SOCIOPSYCHOLOGICAL CHARACTERISTICS OF USERS OF 'NEW DIALECT FORMS'

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In this paper, a characterization of users of new dialect forms among pupils in metropolitan Tokyo has been attempted. Some statistical methods including two multivariate analyses were used. Application of computational techniques to massive data of sociolinguistic research proved to be quite useful.

It was found that 'new dialect forms' are mainly used by active pupils, whereas standard Japanese forms are used by pupils with leadership. Unserious pupils are inclined to use older, 'incorrect' words. The new dialect forms are further interpreted as a form of language change from below. Thus, the new dialect forms are found to have universal value in a sociolinguistic study of language change.

1. Sociolinguistic studies in Japan and the West

Sociolinguistic studies have been flourishing in Japan since World War II, making use of highly sophisticated statistical methods. But the results were published mostly in the Japanese language, so that there was little mutual influence between Japanese and western sociolinguistics.

One of the popular topics of Japanese sociolinguistics has been the study of the standardization of language. Recently the spread of standard Japanese has been so vigorous that most people (including linguists) believed that the Japanese dialects would soon die out. There were sporadic reports about dialect changes towards non-standardization, but no one seems to have understood them as one particular type of language change.

Another field of study which thrived in Japan after World War II was dialect geography. Here, scholars were able to observe past language changes as

* This research was planned and realized in cooperation with Tsunao Ogino. Advice by Professor Hiroya Fujisaki of Tokyo University was stimulating. The study became possible through the aid provided by the Scientific Study Fund. In collecting the data, the cooperation of teachers and pupils of thirteen junior high schools in Tokyo and students of Tokyo University of Foreign Studies was very helpful. Computation of the data was done with program packages GLAPS (Generalized Linguistic Atlas Printing System), developed by T. Ogino, and PPSS2 (Program Package for Social Sciences), developed by Hitachi Co.

Author's address: F. Inoue, Tokyo University of Foreign Studies, 4–51–21 Nishigahara, Kita-ku, Tokyo 117, Japan. shown by the geographical distribution of dialectal forms. Japanese dialectologists developed a new technique to grasp the process of language change by surveying language differences according to age groups. By virtue of this technique, changes towards non-standardization began to be noticed by some dialectologists. Japanese sociolinguists were, fortunately, also often specialists in dialectology, so that these examples of non-standardization have now been added to the topics of sociolinguistic studies.

Linguistic variables studied in western sociolinguistics seem to be mostly phonetic ones. Japanese sociolinguists are, in contrast, generally interested in lexical or grammatical variables, partly because the phonological system in Japanese is so simple that there are only a few variables which can be studied meaningfully in a sociolinguistic sense (that is, with variations according to style, social class, and so on), and partly because Japanese lexical and grammatical items have wider stylistic differentations (e.g. with regard to formality) than is the case in most western languages, owing to the honorific system of Japanese.

In this paper, lexical (and partly, grammatical) phenomena of Japanese are investigated, both because they can be easily studied, and because they show sociolinguistic variants of the language. The main purpose of the paper is to investigate sociopsychological factors of linguistic change in progress in metropolitan Tokyo. The ongoing changes among the youngsters in this citadel of standard Japanese have been found to be closely related to changes in dialectal areas near Tokyo. They will be called 'new dialect forms', on a par with changes in the dialectal areas proper (a definition will be given later).

The speech of Tokyoites is not usually considered a 'dialect' by most Japanese. But the native (mother) tongue of Tokyoites should be treated as a dialect of Tokyo, because it does not appear in formal conversation or in a written form. New non-standard forms used by younger Tokyoites can thus be called 'new dialect forms in Tokyo'.

Many trends of sociolinguistic studies are prospering in the western world. This Japanese attempt can be placed in a trend of correlational study between language and the outside world (society). The data used are similar to those used by Labov (1966, 1972), Trudgill (1974), and others. Our concern with sociopsychological factors is similar to that of Milroy's (1980) with the social network; the technique is different. Milroy gathered a lot of data from long conversations of selected members of a community. By contrast, the present paper is based on answers for selected lexical items from a large number of pupils. Our concern with diffusion is further related to the studies of Trudgill (1974), Hard (1966), Katz-Lazarsfeld (1955), and Hägerstrand (1967).

The sociopsychological study of the Japanese language has had its predecessors (Sibata (1978: 346ff.)). The novelty of the present paper is in the abundance of informants investigated, and in the statistical method of multivariate analysis. This technique is necessary to ascertain the effect of sociopsychological factors at work in the diffusional process of linguistic forms.

