

**EFFECTS OF FREQUENT INTERACTION WITH
NON-NATIVE SPEAKERS ON ENGLISH DIALECT:
/-T,D/ DELETION IN THE ANGLOPHONE
COMMUNITY OF JAPAN***

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ABSTRACT

/T,d/ deletion was chosen as a speech token to test modifications to usage by native speakers of English due to frequent interactions with non-native anglophones in Japan. Approximately 250 tokens per each of thirty-nine informants were gathered at two intervals of one year. All informants were language or conversation instructors from the U.K., the U.S. and New Zealand working in Japan. A shift away from */t,d/* deletion was expected in function of the type of social networks of the speakers and their degree of contact with non-native anglophones, a result validated in two of three nationalities of informants but with variations according to gender in all three national groups. Social network theory is used to examine differences in individual rates of */t,d/* deletion and a multiple regression analysis confirms an inverse correlation between deletion and strong networks with Japanese anglophones.

RÉSUMÉ

L'occurrence de l'omission de */t,d/* en finale en anglais a été choisie pour tester les modifications de prononciation faites par les anglophones en communication fréquente avec des anglophones non-natifs et non-natives au Japon. À peu près 250 occurrences de la part de chacun des trente-neuf informateurs ou informatrices ont été obtenues pendant deux enquêtes à l'intervalle d'un an. Tous les informateurs et toutes les informatrices étaient des enseignant(e)s de langue ou de conversation, natifs ou natives de la Grande Bretagne, des États-Unis, ou de la Nouvelle Zélande et employé(e)s au Japon. Une tendance

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à éviter l'omission de /t,d/ était attendue en fonction des réseaux sociaux et des degrés de contact avec des anglophones japonais(es), résultat obtenu chez les ressortissant(e)s de deux nationalités mais présent avec variations selon le genre des anglophones de tous les trois groupes nationaux. La théorie de réseau social est employée pour analyser les variations dans les occurrences et l'analyse de régression multiple confirme la corrélation inverse entre l'omission de /t,d/ en finale et l'existence des réseaux sociaux forts avec des anglophones japonais(es).

1. INTRODUCTION

This paper investigates the consequences of frequent interaction with non-native English speakers on the English usage of native English speakers living in Japan. Isolation from native speakers of English and frequent contact with non-native speakers, including Japanese people and other people from overseas, may result in a change of linguistic environment for the native speakers of English. This change is likely to influence their way of speaking English while they are in Japan.

For the purpose of exploring this influence, the use of /-t,d/ deletion will be examined among native speakers of English from the United Kingdom, the United States of America and New Zealand who are working as English teachers or assistant language teachers in south-western part of Japan. A language teacher spends many hours with non-native speakers of English in a classroom, and is more or less expected to speak standardised English on which students can model themselves. This paper will consider the results of a real-time study, which compares data collected immediately after the speakers' arrival in Japan and data collected a year later. This comparison will demonstrate whether there are any changes in the use and the rate of /-t,d/ deletion among the native speakers of English, caused either by the contact with non-native speakers of English or by the standardising effect of teaching in a school.

Hypotheses for the present study are: (1) Native speakers of English who come in contact with non-native speakers of English tend to reduce the use of the connected speech process, that is /-t,d/ deletion, during the course of their stay in Japan, and (2) Native speakers of English who have strong social networks with non-native speakers of English tend to reduce the use of /-t,d/ deletion more than those who have weak networks with non-native speakers of English.

In the following sections, the context of native speakers of English who come to Japan as language teachers and the social networks they create while they are there will first be discussed. Second, previous studies of /-t,d/ deletion, and linguistic and contextual constraints on the variable will be reviewed. Third, the methodology of the present study, including how social networks were investigated, will be described. Finally, the results of an analysis of the use of /-t,d/ deletion in connection with social constraints, such as the speakers' nationality or gender, and with their social networks in particular will be presented and discussed.

TABLE 1
Number of Japan Exchange and Teaching (JET) participants since 1987

	USA	UK	Australia	NZ	Canada	Ireland	Others	Total
1987	592	150	83	23	—	—	—	848
1988	871	248	143	34	127	20		1443
1989	1090	370	146	43	290	36	12	1987
1990	1249	396	145	71	366	41	16	2284
1991	1545	488	142	130	488	45	36	2874
1992	1710	596	182	165	586	44	42	3325
1993	1898	686	219	198	656	59	69	3785
1994	2180	729	242	200	685	60	89	4185
1995	2411	819	274	201	723	69	132	4629
1996	2599	920	299	213	761	72	169	5033
1997	2583	1033	338	225	854	88	226	5347
1998	2613	1128	355	255	873	93	360	5677
1999	2560	1183	407	306	900	95	374	5825
2000	2514	1320	417	370	998	99	360	6078
2001	2477	1405	417	371	1057	95	368	6190
2002	2669	1287	447	397	991	99	383	6273
2003	2729	1215	438	375	981	109	379	6226
2004	2841	1060	431	345	894	132	400	6103

Source: MOFA (2005b).

