%	- ' - 22%	
ally (verb)	' - - 50%	- ' - 50%	
discount (verb)	' - - 82%	- ' - 18%	
adult (noun)	' - - 12%	- ' - 88%	
cigarette	' - - - 65%	, - - ' - 35%	
complex (adjective)	' - - 27%	- ' - 73%	
decade	' - - 93%	- ' - 7%	
detail	' - - 75%	- ' - 25%	
exquisite	' - - - 24%	- ' - - 76%	
extraordinarily	- ' - - - - 63%	- - - ' - - - 37%	
fiancée	- ' - - 47%	- ' - 53%	
finance	' - - 87%	- ' - 13%	
harass	' - - 13%	- ' - 87%	
idea	' - - - 14%	- ' - - 86%	
inquiry	' - - - 74%	- ' - - 26%	
insurance	' - - - 12%	- ' - - 88%	
kilometer	' - - - - 16%	- ' - - - 84%	
malpractice	' - - - 25%	- ' - - 75%	
mischievous	' - - - 67%	- ' - - 33%	
respiratory	' - - - - 95%	- ' - - - 5%	
submarine	' - - - 61%	- - - ' - 39%	
umbrella	' - - - 14%	- ' - - 86%	
diagnose	/ ' - - -s/ 32%	/ ' - - -z/ 7%	
	/ , - - ' -s/ 58%	/ , - - ' -z/ 11%	
vehicle	no h-sound, / ' - - - / 62%		
	with an h-sound, / ' - - - / 33%		
	with an h-sound, / - ' - - / 5%		
covert (adj)	/ ' koUv - / 53%	/ koU ' - / 40%	/ ' kAv - / 7%
predecessor	/ ' pri: d - - - / 3%	/ ' pred - - - / 88%	
	/ , pred - ' - - / 9%		

3.4. Comparison with the British Opinion Poll Results

Eighteen of the 102 words in this present survey were also in the British Opinion Poll, whose results are in *LPD*. Among them the following twelve words show very different preferences in the two varieties of English:

luxury	American	/ kʃ / 48%	/ g ʒ / 52%	
	British	/ kʃ / 96%	/ g ʒ / 4%	
covert (adj)	American	/'koʊv - / 53%	/ koʊ ' - / 40%	
		/'kʌv - / 7%		
	British	/'koʊv - / 37%	/ koʊ ' - / 9%	
		/'kʌv - / 54%		
data	American	/ eɪ / 64%	/ ɑː / 1%	/ æ / 35%
	British	/ eɪ / 92%	/ ɑː / 6%	/ æ / 2%
either	American	/ iː / 84%	/ aɪ / 16%	
	British	/ iː / 13%	/ aɪ / 88%	
exit	American	/ ks / 48%	/ gz / 53%	
	British	/ ks / 55%	/ gz / 45%	
applicable	American	' - - - 64%	- ' - - - 36%	
	British	' - - - 23%	- ' - - - 77%	
cigarette	American	' - - - 65%	- ' - - - 35%	
	British	' - - - 15%	- ' - - - 85%	
formidable	American	' - - - 68%	- ' - - - 32%	
	British	' - - - 46%	- ' - - - 54%	
harass	American	' - - 13%	- ' - 87%	
	British	' - - 68%	- ' - 32%	
kilometer	American	' - - - 16%	- ' - - - 84%	
	British	' - - - 52%	- ' - - - 48%	
research (n)	American	' - - 78%	- ' - 22%	
	British	' - - 20%	- ' - 80%	
submarine	American	' - - - 61%	- ' - - 39%	
	British	' - - - 42%	- ' - - 58%	

If a dictionary has a policy to give one British form and one American form at most, it would be appropriate to list American / iː / and British / aɪ / for *either*, American ' *applicable* and British *ap'plicable*, American ' *cigarette* and British ' *ciga'rette*, American *ha 'rass* and British ' *harass*, and American ' *research* and British *re'search*.

Wells (1989b) reports that / iː / *ther*, *ap 'plicable*, *for 'midable*, *ha 'rass* and *ki 'lometer* are more popular among the younger British than the older. In Britain, *either*, *harass* and *kilometer* are probably changing toward the forms preferred in America (/ iː / *ther*, *ha 'rass* and *ki 'lometer*), whereas *ap 'plicable* is diverging from the form popular in America. As discussed in 4.2, the choices between the variants of *applicable*, *formidable* and *harass* are related to age also in American English. *Ha 'rass* is even more popular among young Americans than older Americans, and can therefore be thought of as changing in the same direction in both varieties. *For 'midable*, though less popular in America, also shows age grading suggesting that the two varieties are going in the same direction. In America the form *ap 'plicable* is most popular in the 46 - 65 age group. It might be the case

that the stress of the word was changing in the same direction until recently, and then most recently it is changing in America toward 'applicable, diverging from the British form.

The following six words show similar preferences in the two varieties.
Words showing similar preferences by American and British people:

baths	American	/θs/ 50%	/æz/ 50%
	British	/θs/ 50%	/æz/ 50%
often	American	0 78%	/t/ 22%
	British	0 73%	/t/ 27%
again	American	/e/ 97%	/eɪ/ 3%
	British	/e/ 80%	/eɪ/ 20%
room	American	/u:/ 93%	/U/ 7%
	British	/u:/ 82%	/U/ 19%
decade	American	' - - 93%	' - - 7%
	British	' - - 86%	' - - 14%
exquisite	American	' - - - 24%	' - - - 76%
	British	' - - - 31%	' - - - 69%

Wells (1989b) reports that ex'quisite is more popular among young British people than old. The word had the same age grading in America, as shown in 4.2.

4. Observation

4.1. Comparison of Percentages within Groups of Words

Seven words concern the use of the semivowel /j/. The change from /ju:/ to /u:/ after coronal consonants has occurred in American English. *Tube*, with the environment of primary stress and after a /t/, shows greater preference of /j/ dropping than *new* (primary stress, after an /n/), *student* (primary stress, after /st/), *attitude* (postnuclear strong syllable, after a /t/) and *costume* (postnuclear strong syllable, after /st/). It is not certain, however, whether these results are idiosyncratic or determined by phonetic environments.

c/ju:/pon is a new form of *coupon*, which was originally c/u:/pon when it was first borrowed from French. This /j/ is inserted because the sequence /ku:/ is rare in English. If a coronal consonant were in the place of /k/, this change would not have occurred.

For the plurals ending with -ths, *baths* has equally divided preference between voiced and voiceless consonants, whereas the voiceless consonants were preferred in *youths*.

Insertion of spelling-pronounced /h/ has completed its course in *forehead* in America, now that it is the form preferred by nearly nine out of ten people. See also section 4.2. Only one out of ten prefer to insert /h/ in *herb*. /h/ in *vehicle* is somewhere in the middle between the two.

Coffee, *gone*, *sorry*, *orange* and *tomorrow* have both the vowel of *cot* and the vowel of *caught* in *Coll9+* and many other dictionaries. Although *Coll9+* warns the users not to treat the order of pronunciations presented for a word very seriously, the first two words have the vowel of *caught* as their first pronunciations, and other

words that of *cot* as the first pronunciations. The dictionary indicates by the use of the word 'also' that the vowel of *cot* is less common than that of *caught* for *orange*. The preferences expressed in the present survey do not necessarily confirm the different treatments of the five words in the dictionary. /ɔ:/ was found to be more common for all the words except *sorry* and *orange*. Also the use of /ɔ:/ for *coffee* was preferred more strongly than for *gone*.

In case of *orange* and *tomorrow*, it is interesting that even among those who did not distinguish *cot* and *caught* seem to prefer /ɔ:/ for *orange* and /ɑ:/ for *tomorrow*. Because these two questions merely asked if the informants prefer to use the vowel in *knot* (=the vowel in *cot*) for these words, it is not certain whether informants' judgment of sameness and difference were influenced by the following /t/ or not. Following figures are preferences according to the answers to the questions on *cot* and *caught*, and on *sorry* and *starry*.