2. Our preceding studies

The research reported here is based on some preceding studies about new dialect forms all over Japan. Changes towards non-standardization in northern Japan have been reported in Japanese. Similar changes in metropolitan Tokyo are reported both in English (Inoue (1983a,b, 1986)) and in Japanese (Inoue (1983c,1985)), Inoue and Ogino (1984)). A nationwide distribution of new dialect forms has been ascertained, and age and area differences in the metropolis have been surveyed. This study is designed to go further in order to establish the social and psychological factors relating to users of the new non-standard forms.

New dialect forms are defined as the linguistic forms:

- used more by younger people than by older people,
- (2) treated as stylistically low by users themselves, and
- (3) having different forms from the standard language.

Incidentally, at least some of the new dialect forms are not only low in style, but also adopted subconsciously, first by socially lower people, so that the new dialect forms here are a case of an on-going change from below (Aitchison (1981: 88)).

3. Method of research

The questionnaire consists of two main parts: one linguistic and the other non-linguistic. The linguistic part of the questionnaire is concerned with uses and images of fifteen representative words. Most of the fifteen words are new dialect forms, extracted from the preceding survey in Tokyo. They are: kattarui 'dull', tarui 'dull', mitaku (vs. mitaini 'as if', 'like'), chigakatta (vs. chigatte ita 'was different'), zyan (vs. zya naika 'isn't it'), chikketta (vs. zyanken, a children's game), aotan (vs. aza 'bruise'), pinta (vs. binta 'slap'), and bon naifu 'a knife with a razor blade'.

Other forms represent: a neologism (waapuro 'word processor'), a recent fashion word (kyapikyapi, a description of the manner of talking of young girls), a form which is treated as an abuse (yamatesen, the loop line of the Japanese National Railways in Tokyo, the 'correct' name having been decided on as yamanotesen), and the pair of the standard Japanese and the common Japanese forms designating a pine-cone (matsukasa and matsubokkuri).

Questions were asked as to whether pupils use the respective words in certain situations, whether they consider the forms appropriate for certain people, whether they have heard or seen the words, and so on.

The non-linguistic part of the questionnaire is mainly concerned with

psychological and behavioral characteristics of the pupils. The questions will be given later in this paper.

The data were gathered in the summer of 1984 from thirteen junior high schools in five localities of the Tokyo metropolis. They were later grouped into three localities: (1) Hachioji, an old town, now in the western suburbs; (2) two wards (Setagaya and Suginami) in Yamanote (Uptown), the western part of central Tokyo, inhabited mainly by white-collar workers, and (3) two wards (Katsushika and Edogawa) in Shitamachi (Downtown), located on the eastern edge of Tokyo, inhabited characteristically by blue-collar workers.

Of the fifteen words investigated, one form (uzattai) showed an extreme geographical contrast as shown in figure 1, and some other forms also showed geographical differences. Thus the data from 636 pupils in the Uptown (Yamanote) — 16 classes in 6 schools — are extracted and treated here.

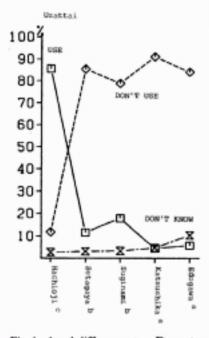


Fig. 1. Areal difference. ' = Down town; ' = Uptown; ' = Suburbs.

4. Classification of words by Hayashi III

A multi-variate analysis called Hayashi's Quantificational Theory Type III (in short Hayashi III) is a method which works like Factor Analysis for nominal (non-numerical) variables, such as discrete answers in social or linguistic surveys. By adopting this method to our data, answers to the questionnaire and the pupils who answered are arranged at the same time, according to similarity of the pattern of answering. The usefulness of Hayashi III can be seen from our preceding works (Inoue (1983b)).

Hayashi III was applied to the data of the Uptown pupils. In figure 2, a calculation of usage of fifteen words with school friends is shown; calculations including other situations (talking in a supposed TV interview etc.) being too complicated to be treated here.

The fifteen words are plotted in figure 2 according to the values of the first two axes (which work like the first two factors in the Factor Analysis). Axis 1 (the x-axis) is interpreted as related to the style or formality of words. Slang-like new dialect forms are plotted on the right-hand side, and a standard Japanese form (matsukasa) and a neologism (waapuro) are plotted on the left-hand side. This interpretation is supported by the values written on the side of each word, showing its percentage of usage in a supposed TV interview (numerators) and those in a daily conversation with friends (denominators). The forms to the left have large numerators, those to the right smaller numerators, reflecting difference of formality.