2. NATIVE SPEAKERS OF ENGLISH IN JAPAN AND THEIR SOCIAL NETWORKS

Since English is the first foreign language studied at most schools and universities in Japan, there is strong demand for native-speaker English teachers. Partly in order to meet this need, the Japan Exchange and Teaching (JET) Programme began in 1987, sponsored by Japanese ministries and local government. It invites young university graduates from overseas to participate in international exchange and foreign language education in local government, boards of education, and junior and senior high schools throughout Japan. As shown in Table 1, the number of JET participants¹ has grown rapidly since 1987. Currently, over 6,000 graduates from over forty countries work in Japan. Those who wish to teach language and participate in Japan and its culture take advantage of this programme. All participants in the JET Programme have the opportunity to take a Japanese language course offered by the government (CLAIR 2001; MOFA 2005a).

¹JET applicants must hold a Bachelor's degree and, in principle, must be under 40 years of age. They are expected to work 5 days a week at local schools and occasionally in local government organizations. For assistant Language Teacher (ALT) applicants from English-speaking countries, a TEFL qualification is helpful, but not required. The remuneration is approximately 3,600,000 yen per annum after Japanese taxes are deducted (CLAIR 2001; MOFA 2005a).

Private conversation schools for foreign languages also provide demand for English teachers. Nova² is one such successful language school and has grown into the largest in Japan, boasting more than 440,000 students in 640 branches throughout the country. They employ thousands of English, French, German, Spanish, Italian and Chinese language teachers from around the world (Nova Corp. 2001). A lot of young university graduates, particularly from English-speaking countries, who prefer to teach at private institutions come to Japan and join Nova.

Those who come to Japan on the JET Programme or to work for private conversation schools typically stay in Japan for one to three years working as language teachers. As they are away from home, staying in a foreign country, and have no family members or old friends nearby, they tend to socialise with each other. In addition, local government authorities or private institutions often allocate them accommodations together, giving them extra opportunities to interact with each other after work and on the weekend.

While they are in Japan, there are many opportunities for interaction with Japanese people. They spend long hours talking in English with Japanese students at school. Often people prefer to spend some of their spare time after work or on the weekend with local Japanese people, too. Others, however, feel more relaxed being with other native speakers of English in their free time. Each person, therefore, creates his or her own social network according to preference and living environment while residing in Japan.

Some well-known studies of linguistic behaviour of people who have strong social network ties within a community have been carried out. For example, Cheshire (1982) investigated the linguistic behaviour of peer groups of working-class teenage gangs in Reading, England, and Eckert (1988, 1989, 2000) explored the preferred linguistic forms used by two types of high school students — “Jocks” and “Burn-outs” — in Michigan, in the U.S. Milroy’s Belfast study (1980) established a social network theory that can help explain individual choice of linguistic variants. She studied working-class residents of small local communities in Northern Ireland and demonstrated that the social network of a speaker has a strong correlation with the speaker’s linguistic behaviour. She illustrated that the stronger the ties with the local community, the more likely speakers are to retain the vernacular form of the linguistic variable.

It is, thus, useful to investigate the social networks of the informants of the present study, to distinguish the strengths of the networks with Japanese people or non-native speakers of English, and attempt to find correlations between the strength of the networks and the speakers’ linguistic behaviour. While Milroy studied the

²Nova is one of the leading language schools in Japan. Its business activities are based on intercultural communication and telecommunication. A candidate for the post of language instructor must have a Bachelor’s degree or equivalent from an accredited university. Renewable one-year contracts begin at various times throughout the year. The position pays about 3,000,000 yen per annum for a full-time instructor (Nova Corp. 2001; Nova Group 2001).

relationship between retention of the vernacular dialect form and social network strength, the present study will examine the shift from the non-standard to the standard form of /-t,d/ clusters with respect to the strength of English teachers' social networks with Japanese people. The investigation was based on the premise that native speakers of English who have strong social networks with non-native speakers of English tend to reduce the amount of /-t,d/ deletion more than those who have weak networks with such non-native speakers of English.

3. /-T,D/ DELETION

In English the word-final alveolar stops, /t/ and /d/, in consonant clusters (e.g., *best*, *cold*, *stuffed*, *opened*, *left*, *kept*, etc.) are subject to deletion, particularly in casual speech. When the deletion takes place, *best friend* [best frɛnd] will be pronounced [bɛs frɛn], *opened cans* [oʊpənd kænz] will be [oʊpən kænz], and *kept busy* [kɛpt bɪzi] will be [kɛp bɪzi]. This type of consonant cluster reduction is recognised as a well-established characteristic of any English speaker, although the frequency of /-t,d/ deletion differs depending on the individual speaker or the region or ethnicity to which the speaker belongs.

/-t,d/ deletion is one of the most extensively studied linguistic variables of English accents. Guy (1980, 1991a, 1991b), Guy and Boyd (1990), Labov (1989) and Neu (1980) studied /-t,d/ deletion in the English spoken by native speakers in the United States; Patrick (1999) investigated Jamaican Creole; Bayley (1994) examined /-t,d/ deletion in Tejano English in Texas; and Santa Ana (1991, 1996) studied Chicano English in Los Angeles. Those studies found many similarities in the factors constraining the deletion. Hibiya (1995, 1997) examined the English spoken by Japanese immigrants in Canada and found some disagreement with the variable rules for /-t,d/ deletion of English spoken by native speakers of English.