	<i>orange</i>	<i>tomorrow</i>
Among those whose answered that <i>cot</i> and <i>caught</i> sounded different:		
first vowel sound is the same as <i>knot</i>	25% (60)	64% (155)
first vowel sound is different from that of <i>knot</i>	75% (183)	36% (88)
Among those whose answered that <i>cot</i> and <i>caught</i> sounded the same:		
first vowel sound is the same as <i>knot</i>	11% (16)	58% (28)
first vowel sound is different from that of <i>knot</i>	89% (131)	42% (20)
Among those who answered that <i>sorry</i> and <i>starry</i> sounded different:		
first vowel sound is the same as <i>knot</i>	14% (17)	48% (59)
first vowel sound is different from that of <i>knot</i>	86% (106)	52% (64)
Among those who answered that <i>sorry</i> and <i>starry</i> sounded the same:		
first vowel sound is the same as <i>knot</i>	22% (59)	73% (191)
first vowel sound is different from that of <i>knot</i>	78% (204)	27% (71)
Among those who answered that <i>sorry</i> and <i>starry</i> sounded the same and that <i>cot</i> and <i>caught</i> sounded different:		
first vowel sound is the same as <i>knot</i>	31% (51)	72% (120)
first vowel sound is different from that of <i>knot</i>	69% (114)	28% (46)

Correlation between the choice in the question of *cot* and *caught* and the choice of a vowel for *orange* was very strong as the chi square probability was 0.001. The answers to *orange* question were found to be related to the answers to the question of (s)orry=/(st)arry, probability being 0.047. Correlation was not observed between the choice in the question of *cot* and *caught* and the choice of a vowel for *tomorrow*, probability being 0.300. The answers to the *tomorrow* question were proved to be related to those to the question of (s)orry=/(st)arry, probability being smaller than 0.001.

The percentages for *hurry* and *symp* are greatly different, and there is a significant correlation between the responses to the two questions with chi square probability being 0.027. 65% of the people who prefer $h/\Lambda r/\text{y}$ prefer $s/\text{I}r/\text{up}$, and 53% of the people who prefer $h/3r/\text{y}$ prefer $s/3r/\text{up}$.

Among the four words ending with *-able*, forms with an early stress is preferred to those with a late stress except in the case of *justi fiable*. In the preferred stress placement of *applicable*, *incomparable* and *justifiable* the stems *apply*, *compare* and *justify* are not audible.

Also for verbs ending with *-ize* and *-ate* (except *create*), forms with an early stress is preferred to those with a late stress. Dobson (1968: 448) cites evidence of stresses on the second syllables of *confiscate* and *illustrate* from the seventeenth century. This was probably the pronunciation of the early settlers in America, but now the forms with an early stress are the predominant ones.

4.2. Correlation with Age

Figures 1 to 15 show the percentages of people who prefer a particular form within each age group. The forms with plots in dotted lines are not shown to have correlations with age; their probability figures in chi square tests are greater than 0.05. Words whose figures were smaller than 0.01 totalled 49, and they were all plotted here. The criterion of 0.01 is a strict one, which is hoped not to let those selected be mere results of there being a large number of questions in the questionnaire.

Figures 1 and 2 show that $/j/$ dropping in *new* is related with young age. $/j/$ dropping in *due* is not as strongly related with age. *Tube*, *student*, *attitude* and *costume* do not seem to exhibit age grading at all. People aged between 26 and 45 prefer to say $c/u:/text{pon}$, and this word does not exhibit grading similar to words with $/j/$ dropping at all.

Spelling pronunciation with $/h/$ is becoming more and more popular in *forehead*, approaching 100% as Figure 3 shows. For *vehicle*, the trend seems to be a recent one. Pronunciation without $/h/$ of *herb* is a fairly stable one in all age groups.

It is surprising that the pronunciation $wi/\theta/$ is becoming more and more popular as shown in Figure 4, because the voiceless sound is thought to be an older pronunciation for this word. In *baths* and *youths*, regular plurals without changing the consonant into voiceless seem to be becoming more popular recently.

The older pronunciation $/ks/$ for the letter *x* became $/gz/$ before stress in the seventeenth century according to the English tendency to use voiced consonants mentioned by Dobson (1968:934). As can be seen in Figure 5, this is still in force in the history of the word *luxurious*, and it seems to be influencing the pronunciation of its stem *luxury*.

The distinctions between *cot* and *caugh*; *Mary*, *marry* and *merry* are becoming less popular as the age group gets younger as Figure 7 shows. If you reverse the graph of (s)orry=(st)arry, it is almost identical to that of (tom)o(throw)=(kn)o(t) in Figure 9. It can safely be said that $s/\alpha:/text{rry}$ and $tom/\alpha:/text{rrow}$ is and has been preferred stably by about 70% of the American population.

Figures 8 and 9 show that /ɑ:/ *lffe*, /ɜ:/ *lne* and /ɔ:/ *lrnge* are gaining ground although only the last form was preferred by the majority of the panel.

H/3ɜ:/ *lrry* and *s/3ɜ:/* *lrup*, where /r/ has been integrated into the previous vowel, are becoming more popular as Figure 10 shows.

The previous section showed that 'applicable', 'formidable' and 'incomparable' are more common, but the less preferred later stress is gaining more ground as the age grading in Figure 12 shows. 'Justifiable' is supported by all the age groups.

When an age graph of a pronunciation with chi square probability smaller than 0.01 is a simply increasing graph, we call in this present paper the pronunciation a New Form for short. These forms are expected to become more popular, unless people uniformly adopt certain forms characteristic of older people when they grow old. New Forms found in this survey are:

d/u:/, n/u:/, w/θ/, fore/h/ead, lu/gy/urious, ab/z/orb, congra/ɪ ʒə /late,
 Fe/bju/ary, pa/l/m, shutter(=shudder), cot(=caught), Mary(=marry),
 marry(=merry), co(ffee)(=co(t)), (g)o(nc)(=c)o(t), o(rnge)(=lkn)o(t)),
 hu(rry)(=he(r)), juve/nall/, c/oU/ 'vert, prest/i:/gious, for' midable,
 incom' parable, a' dult, ex' quisite, ha' rass, mis' chievous, ' research.

English, as a Germanic language, has a tendency to shift a word stress to the initial position. Mencken (1941:325, 1948:48) seem to have thought that this tendency was stronger in America than in Britain, giving examples including *adult*, *ally*, *detail*, *cigarette*, *finance*, *idea*, *inquiry* and *research*. 'Research' is still a New Form, but *a' dult* now seems to be going in the other direction. As for Mencken's other examples here, all had an early stress in their preferred forms except *idea* and *ally*. As we saw in 3.4, *cigarette* and *research* are indeed instances of American-British variation.

4.3. Correlation with Region

Figures 16 to 26 show the percentage of preference of a particular form of the word within each of the six regions and one additional category (more than one region). The words *coupon*, *youth*, *tomorrow*, *formidable* and *justifiable* did not have a probability figure smaller than 0.005, but their graphs were plotted for comparison with other words of similar type.

Figure 16 shows that /j/ dropping occurs less commonly in New England. With *costume*, it is also less common in Lower North. These two areas have smaller percentages preferred for d/u:/ and n/u:/, which are age related, so these areas are not leading the trend of the American pronunciation as far as these two words are concerned. The probability that the regional difference in preference of c/ju:/pon was as Figure 17 on mere coincidence is 0.071 (chi square test). Even though this difference is not significant, New Englanders and people in Lower North preferred c/ju:/pon more strongly than others.

A very small percentage of people liked *veh/icle* in New England and no one there preferred *h/erb*. *Fore/h/ead*, however, which is prevalent in all regions, was least preferred in the South and was preferred most strongly in the West, which is leading the change of this word.

The older voiced endings of *baths* and *youths* were found to be preferred most strongly in New England, although the regional difference in *youths* was due to mere chance as probability figure of 0.073 suggests in chi square test. The regional variation for *with* is greater, and people from the West prefer its last consonant to be voiceless most strongly.