Axis 2 (the y-axis) is mostly governed by a word in fashion (kyapikyapi), which is used only by some pupils.

On the whole, the fifteen words have been classified into four main groups in figure 2, that is, new dialect forms, standard forms, and a word in fashion. Other forms cluster in the center, showing no remarkable tendency.

Differences according to sex are also theoretically possible. But the pattern of figure 2 was not explained by sex. Other factors, especially those related to the psychological or language behavior of the pupils are to be examined later.

5. Classification of sociopsychological questions by Hayashi III

About forty non-linguistic questions are also included in the questionnaire. Hayashi III was again applied to these questions so as to obtain an overall pattern of correlation of psychological and behavioral traits of pupils. The answers were treated as free check (0,1) reactions to questions, that is, only the answers coded as 1 are treated here (mostly 'yes', along with other, selected typical answers).

The resulting graphs are not shown here, because the general tendency can also be seen from the figure in the next section. Axis 1 characterizes two extremes of psychological traits which can be named as 'serious — unserious'. Axis 2 shows two extreme traits of 'activeness — meekness'. By selecting questions which show extreme values as to the first or the second axis, and arranging them into groups of similar sociopsychological tendency, five typical groups were established. The questions with no extreme values of the first or the second axes are not treated here, because they have little power of classifying pupils (perhaps they are commonplace questions which apply to most pupils).

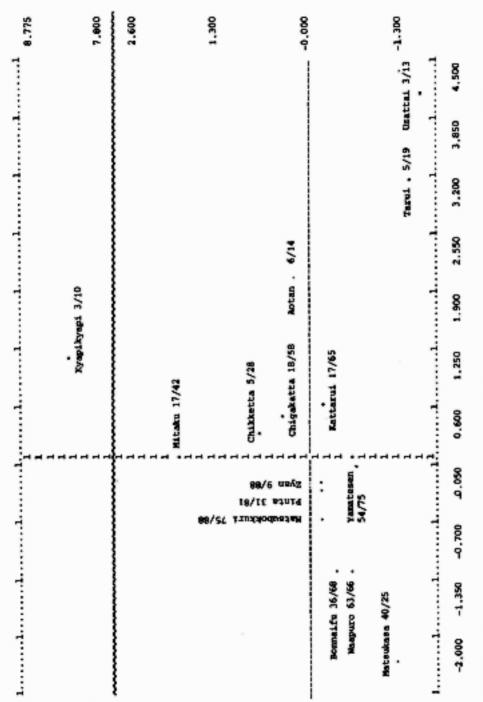


Fig. 2. Pattern of fifteen words.

The five groups can be characterized and named as follows:

	Axis 1	Axis 2
Active		+
Leading	-	+
Serious	-	-
Lonely		-
Unserious	+	

The classification into five typical groups was also applicable to the analysis of each of the three localities, and also to that of all localities at the same time. The pattern did not change much even when all fifteen words were included, so that these five groups can be interpreted to have a universal value in our analysis.

Simultaneous classification of the words and the sociopsychological questions by Hayashi III

The ultimate aim of this paper is to find out the correlation between language use and sociopsychological factors of the pupils. To grasp the overall relation of linguistic and non-linguistic factors, Hayashi III was again adopted here. This time, the use of the fifteen words with friends, and the answers to forty psychological and behavioral questions were treated together.

The result is shown in figure 3. The graph of the first and the second axes approximately reproduces the pattern of the first and the second axes of the forty non-linguistic questions, discussed in the preceding section.

The fifteen words are arranged mainly by the values of the second axis. The graph of the second and the third axes (which is not shown here) resembles figure 2, that is, the classification of the fifteen words.

In figure 3, three new dialect forms (uzattai, tarui, and aotan) are plotted near questions about activeness as for values of the second axis, thus showing that these new dialect forms are preferred by active pupils. On the other hand, the standard Japanese form matsukasa shows the biggest value as to the first axis, thus suggesting a relation with pupils with leadership and seriousness. The result of Hayashi III showed impressionistically that there definitely exist parallels between language use and non-linguistic factors.