While the frequency of /-t,d/ deletion differs depending on the individual speaker or the region or ethnicity to which the speaker belongs, there appear to be common linguistic variable rules constraining /-t,d/ deletion. Labov (1989:90) summarizes pan-dialectal constraints as shown in Table 2. Previous studies have found that grammatical category and phonological environment of the preceding or following segment are the strongest linguistic constraints for /-t,d/ deletion. As the main concern of the present paper lies in social rather than linguistic constraints on the variation, no further inquiry into linguistic constraints will be made at this point.³

A shift in speech style may also have an effect on /-t,d/ deletion. Guy (1980) reports that, for example, when contrasting two different speech styles — casual conversation and formal speech — the occurrence of /-t,d/ deletion is lower in the more formal style. This result implies that native speakers of English are apt to use less /-t,d/ deletion when they are conscious and careful about their speech.

The change in the rate of /-t,d/ deletion depending of a speech style is, in fact, relevant to the main subject of the present study. Native speakers of English who

³The linguistic constraints on /-t,d/ deletion will be discussed in a forthcoming paper.

TABLE 2
Variable rules favouring /-t,d/ deletion

a	in unstressed syllables.
b	if a third consonant precedes the consonant cluster.
c	by the phonetic features of the preceding consonant, yielding the segmental order: /s/ > stops > nasals > other fricatives > liquids.
d	by the grammatical status of the final /t/, with the order: part of <i>-n't</i> morpheme > part of stem > derivational suffix > past tense or past participial suffix.
e	by the phonetic features of the following segment, yielding the order: obstruents > liquids > glides > vowels > pause.
f	by agreement in voicing of the segments preceding and following the /-t,d/ (homovoiced > heterovoiced).

Based on Labov (1989:90)

come to Japan as language teachers are expected by the public to speak more standardised English, especially when they are in a classroom. They are also expected to speak slowly and clearly when talking to language learners. This environment may be considered a formal context where more careful speech is required. They, therefore, become conscious and cautious about the way they speak at school. In this sense, Guy's finding provides the present study with strong support that explains the process of the change in different speech environments.

4. METHODOLOGY

4.1. Informants and sampling method

A total of thirty-nine native speakers of English, who arrived in Japan in the summer of 2000, participated in the present study. They include thirty-six assistant language teachers on the JET Programme, allocated to various prefectures of the Kyushu region of southwestern Japan, and three English conversation instructors placed in Fukuoka prefecture in Kyushu and employed by language schools including Nova. Of these thirty-nine informants, fifteen are from the United Kingdom (UK), eleven from the United States (U.S.) and thirteen from New Zealand (NZ), as shown in Table 3.

TABLE 3
Informants

Gender	UK	US	NZ	Total
male	5	7	3	15
female	10	4	10	24
Total	15	11	13	39

There were twenty-four females and fifteen males. They were aged between twenty-

one and thirty-four at the time of the first data collection, averaging 24.3 years of age. All the informants have an almost equal level of higher education. The informants were selected by a purposive selection method, the so-called "friend-of-a-friend" method.

4.2. Data collection

The data used for this study were collected on two separate occasions. The first dataset was collected in the autumn of 2000, immediately after the informants' arrival in Japan. The second dataset was collected during the summer-autumn of 2001, about a year after the informants initially arrived in Japan. Fifty-four informants participated in the first dataset collection. Thirty-nine of the original fifty-four informants participated in the second dataset collection.

In both sessions, casual conversations between two native speakers of English from the same country were tape-recorded. For example, a British person spoke with a British person, an American with an American or a New Zealander with a New Zealander. Most participants had the same partner for both recordings and were friends with each other. The data used for the present study totalled approximately thirty-four hours of speech. Only conversations of speakers who participated in both the first and second sessions were analysed.

The speakers were paired with someone from the same country to avoid any possibility of short-term accommodation, which might have occurred if they had been paired with a non-native speaker of English or someone from a different country who had a different English dialect. As the conditions for making pairs and of recording conversation on both occasions were identical, it was possible to minimise the risk that changes were caused by the conversation partner at the time of data collection. Therefore, any linguistic changes observed among speakers in the second dataset were most likely caused by the linguistic environment in which they teach English or through daily conversations with native or non-native speakers of English during the preceding year in Japan. The speakers seem to retain the change, if any, unconsciously even when talking to another speaker from the same dialect area.

Chambers (1992) studied how Canadian children that moved from Canada to Southern England acquired the features peculiar to Southern England English (SEE). In his research, when Chambers interviewed Canadian children two years after they moved to England in his normal Canadian English (CE) accent, SEE features were observed in their speech. The children were not able to "control or suppress" the SEE features even when they were speaking to a CE speaker. According to Chambers, the SEE features that appeared in their CE dialects "could reasonably be considered irrepressible acquisitions rather than ephemeral accommodations" (Chambers 1992:676).

The similar phenomenon is expected to be observed in the data collected for the present study. In this study, native speakers of English who come in contact with non-native speakers of English in Japan are believed to have a tendency to reduce

the use of /t,d/ deletion. The reduction of /-t,d/ deletion occurs not only when they talk to non-native speakers but also when they talk to native speakers of English. If the reduction of /-t,d/ deletion occurs frequently enough when communicating with non-native speakers, the ephemeral tendency is likely to become a permanent or at least a lasting feature of the native speaker's linguistic behaviour.