When we look at Figure 21, it is interesting that both the West and New England prefer to have the same vowel in *cot* and *caught*. The vowel used in New England is rounded (Bronstein 1960:165), whereas the vowel used in the West is usually unrounded (Bronstein 1960:164). All the regional correlations are significant in Figure 21, and the other three distinctions are most strongly made in New England.

The regional account of answers on *coffee* and *gone* is not plotted because they did not show strong correlation with region, with responses being limited from those to whom *cot* and *caught* sounded different, who are in turn mostly in certain regions.

Although many Westerners prefer to regard *cot* and *caught* as the same and hence are expected to make *knot* and *naught* the same, they prefer to keep the strong vowels of *orange* and *knot* distinct as Figure 22 indicates. This preference was also the younger generation's as we saw in the previous section. The low percentage of *o(range)≠(kn)o(t)* among New Englanders is probably because they use a rounded vowel of the same quality for all of *orange*, *knot*, *cot* and *caught*. Answers to the question on *tomorrow* are not related to region, with chi square probability being 0.443.

Hurry and *syrup* are the words with a great regional variation as Figure 23 shows. *H/ʌ /rɪrɪ* is a New England characteristic, whereas *s /l/ɹʌp* is very common in Upper and Lower North. In New England, where much maple syrup is produced, *s/ɜː /ɹʌp* is preferred more strongly than anywhere else in the United States.

In Figure 25, answers to *applicable* ($p=0.009$) and *incomparable* (0.004) were found related to region, whereas *formidable* (0.382) and *justifiable* (0.799) were not.

'*Applicable* is preferred most strongly in the South, and *incom'parable* in the West.

Figures 20, 24 and 26 show other words which are related to region, with probability figures of chi square tests smaller than 0.01, except *because* in Figure 24, where the number of those who preferred *bec/ɔːs/* was not large enough to make the chi square a valid test. The following forms were preferred especially by New Englanders:

Fe/bru/ary, p/ɑː /m, aunt (/ɑː nt/), prest/l/igious, t/ʌː /te, sem/i/formal, i' dea

The following forms were found popular in the South:

grea/z/y, new/z/paper, p/ɑː l/m, ' idea

Greasy is one of the most famous words known to have regional variation. Keating, et al.(1992:9), Cassidy (1985:792) (*DARE*), Kurath and McDavid (1961:176-177) and Atwood (1950:429) agree that *grea/z/y* is associated with the South and its environs. *DARE*(792) shows in detail that it is the predominant form in the area southeast from New Jersey, Delaware, Maryland, West Virginia, Indiana, Missouri, Oklahoma and New Mexico. Shields (1989:429) reports that in

what used to be an overlapping area in eastern Pennsylvania the use of /s/ is becoming more popular. Keating, et al (1992) showed TIMIT speech database (of 630 native speakers of American English developed by Texas Instruments and MIT) had about 50% occurrences of *greaz/ly* in the two areas which seem to be Kurath (1949)'s South and South Midland. My result in the area approximating Carver's South was 45% preference of *greaz/ly*.

The following forms were strongly preferred by the Westerners and those who moved around:

p/ɑ: l/m, vi/s/a, bec/Λz/, sem/aI/formal, mis' chievous

Following are New Forms which are also related to region, with both probabilities of age and region being less than 0.01. After each word follow the new form and the regions which showed the greatest and the second greatest preferences of the form.

	New Form	First	Second
February	/ bju /	South	West
forehead	/h/	West	Upper North
palm	/ɑ: l/	West	South
due	/ u: /	(More than One)	Upper North
new	/ u: /	(More than One)	Upper North
cot	=caught	New England	West
Mary	=marry	West	(More than One)
marry	=merry	West	(More than One)
prestigious	/ i: /	West	South
incom' parable		West	(More than One)
mis' chievous		West	(More than One)

Chi square was not a valid test for the following words on account of the presence of the third forms which was preferred by very few people. These words had a form which was associated with young age. After the word follow such a form and the regions where it is preferred most strongly and second most strongly.

because	/ Λz /	West	(More than One)
data	/ æ /	(More than One)	South
ideology	/ aI /	West	Lower North

In nine out of these fourteen words which are related to both age and region, the forms preferred by young people are also preferred most strongly by people from the West. Speech in the western half of the USA is, indeed, leading the changes observed here of the American pronunciation.

4.4. Correlation with Sex, Ethnicity and High School Type

Females, who are thought to be more conscious of pronunciation, are quick to adopt new trends in speech and lead the linguistic change, whereas males generally find it less easy to do so because of the peer pressure. We will see in this section if this holds in the present survey, calling forms preferred by females Female Forms..

There were only two groups of ethnic backgrounds available in this survey: Anglo-Saxon/North European American and others. This distinction may not be a meaningful one in present-day America, but we will see if those who regard themselves as Anglo-Saxon/North European are different from others or not in their

preference of pronunciation. Forms preferred by these people are called A-S Forms for short.

Only two words had probability figures smaller than 0.01 in chi square tests to see correlation with high school type: *capsize* and *incomparable*. Those who went to public high schools preferred the forms 'capsize (95%) and incom' parable (39%) more strongly than those who had attended private high schools (84% and 21%). Only *incomparable* is also related to age, with incom' parable as the New Form.

In the following table, the presence of a form means that the chi square test showed probability smaller than 0.01. The absence of a form in the cell means that either the probability is greater than 0.01 or chi square was not a valid test for the correlation in question. New Forms have simply increasing graphs by definition and can be thought of as a form which will become more popular in the future.

The first row of the following table means that ab/z/orb was more popular as the age group became younger, that the females preferred ab/z/orb significantly more strongly (81%) than the males (68%), and that Anglo-Saxon/North European Americans preferred ab/s/orb significantly more strongly (33%) than people with other backgrounds (13%).

	New	Female	A-S
absorb	/z/	/z/ (81, 68)	/s/ (33, 13)
Mary	=marry	=marry (75, 61)	=marry (74, 60)
co(ffee)	=co(t)	=co(t) (16, 6)	--
o(range)	≠(kn)o(t)	≠(kn)o(t) (85, 74)	--
prestigious	/i:/	/i:/ (72, 54)	--
exquisite	ex' quisite	ex' quisite (85, 65)	--
harass	ha' rass	ha' rass (92, 82)	--
(g)o(ne)	=(c)o(t)	--	=caught (83, 69)
congratulate	/dʒə/	--	/tʃə/ (50, 33)
juvenile	/nəl/	--	/nɪ/ (37, 21)
greasy	--	/s/ (91, 80)	--
visa	--	/s/ (53, 36)	--
exit	--	--	/ks/ (54, 39)
baths	--	--	/θz/ (56, 40)
luxury	--	--	/kʃ/ (55, 39)
syrup	--	--	/ʒr:/ (56, 39)

With the exception of the question Mary=≠marry, A-S Forms were the opposite of New Form=Female Form. There were seventeen words with New Forms which are related to neither sex nor ethnicity: d/u:/, n/u:/, wi/θ/, fore/h/ead, lu/gʒ/urious, Fe/bju/ary, pa/l/m, shutter(=shudder), cot(=caught), marry (=merry), hu(rry)(=he(r)), c/oU/'vert, for' midable, incom' parable, a' dult, mis'chievous, research.

For questions with more than two alternatives, chi square may not be a valid test because not all the forms were not preferred by a sufficient number of people. Following are such words which have a form more popular with younger age groups, and forms and figures showing correlations with sex, ethnicity and high school type. In the following table, probability figures do not affect the absence/presence of the comment unlike the previous table.

	Young	Female	A-S	Public High
because	/ʌz/	/ʌz/ (62, 52)	/ʌz/ (59, 53)	/ʌz/ (58, 57)
data	/æ/	/æ/ (39, 30)	/eI/ (65, 62)	/eI/ (65, 62)
ideology	/aI/	/aI/ (69, 58)	/aI/ (65, 63)	/aI/ (67, 51)

These differences in percentages are so small that we cannot conclude anything.