7. Use of words and sociolinguistic traits

The above analysis by means of Hayashi III became possible because large computers are now easily accessible to humanistic scientists. General patterns

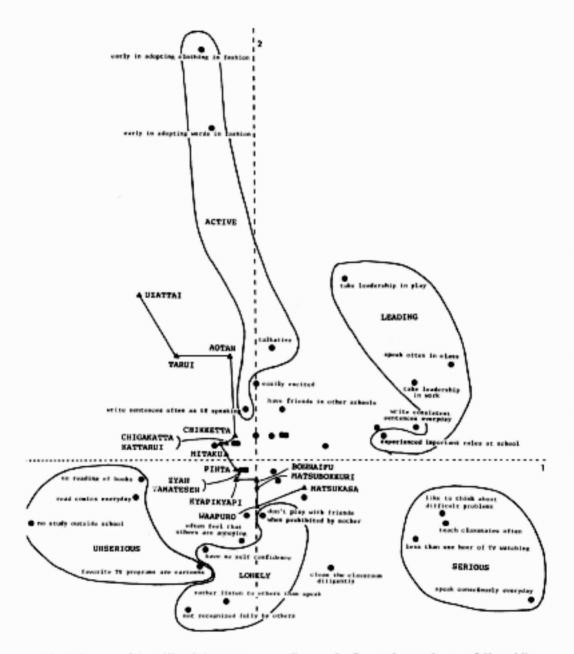


Fig. 3. Pattern of (non-)linguistic answers according to the first and second axes of Hayashi's Quantitative Theory Type 3.

were easily grasped through this multivariate analysis. But the correlation is a little too abstract, and the extent of the correlation between linguistic and non-linguistic factors is hard to grasp; to calculate the relations between fifteen words each and forty questions each is an enormous task, and the results are rather unmanageable. Therefore, the same five typical sociopsychological groups are made use of here, and an analysis by a simpler calculation (cross-tabulation) will be shown.

The five groups each consist of four questions. By counting how many questions are answered by 'yes' for each pupil, every pupil is given values from 0 to 4. Thus activeness (or seriousness, and so on) of pupils can be measured on a scale of 0 to 4. Since only a few pupils answered 'yes' to more than two of four questions at once, the values 2, 3, and 4 were grouped together. As a result, pupils are grouped into three subsets (0, 1 and 2–4 respectively) for the five sociopsychological groups. The actual numbers (and percentages) of the five sociopsychological groups are shown in table 1.

Table I

Group	Values	Total		
	0	1	2-4	
Active	262	242	132	636
	(41.2)	(38.1)	(20.8)	(100.0)
Leading	402	136	98	636
-	(63.2)	(21.4)	(15.4)	(100.0)
Serious	440	135	61	636
	(69.2)	(21.2)	(9.6)	(100.0)
Lonely	289	246	101	636
	(45.4)	(38.7)	(15.9)	(100.0)
Unserious	237	238	161	636
	(37.3)	(37.4)	(25.3)	(100.0)

Then, the percentages of use (or non-use and 'Don't knows') for each word (fifteen in all) were calculated for the three subsets of the five typical socio-psychological groups. The resulting $(15 \times 3 \times 5 =)$ 225 values are shown in $(15 \times 5 =)$ 75 graphs. The patterns for some new dialect forms are similar, so six rows of graphs (each consisting of five graphs) for six representative words are shown in figure 4. The square symbols on the right-hand side of each graph are filled in in black to show that they represent pupils having characteristic sociopsychological traits. The symbols on the left-hand side of each graph represent pupils who do not fall into the respective sociopsychological groups. The black square which shows the highest usage of words of the five sociopsychological groups is bigger, in order to show that the word is typically used by the pupils with the corresponding characteristics.