4.3. Tokens

Tokens containing a word-final /-t,d/ in a consonant cluster were coded by the researcher, along with information about the speaker and linguistic constraints. The following tokens were excluded from the data:

1. the word 'and' (deletion is almost categorical in this environment);
2. negative contractions with '-n't' (deletion is almost categorical in this environment);
3. tokens followed by /t/ and /d/;
4. tokens preceded by /r/ (UK English and NZ English are not rhotic);
5. /t/ tokens preceded by /n/ (/t/ is subject to glottalization in UK English and NZ English);
6. /d/ tokens preceded by /n/ and followed by a vowel (/t/ is subject to nasalization).

There were 4,907 tokens collected from the first dataset and 4,828 from the second (Table 4). A total of 9,735 tokens were analysed for the 39 speakers of different English varieties who participated in this study. There were, therefore, about 250 tokens per person.

TABLE 4
Tokens collected from the 1st and 2nd datasets

Data	UK	US	NZ	Total
1st dataset: immediately after arrival	2062	1296	1549	4907
2nd dataset: a year after arrival	1879	1384	1565	4828
total no. of tokens	3941	2680	3114	9735

4.4. Statistical analysis

SPSS (the Statistical Package for the Social Sciences) was used to analyse the data. All the figures presented in the results for this paper are based on each speaker's percentage of /-t,d/ deletion on the two different occasions, calculated from the number of tokens in question.

TABLE 5
Questions about the speakers' social network

Q1	names or initials of close friends
Q2	sex of each person
Q3	frequency of meetings with each person
Q4	frequency of phone calls with each person
Q5	relationship with each person (friend, colleague or neighbour)
Q6	whether or not each person is an English teacher in Japan
Q7	nationality of each person
Q8	years spent in Japan by each person (for non-Japanese only)
Q9	main language used with each person
Q10	interconnecting close ties with one another
Q11	ranking of these relationships

4.5. Social networks

Collecting information about social networks of the informants was an important aspect of the research, since the investigation was based on the hypothesis that native speakers of English who have strong social networks with non-native speakers of English tend to reduce the amount of /-t,d/ deletion more than those who have weak networks with such non-native speakers of English.

4.5.1. Questions about the social networks of the informants

After recording the conversation, each speaker had a short interview with the researcher and eleven questions (Table 5) were asked to extract information about his or her social networks. The informants were first asked to name or give the initials of people to whom they felt close and whom they met on a regular basis (Question 1). This gathered a list of the main members of their social network. Second, the informants were asked some details about each member of their social network (Questions 2–9). These questions were repeated for each person mentioned in Question 1. Third, the informants were asked which of the people from their own country on the list were close to one another (Question 10). Finally, they were asked to rank all the people they mentioned according to how close or friendly they were with them (Question 11).

4.5.2. Measuring the social networks of the informants

The strength of a social network is often determined by the degree of its multiplexity and density, according to Milroy (1980), who first employed the concept in sociolinguistic research. The multiplexity of a social network depends on the extent to which individuals are linked to one another by more than one relationship category. For example, two people may be good friends as well as colleagues at the same work place. The density of a social network depends on the degree to which the members who form the social network know each other. Close-knit or strong

social networks tend to help individuals maintain local dialect forms (Milroy and Milroy 1978; Milroy 1980).

The community under investigation for the present research, however, differs from the communities Milroy investigated in Belfast in that the members do not belong to close-knit networks. Instead, they belong to loose-knit networks as the members of the community in Japan are constantly replaced by new arrivals from overseas. The present study also differs from Milroy's research because it aims to investigate the consequences to the informants of frequent interaction with people who speak English as a foreign language. Those in loose-knit networks are likely to be exposed to external linguistic influences. The method for measuring the social networks of the informants for this research, therefore, must be different from the one Milroy employed.

For the present study, each informant's social network will be divided into sub-networks that are formed by members of different categories. In order to measure the strength of each sub-network, the number of members of each network and the strength of individual connections will be considered. Closeness and the frequency of contact are important elements of the relationship with each person. Therefore, the degree of closeness and the frequency of contact are used to calculate the strength of individual relationships. A score for each relationship was calculated using the rank order of closeness and the frequency of meetings and telephone calls with the person (1).⁴

$$(1) \text{ Score of each relationship} = \text{rank order score} \times (\text{score for frequency of meetings} \\ + \text{score for telephone call frequency})$$

Each score for each relationship was totalled to provide a particular network score (2):

$$(2) \text{ Network score} = \text{total of the scores for all relevant relationships}$$

This method of calculating social network scores was adopted from Wellman (1979)⁵ and modified to suit the characteristics of the informants of this research.

4.5.3. Types of social networks

From the information collected, scores for more than ten different types of social network were calculated. Scores for five sub-networks shown in Table 6 were tested in the present study, as these involved contact with non-native speakers of English. Membership in each network partly overlaps.

⁴See appendix for the scoring of rank order, frequency of meetings and telephone calls, and for the summary of social network scores by country.