4.5. Correlation with Educational Qualifications

In this section, we will see if New Forms are related to higher educational qualifications or high degree of intelligence of occupation. Alternatives in the question on educational qualifications were high school diploma, associate's degree from a community college, bachelor's degree from a four-year university, and degree from a postgraduate program. Out of the 21 questions which produced significant correlation with educational qualification with probability smaller than 0.01, twelve showed that people who gained up to associate's degree showed the highest percentage of preference of one form. This may be because associate's degree is in the present panel at the lowest end of the scale of educational background, with high school diploma being gained by almost all the people who are adults.

In the following table, the preference percentage in each of the four categories of the New Form is shown for a word whose answers were found related to educational qualifications of the informants, where New Form is available. For words without a New Form, forms generally preferred by people with a low educational background are used. The highest percentage for each word is underscored.

	New	Educational Qualification				
		High School	Associate's	Bachelor's	Postgraduate	
forehead	/h/	26%	91%	89%	79%	
February	/bju/	78	69	62	55	
Mary	=marry	79	76	75	52	
o(range)	ʌ(kn)o(t)	88	82	88	69	
prestigious	/i: /	79	85	73	44	
cot	=caught	47	53	26	27	
incomparable	incom' par-	31	35	23	13	
formidable	for' midable	35	15	42	24	
exquisite	ex' quisite	88	82	73	68	
garage	--	/dʒ/	49	71	56	36
often	--	/ʌ/	36	41	23	8
visa	--	/s/	57	67	43	31
pa/I/m	--	/ʌ/	60	74	56	41
route	--	/aU/	34	56	36	22
direct	--	/aI/	30	25	26	12
ally (v)	--	' ally	72	68	57	28
address (n)	--	' address	58	34	45	32
donate	--	do' nate	4	26	16	9
extraordinarily	--	-' narily	34	47	34	20
fiancée	--	fi' ancée	60	76	48	35
mischievous	--	mis' chiev-	39	56	33	18

Preferences of the nine words which are related to both age and educational qualifications show that forms associated with young people are associated with people with low educational qualifications.

Twelve words which were related to educational qualification did not have New Forms, and the following seventeen New Forms were not related to educational qualifications: d/u: /, n/u: /, wi/θ /, lu/gʒ /urious, ab/z/orb, congra/dʒə /ate, shutter(=shudder), marry(=merry), co(ffee)(=co(t)), (g)o(ne)(=(c)o(t)), hu(rry)(=he(r)), c/oU/ 'vert, juve/naʌl/, ha' rass, a' dult, mis' chievous, ' research.

The following three words for which chi square is not a valid test seem to have some correlation with educational qualifications:

	Young	Educational Qualification			
		High School	Associate's	Bachelor's	Postgraduate
because	/ ʌz /	67%	52%	52%	53%
data	/ ə /	46	59	37	22
ideology	/ aI /	79	74	61	58

4.6. Correlation with Occupation

Categories of occupation which were available for this present survey were academics, teachers, students and others. We will see this in the light which among these categories lead the linguistic change suggested in section 4.2. Words in the following table are all related to occupation with chi square probability figures smaller than 0.01. The percentages of the groups which prefer the New Form most strongly are underscored. Where a New Form is not available, one form is specified directly before the figures.

	New	Occupation	Academics, Teachers, Students, Others			
			Academics	Teachers	Students	Others
forehead	/h/		76%	72%	<u>95%</u>	89%
vehicle	--	/h/	25,	32,	<u>47</u> ,	37
often	--	/h/	5,	8,	<u>33</u> ,	24
palm	--	/h/	38,	36,	<u>67</u> ,	54
congratulate	/dʒə /		54,	44,	<u>72</u> ,	48
February	/bju/		38,	<u>50</u> ,	24,	45
cot	=caught		30,	21,	<u>50</u> ,	32
Mary	=marry		53,	56,	<u>87</u> ,	63
marry	=merry		47,	44,	<u>68</u> ,	45
o(range)	*(kn)o(t)		69,	63,	<u>91</u> ,	80
hu(rry)	=he(r)		79,	88,	<u>94</u> ,	84
syrup	--	/3r:/	39,	33,	<u>60</u> ,	51
prestigious	/i:/		37,	56,	<u>80</u> ,	67
formidable	for' mid-		23,	16,	<u>43</u> ,	29
incomparable	-' parable		11,	8,	<u>37</u> ,	24
justifiable	--	justi' fi-	<u>93</u> ,	88,	80,	76
adult (n)	a' dult		89,	68,	<u>93</u> ,	88
mischievous	mis' chiev-		15,	17,	<u>46</u> ,	33
research	' research		65,	67,	<u>86</u> ,	79
equation	--	/3 /	<u>100</u> ,	88,	89,	85
garage	--	/3 /	74,	60,	46,	41
aunt	--	=ant	<u>79</u> ,	64,	74,	59
direct	--	/aI/	7,	12,	23,	<u>31</u>
either	--	/aI/	6,	13,	<u>23</u> ,	15
address (n)	--	ad' dress	74,	54,	61,	46

ally (v)	--	' ally	30,	32,	<u>61</u> ,	54
capsize	--	' capsize	92,	76,	93,	<u>26</u>
complex (adj)	--	com' plex	77,	68,	<u>83</u> ,	62
create	--	cre' ate	<u>22</u> ,	84,	87,	80
fiancée	--	fian' cée	<u>62</u> ,	52,	49,	45
illustrate	--	il' lus-	0,	8,	<u>14</u> ,	8

All the New Forms were preferred by students most strongly. Seventeen words which were related to occupation did not have New Forms. The following twelve New Forms were not found related to occupation significantly: *d/u: /, n/u: /, wi/θ/, lu/gʒ/urɪʊs, ab/z/orb, shutter(=shudder), co(f)fee(=co(t)), (g)ɔ(ne)(=c)ɔ(t)*, *c/oʊ/ 'vert, juve/nall/, ex' quisite, ha' rass.*

The following three words for which chi square is not a valid test seem to have some correlation with occupation:

	Young	Occupation	Academics, Teachers, Students, Others			
because	/ ʌz /		55%,	24%,	<u>71%</u> ,	52%
data	/ æ /		14,	36,	<u>44</u> ,	40
ideology	/ aɪ /		59,	56,	<u>71</u> ,	61

5. Conclusion

The present paper summarises how nearly 400 Americans with various backgrounds liked to pronounce the 102 words. In order to answer the question how they have come to the present state of pronunciation, diverging slightly (or greatly in some words) from seventeenth-century English, we need to investigate the history of each word, taking it into consideration that English in England has also changed since then. The facts collected in this way will be the foundation for examining the probability of the two varieties of English becoming increasingly different from each other or not in the future.

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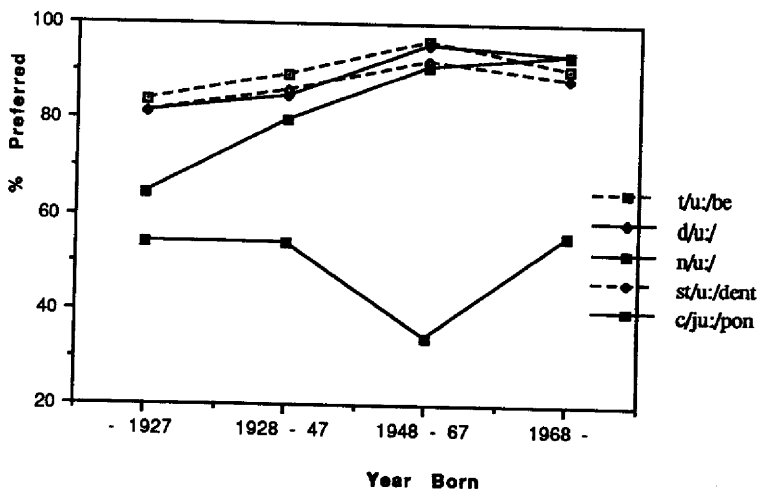


Figure 1. Age and /j/ Dropping/Insertion (1)