⁵Wellman (1979) used the following five questions to investigate the intimate networks of East Yorkers: (1) six closest intimates; (2) the ranked strength of closeness of their relationship; (3) their gender, socio-economic status, the basis of their relationship, place of residence; (4) frequency of contact (in person and by telephone); (5) interconnecting close ties (which of the people are close to one another) — density.

TABLE 6

Social networks relevant to contact with non-native English speakers

Non-native speakers of English
Japanese teachers of English
Teachers of English
Japanese people
Japanese who use English as a main language with the informant

TABLE 7

Change in the mean % use of /-t,d/ deletion by UK, US and NZ speakers

Time after arrival	UK	US	NZ
immediately after arrival	64.0	67.3	68.1
a year after arrival	59.8	67.0	62.2
Paired-samples T test (two-tailed)	$t = -2.540$ $df = 14$ $p = 0.024$	$t = 0.107$ $df = 10$ $p = 0.917$	$t = 2.446$ $df = 12$ $p = 0.031$

5. RESULTS AND DISCUSSION

5.1. Change in the mean % use of /-t,d/ deletion by UK, US and NZ speakers

Table 7 shows the mean percentage use of /-t,d/ deletion for UK, US and NZ speakers on the two separate occasions. The error bar graph of Figure 1 displays vertical bars representing the 95% confidence intervals of each mean for the two occasions. The figures here have been calculated from the percentage use of /-t,d/ deletion of each speaker. The results do not show a statistically significant difference between nationalities in the use of /-t,d/ deletion immediately after their arrival in Japan, but they do indicate a significant difference between the first and second datasets for the UK and the NZ speakers. Although the American speakers show almost no change in the use of /-t,d/ deletion, the British speakers decrease rates of deletion from 64.0% to 59.8% after a year, and the New Zealand speakers do so from 68.1% to 62.2%.

The two sets of data were collected under the same conditions. During both the first and second data collections, when the speech was recorded, the speaker was talking to another native speaker of English from their own country. The researcher was not present during the recording of their conversation in either occasion. Therefore, there were no particular methodological reasons or factors for the speakers to reduce /-t,d/ deletion at the time of the second recording. It is reasonable to assume that, at least with the UK and NZ speakers, a change in their linguistic environment has caused them to change their linguistic behaviour over the course of their year in Japan.

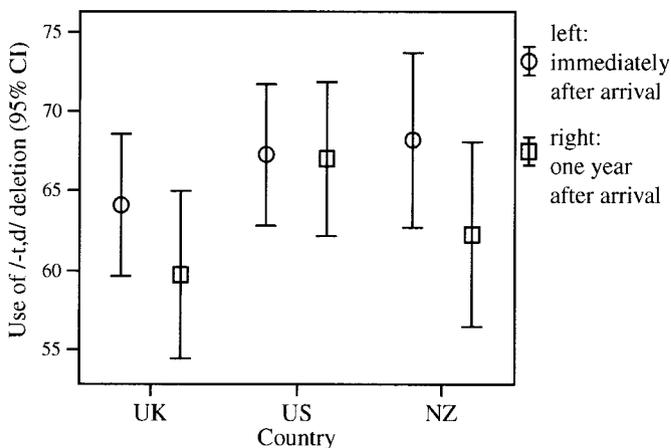


FIGURE 1

The change in /-t,d/ deletion by UK, US and NZ speakers

5.2. Change in the mean % use of /-t,d/ deletion by male and female speakers

Tables 8, 9 and 10 compare the use of /-t,d/ deletion between the male group and the female group for UK, US and NZ speakers, respectively, when they arrived in Japan and one year later. These three tables show that, on both occasions of data collection, the /-t,d/ deletion rate among male speakers is consistently higher than the deletion rate by female speakers, regardless of their nationalities. However, only the NZ data shows a statistically significant difference between males and females in an independent-sample T test.

TABLE 8

Mean % use and change by gender for UK speakers

Time after arrival	Female	Male	t, df, p (two-tailed)
immediately after arrival	63.240	65.580	$t = -0.520$, $df = 13$, $p = 0.612$
a year after arrival	59.740	59.900	$t = -0.029$, $df = 13$, $p = 0.977$
Change	-3.500	-5.680	$t = 0.603$, $df = 13$, $p = 0.557$

TABLE 9

Mean % use and change by gender for US speakers

Time after arrival	Female	Male	t, df, p (two-tailed)
immediately after arrival	66.875	67.500	$t = -0.145$, $df = 9$, $p = 0.888$
a year after arrival	62.600	69.529	$t = -1.636$, $df = 9$, $p = 0.136$
Change	-4.275	2.029	$t = -1.263$, $df = 9$, $p = 0.238$

TABLE 10
Mean % use and change by gender for NZ speakers

Time after arrival	Female	Male	t, df, p (two-tailed)
immediately after arrival	64.980	78.500	$t = -2.822$, $df = 11$, $p = 0.017$
a year after arrival	58.410	74.633	$t = -3.697$, $df = 11$, $p = 0.004$
Change	-6.570	-3.867	$t = -0.453$, $df = 11$, $p = 0.660$

Figure 2 shows the change in /-t,d/ deletion by males and females from the time when the first data were collected to the time when the second data were collected. As shown in the graph, the male and female UK speakers, the male and female NZ speakers and the female US speakers reduce the rate over the course of their year in Japan, but the male US speakers show a reverse behaviour. They increase the deletion rate.

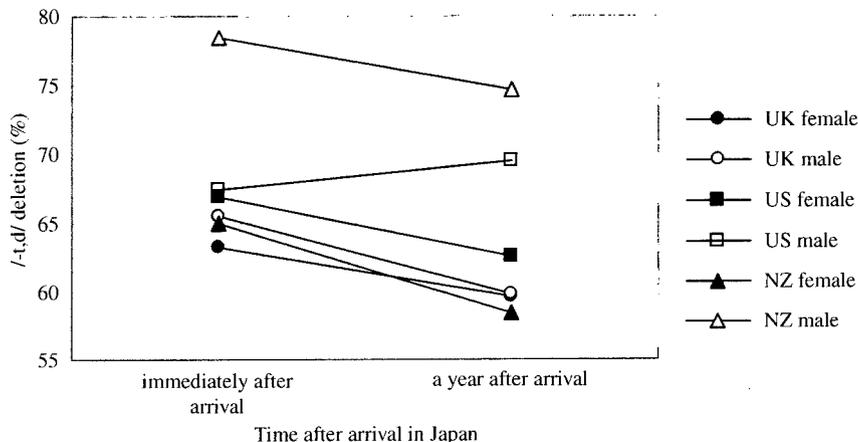


FIGURE 2

The change in /-t,d/ deletion by female and male speakers in the 1st and 2nd datasets

As shown in Figure 2, the only group which increases the rate of /-t,d/ deletion is the American male group. This increase has influenced the outcome of the analysis according to the nationality of speakers shown in Figure 1. The result shown in Figure 2 may invalidate part of the outcome so that it appears that American speakers are not likely to change the rate over the course of their year in Japan. In fact, the increase by the male speakers compensates for the decrease by the female speakers, which makes the total US change even.

5.3. Change in the mean % use of /-t,d/ deletion by individual UK, US and NZ speakers

Figures 3, 4 and 5 show the comparison between two sets of data collected at two separate times for individual speakers of each country. In Figure 3, the speaker who has the highest rate of /-t,d/ deletion immediately after arrival in Japan is placed on the far left of the graph, the speaker who has the lowest rate is placed on the far right, and the remaining speakers are arranged according to their rates. This reveals that most of the UK speakers reduce the use of /-t,d/ deletion after a year and only two — both females — out of 15 speakers increase it.

New Zealand data for individual speakers are presented in Figure 4, which reveals that most of them reduce the rate after a year living in Japan and only two (both females) out of 13 speakers increase it.

The data presented in Figure 5 show the change in the use of /-t,d/ deletion by individual US speakers. This graph illustrates that about half the informants — that is, five out of 11 — increase the rate of deletion after a year in Japan. Four out of five who increase the occurrence of the deletion are actually male speakers, which corresponds with the result shown in Figure 2 that the US male group is responsible for the increase in the rate of /-t,d/ deletion.

As far as the deletion rate of individual speakers is concerned, about 80% of the speakers either decrease their frequency of deletion or retain it after a year in Japan, and only about 20% of the speakers increase it. However, apart from the direction of the change, there are individual differences in the extent of the change. It is worthwhile, therefore, to examine from a different perspective why the direction and extent of the change differ from person to person. In the next section, this issue will be explored using social network theory.

5.4. Change and social network

In this section, another index for the use of /-t,d/ deletion is introduced in order to illustrate the extent of change in the percentage use of the deletion by each speaker during their stay in Japan. Speakers who reduce the use of /-t,d/ deletion after a year will have a negative quantity. Those who increase the use after a year will have a positive quantity.

Network scores of the five social networks mentioned earlier that are relevant to contact with non-native speakers of English will be tested here. Using multiple regression, SPSS can predict which network is influencing levels of /-t,d/ deletion. It was found that the network with Japanese teachers of English is the strongest influencing factor for UK and US speakers, while the network with Japanese who use English as a main language in speaking with the informant is the strongest influencing factor for NZ speakers. The results⁶ of multiple regressions for UK and NZ speakers are presented in Tables 11 and 12.

⁶The result of multiple regression for the US group was not statistically significant.