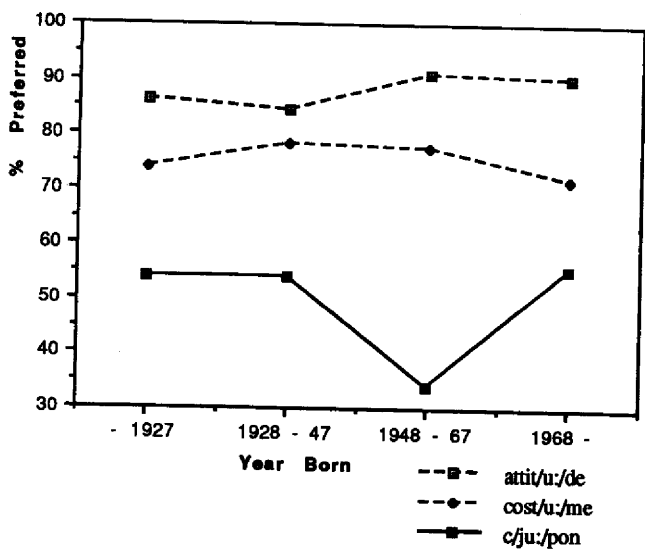


Figure 2. Age and /j/ Dropping/Insertion (2)

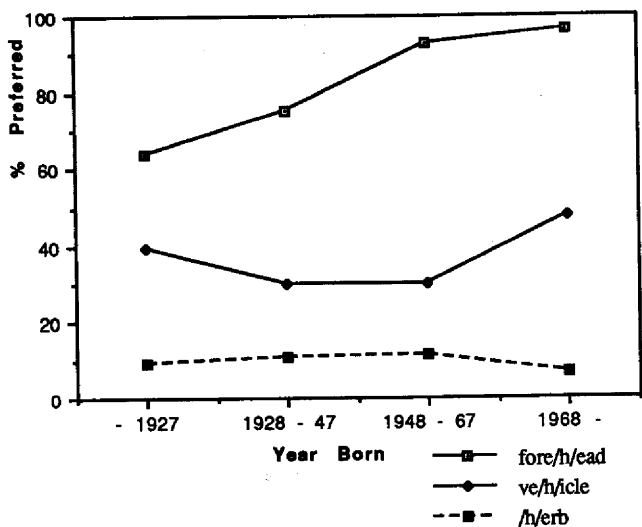


Figure 3. Age and Spelling Pronunciations with /h/

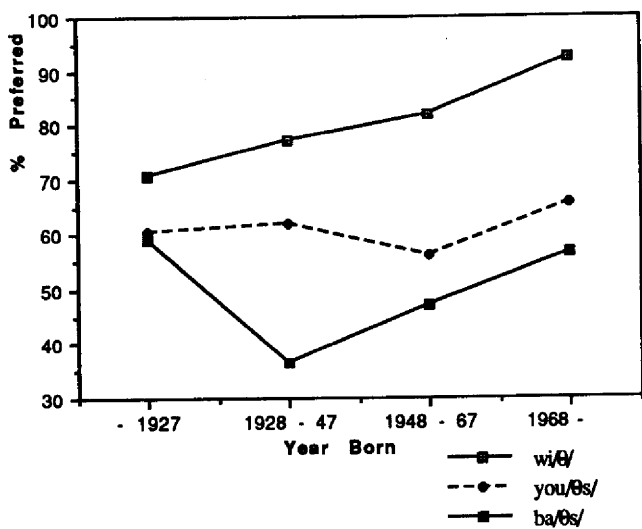


Figure 4. Age and Words with -th(s)

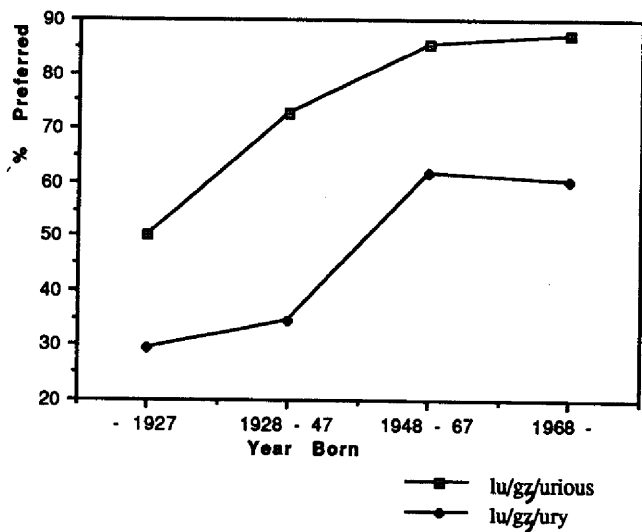


Figure 5. Age and the Voiced Consonants in *Luxury* and *Luxurious*

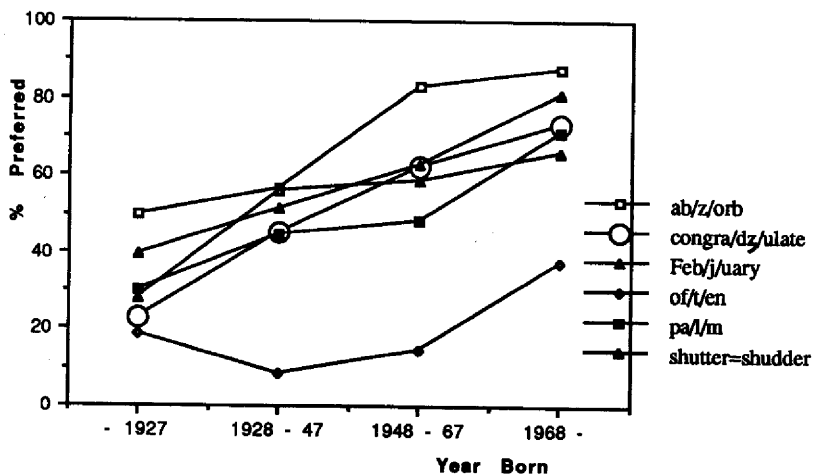


Figure 6. Age and Other Words with Consonant Variation

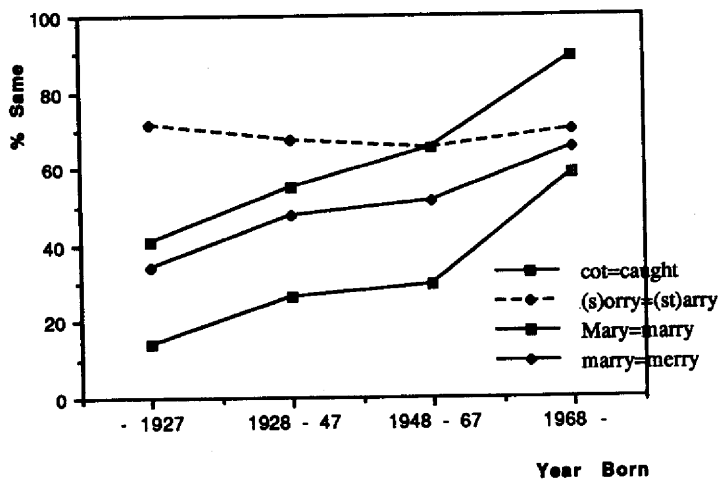


Figure 7. Age and Judgment of Sameness

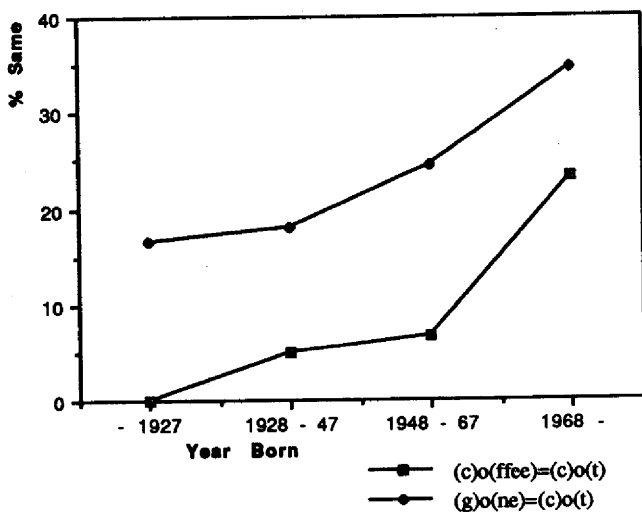


Figure 8. Age and Vowel Choice in *Coffee* and *Gone*

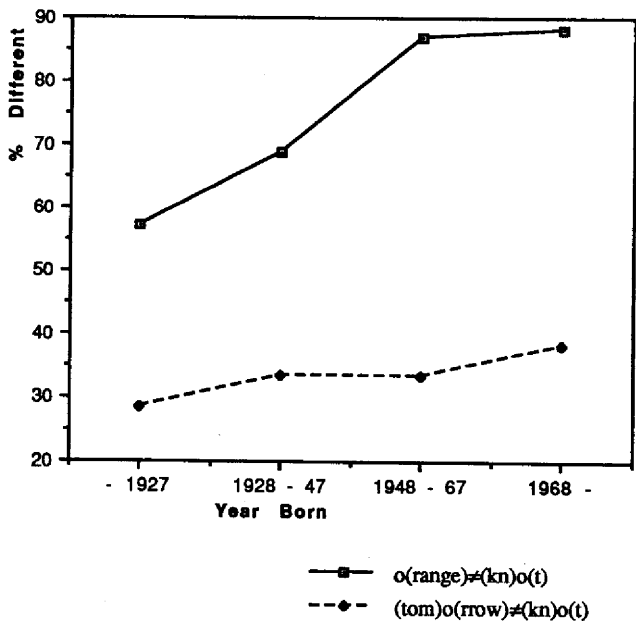


Figure 9. Age and Vowel Choice in *Orange* and *Tomorrow*

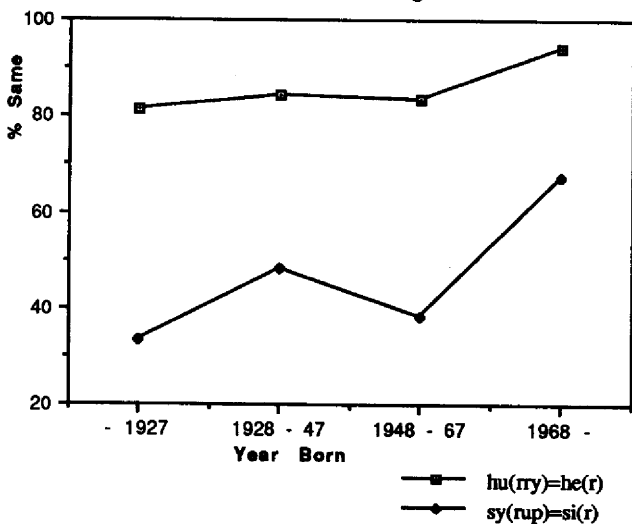


Figure 10. Age and Vowels before /r/ in *Hurry* and *Syrup*

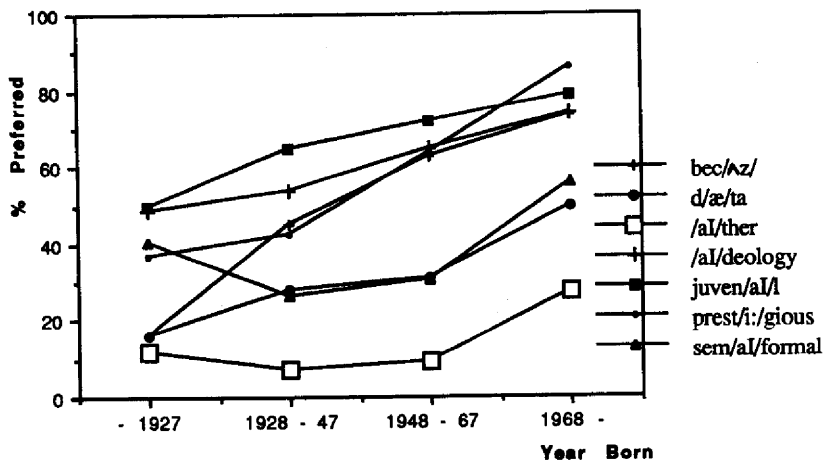


Figure 11. Age and Other Words with Vowel Variation

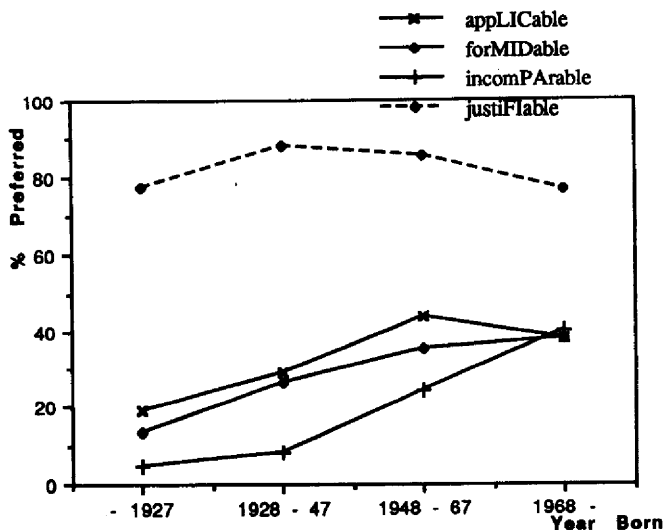


Figure 12. Age and the Late Stress in Words with -able

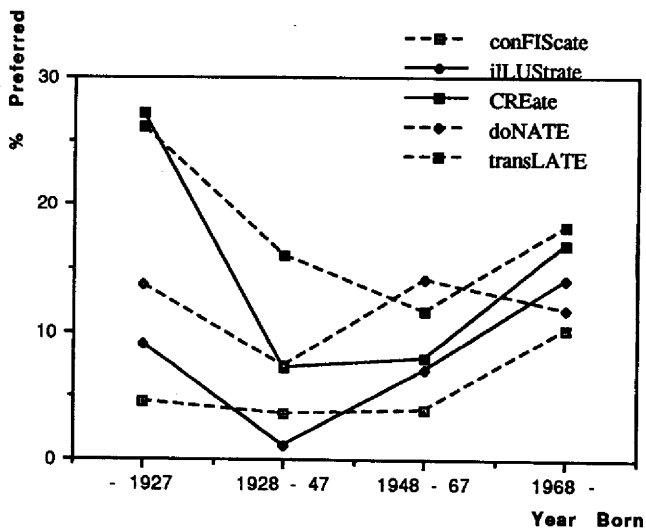


Figure 13. Age and Stress in Words with *-ate*

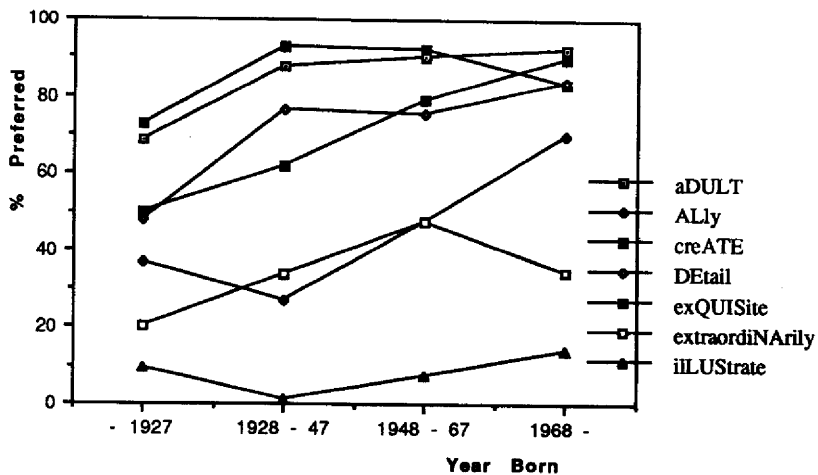


Figure 14. Age and Other Words with Stress Variation (1)