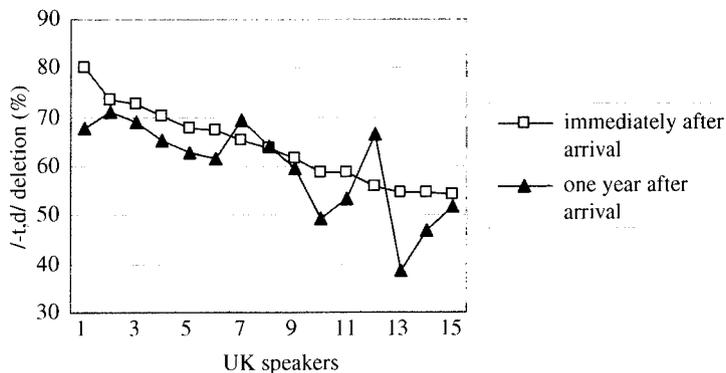


FIGURE 3

The change in /-t,d/ deletion by individual UK speakers

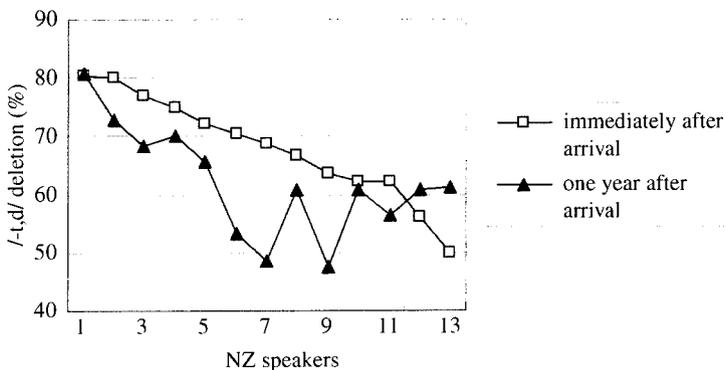


FIGURE 4

The change in /-t,d/ deletion by individual NZ speakers

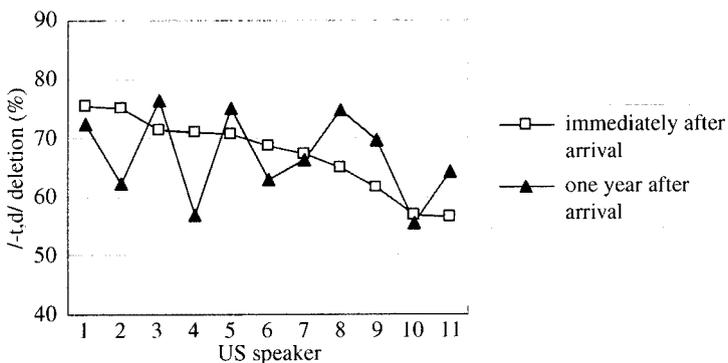


FIGURE 5

The change in /-t,d/ deletion by individual US speakers

TABLE 11
Multiple regression for UK speakers*

Predictor Variable	Beta	<i>p</i>
Japanese teachers of English	-.552	<i>p</i> = 0.033

*Other variables were not significant predictors in this model.
Adjusted R square = 0.252; $F_{1,13} = 5.712$,
 $p = 0.033$ (using the stepwise method)

TABLE 12
Multiple regression for NZ speakers*

Predictor Variable	Beta	<i>p</i>
Japanese who use English as a main language with the informant	-.580	<i>p</i> = 0.038

*Other variables were not significant predictors in this model.
Adjusted R square = 0.276; $F_{1,11} = 5.571$,
 $p = 0.038$ (using the stepwise method)

5.4.1. The influence of strong social networks with Japanese teachers of English on speakers' rates of deletion

Figure 6 shows the change in the percentage use of /-t,d/ deletion by British speakers between the first and second datasets, according to their networks with Japanese teachers of English. The results show that the greater the informant's contact with Japanese teachers of English, the greater the negative effect on the use of the deletion.

Figure 7 shows a similar tendency among American speakers. Because of the speaker whose deviant score is placed at the top right corner, this network is not a statistically significant predictor and the line of the graph looks rather level. It is not possible at this stage to explain why this speaker shows unusual behaviour. If his score is excluded from the US data, the multiple regression analysis identifies network with Japanese English teachers as a significant influencing factor, as shown in Table 13.

TABLE 13
Multiple regression for US speakers (excluding one male speaker)*

Predictor Variable	Beta	<i>p</i>
Japanese teachers of English	-.697	<i>p</i> = 0.025

*Other variables were not significant predictors in this model.
Adjusted R square = 0.421; $F_{1,8} = 7.538$,
 $p = 0.025$ (using the stepwise method)

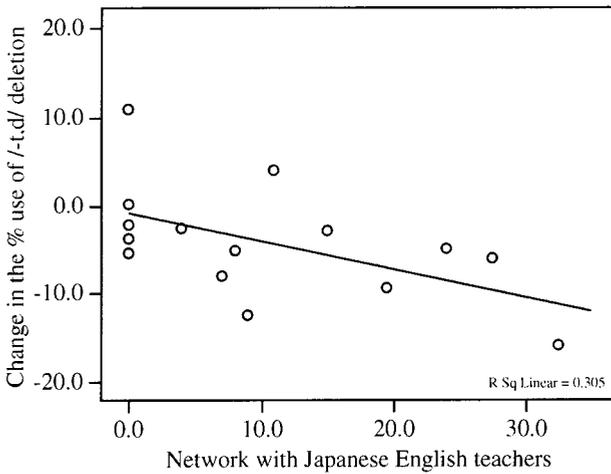


FIGURE 6

Change in the % use of /-t,d/ deletion by UK speakers with strong networks of Japanese English teachers