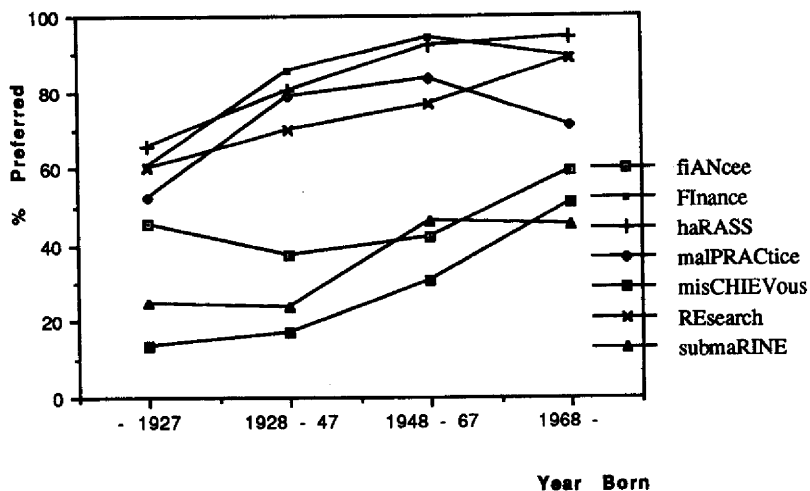


Figure 15. Age with Other Words with Stress Variation (2)

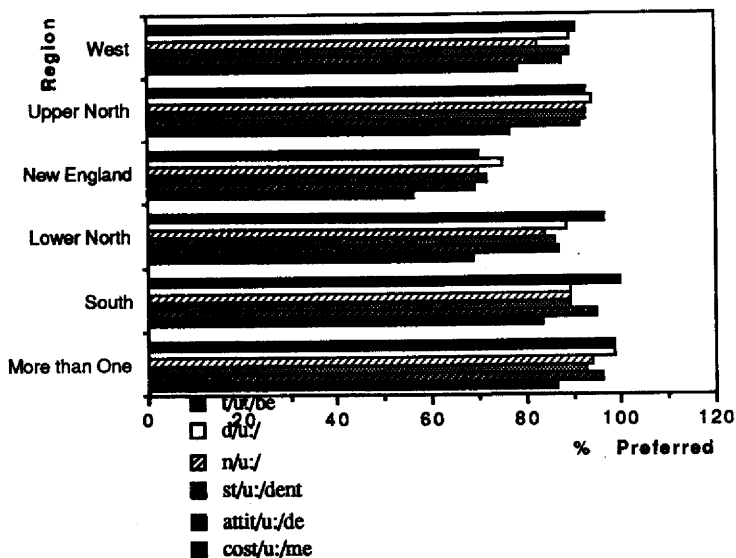


Figure 16. Region and /j/ Dropping

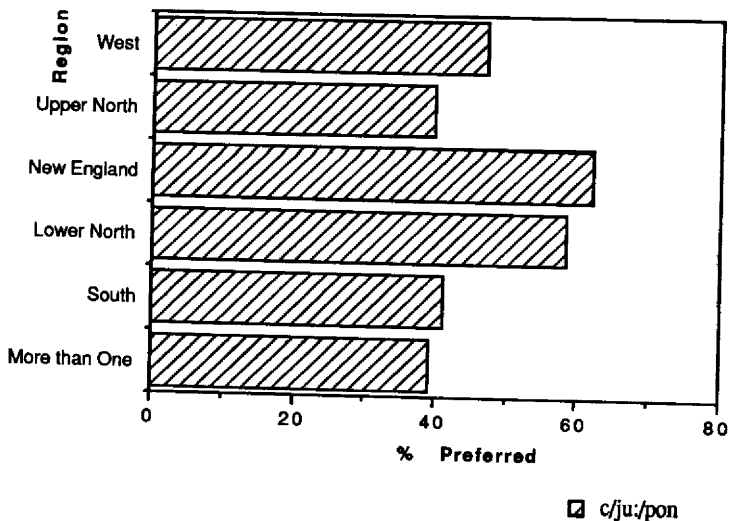


Figure 17. Region and /j/ Insertion in *Coupon*

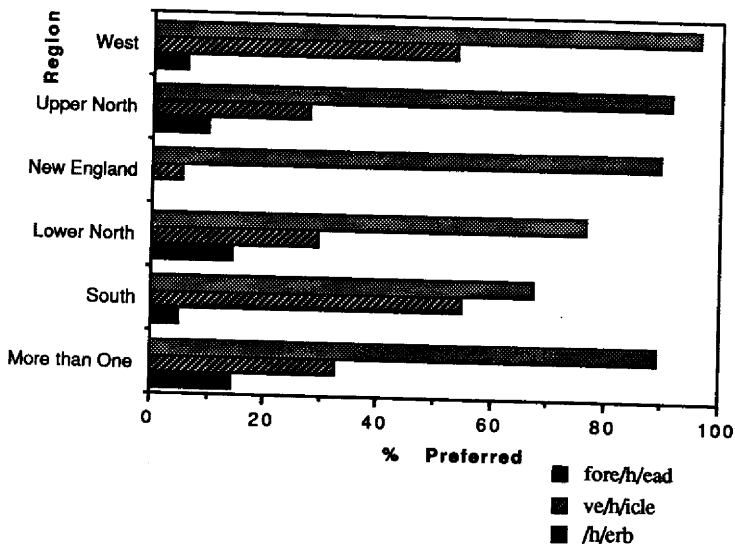


Figure 18. Region and Spelling Pronunciations with /h/

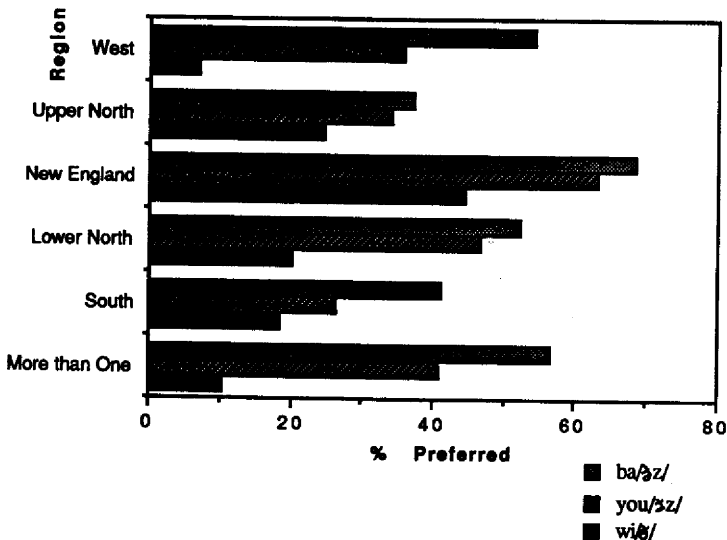


Figure 19. Region and Words with *-th(s)*

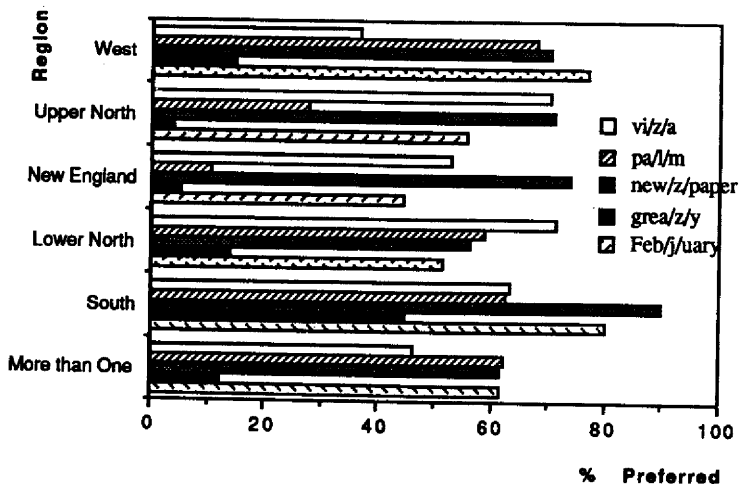


Figure 20. Region and Other Words with Consonant Variation

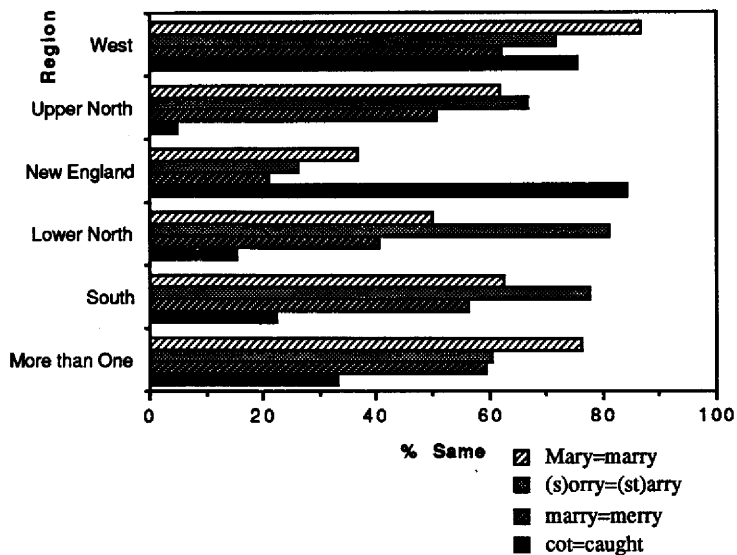


Figure 21. Region and Judgment of Sameness

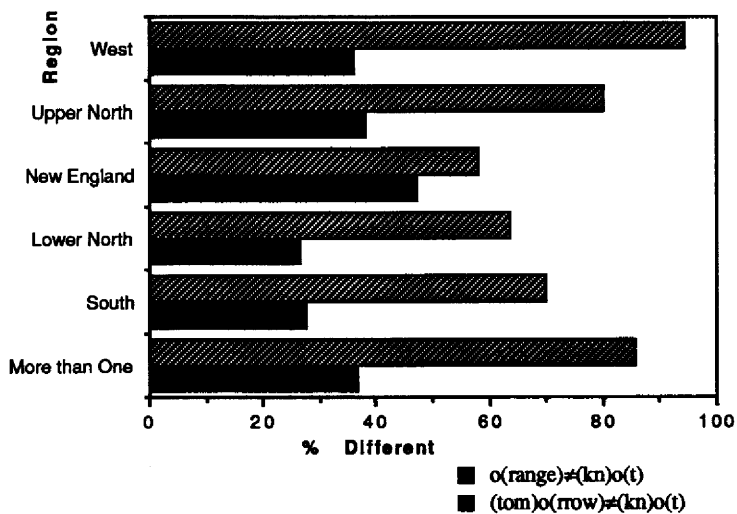


Figure 22. Region and Vowel Choice in *Orange* and *Tomorrow*

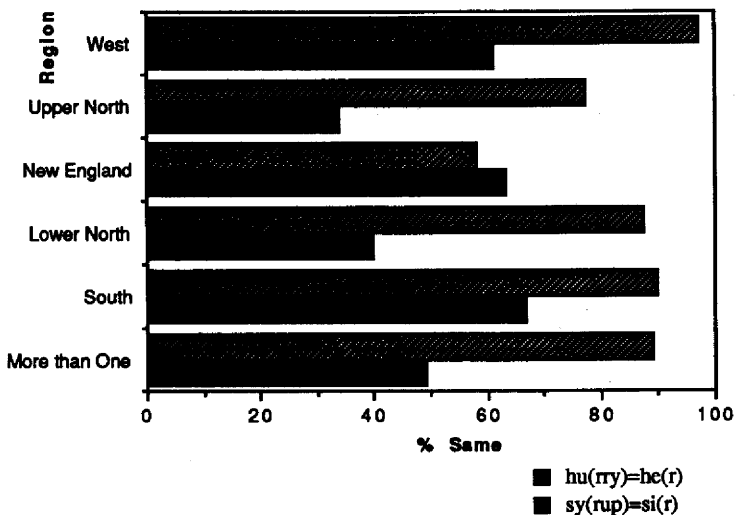


Figure 23. Region and Vowels before /r/ in *Hurry* and *Syrup*

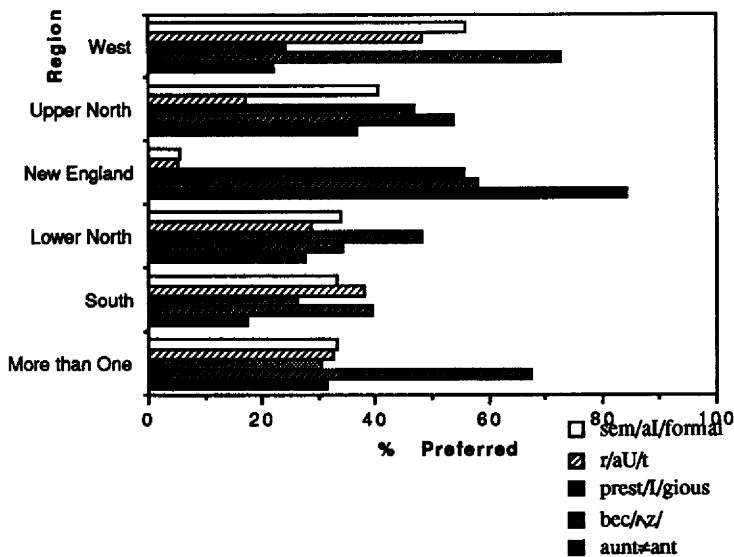


Figure 24. Region and Other Words with Vowel Variation

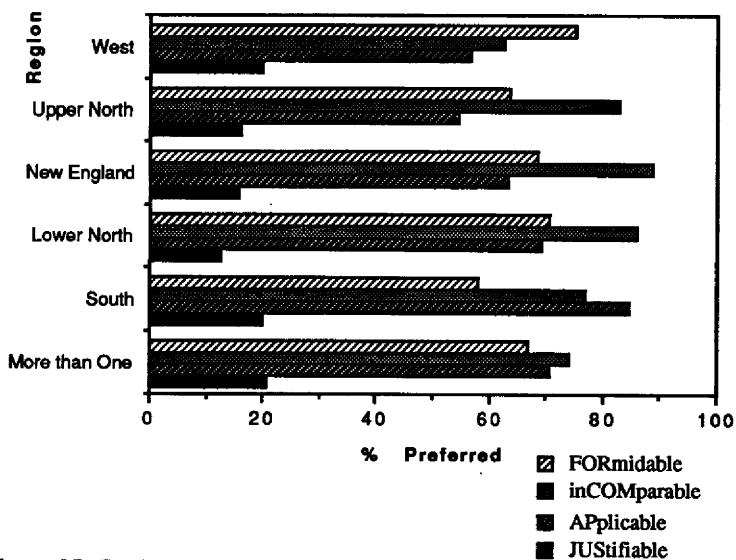


Figure 25. Region and the Early Stress in Words with -able

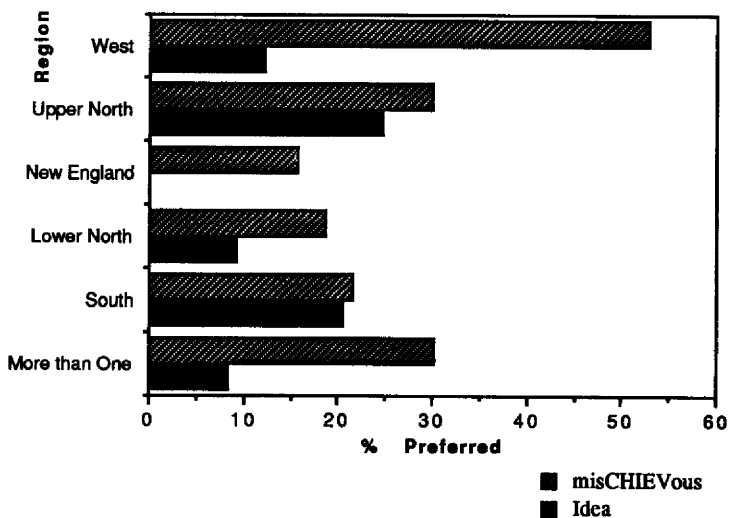


Figure 26. Region and Other Words with Stress Variation.