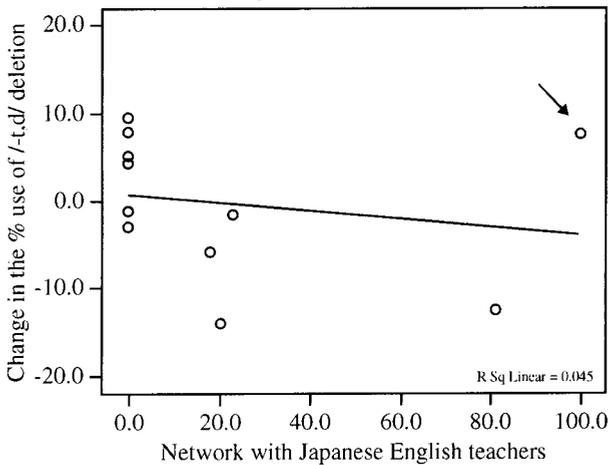


FIGURE 7

Change in the % use of /-t,d/ deletion by US speakers with strong networks of Japanese English teachers

5.4.2. The influence on deletion rates of strong social networks with Japanese people who use English as a main language with the informant

Figure 8 shows the relationship of the change in the percentage use of /-t,d/ deletion by the New Zealand speakers between the first and second datasets according to their network strength with Japanese people who use English as a main language

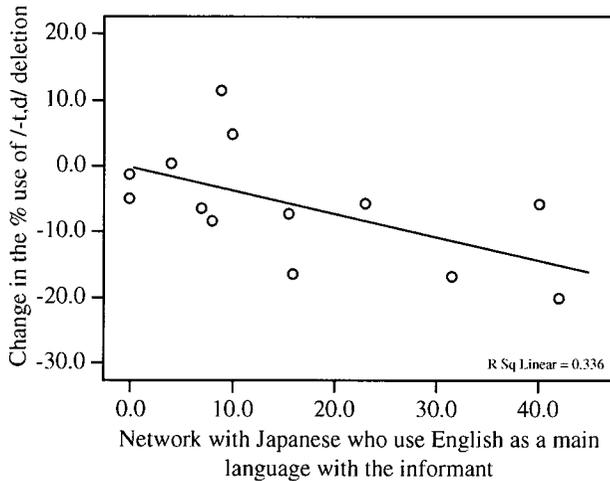


FIGURE 8

Change in the % use of /-t,d/ deletion by NZ speakers in relation to the strength of social networks with Japanese who use English as a main language with the informant

in speaking with the informant. In effect the results show that the greater the respondent's contact with non-native speakers of English, the more they reduce the use of /-t,d/ deletion.

This graph and the statistics mentioned earlier clearly show that the speakers' social networks significantly influence their linguistic behaviour. In this case, contact with non-native speakers of English influences the use by native speakers of English of connected speech processes.

Since most Japanese people are not fluent English speakers, they are unaccustomed to listening to conversational English at its usual speed. If a native English speaker deletes a word-final consonant more frequently — as they usually do when talking to another native speaker — then non-native speakers who are not used to this are likely to have difficulty listening to and understanding what is said. In order to avoid such problems when speaking to non-native speakers of English, the native speakers presumably try to pronounce each word and phrase in a style more associated with slow and careful speech, reducing the high deletion rate of consonant clusters.

After doing so repeatedly through their year in Japan, this change may well be retained in conversation with other native speakers. As a consequence, levels of deletion as a whole may gradually decrease. Such linguistic circumstances could account for the significant decrease in the /-t,d/ deletion rate among the speakers in the present study.

6. CONCLUSION

This study found systematic decreases in rates of /-t,d/ deletion in the English spoken by native speakers from the United Kingdom, the United States and New Zealand who have come to Japan to teach English. The evidence strongly suggests that this change is induced by frequent contact with non-native speakers of English.

Comparison of the deletion rate according to nationality and gender, measured immediately after the speakers' arrival in Japan, with rates measured a year later shows that — apart from the American male group — levels of deletion in all groups decline. The analysis of individual speakers reveals that a decrease in the use of /-t,d/ deletion occurs in the speech of about 80% of the speakers who participated in the present study. These results support the first hypothesis presented in the introduction of this paper: that native speakers of English who come in contact with non-native speakers of English tend to reduce the use /-t,d/ deletion of rapid speech phenomena over time.

Further analyses using social network theory supported the second hypothesis that native speakers of English who have a large and strong social network with non-native speakers tend to reduce the /-t,d/ deletion rates more than those who have smaller and weaker networks with such non-native speakers of English. These results lead us to conclude that the speaker's linguistic surroundings and the speaker's social network have considerable influence on their linguistic behaviour.

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APPENDIX**1. Scoring the rank order of network members according to the closeness**

Rank (1st–20th max.)	Scores
Top 20%	5
Second 20%	4
Third 20%	3
Fourth 20%	2
Bottom 20%	1

2. Scoring the frequency of meetings and telephone calls

Frequency	Scores for meetings	Scores for telephone calls
6–7 times a week	5	2.5
4–5 times a week	4	2.0
2–3 times a week	3	1.5
once a week to 3 times a month	2	1.0
1–2 times a month	1	0.5

3. Summary of social network scores by country

Social networks	UK	US	NZ	Average
Non-native speakers of English	31.4	54.5	32.3	38.2
Japanese English teachers	10.5	22.0	5.7	12.1
English teachers	80.8	66.3	72.2	73.8
Japanese	29.9	54.5	29.9	36.9
Japanese with English as a main language	13.7	35.0	15.8	20.4