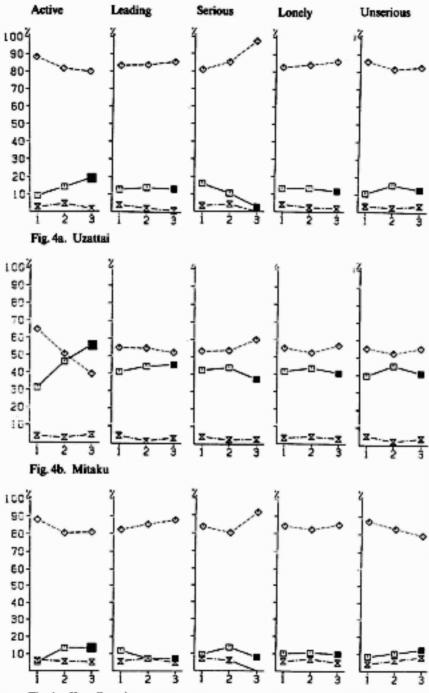


Fig. 4c. Kyapikyapi

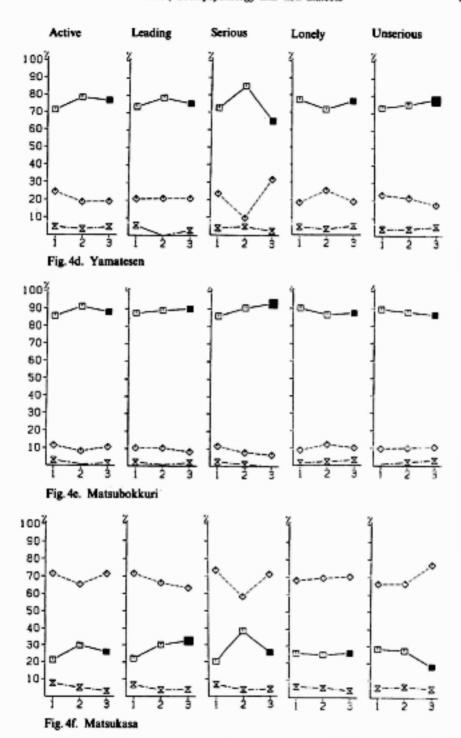


Fig. 4a-4f. Characters and language use. 1 = not active, leading, serious, lonely or unserious; 2 = slightly active, leading, serious, lonely or unserious, and 3 = very active, leading, serious, lonely or unserious.

Figure 4a shows the usage of *uzattai* for five typical sociopsychological traits. The graph on the left-hand side has the biggest square, suggesting that this new dialect form is used lively by the active pupils. The graph in the middle shows that serious pupils, in contrast, scarcely use this new dialect form. The steepness of this graph suggests that seriousness has a quite strong effect on the use of this word.

Figure 4b shows the usage of another new dialect form, viz. mitaku. The difference of usage according to activeness of the pupils is great, as shown by the steep line of the graph on the left-hand side. Serious pupils do not use this word, as shown in the graph in the middle. Patterns of usage of other new dialect forms are similar to those represented by these two words.

As shown in figure 4c, the recent word in fashion kyapikyapi has not spread so much among the pupils. This word is typically used by the active pupils and by the unserious pupils, whereas the leading and serious pupils are reluctant to adopt this word. The unserious pupils are characterized by studying and reading very little and by spending much time on comics (as shown in figure 3); thus, they are fast in getting their information directly from the massmedia. Their fondness of the word in fashion is thus quite understandable.

Figure 4d shows yamatesen, a form which has been determined as not to be used officially by the Japanese National Railways. The usage of this form is characteristic of the unserious pupils, as shown in the graph on the right-hand side. (At the opposite end, the serious pupils are reluctant to use this form as shown in the graph in the middle.) The unserious pupils seem to be unconcerned about the appropriateness (or correctness) of this language use.

Matsubokkuri in figure 4e is adopted to show the contrast with matsukasa in figure 4f. The common Japanese form matsubokkuri, which originated in eastern Japan, is here mainly used by the serious pupils, and is unfavored by the unserious pupils. The standard Japanese form matsukasa, which originated in western Japan, is the one most used by the pupils with leadership (perhaps coinciding with the pupils with a good school record).

The abstract relation between the word and the sociopsychological traits is ascertained more concretely by the graphs shown above.

8. Evaluation of the action of the sociopsychological traits, using Hayashi II

Thus far, the relation between words and sociopsychological factors has been determined. But the extent of the latter's action is not yet clear. Differences of sex, age, or other sociological factors may work as well as (or better than) the sociopsychological factors treated here.

Another multivariate analysis, Hayashi II, which works as a kind of Discriminant Function for nominal (non-numerical) variables is adopted here. In this analysis, the action of sociopsychological factors on the usage of words can be measured by the size of range of values for each question. All fifteen words showed bigger ranges for some of the twenty-six questions related to psychological and linguistic behavior, while age or sex showed only small ranges of values.

			-15.00	-10.00	-5.00	0.0	5.00	10.00	15.00
C	1-1	-1.01	like to have a wide cir	cle of acqua	intances				
C	1-2	-0.59					. •		
C	1-3	3.82					•		
C	2- 1	-0.70	rather listen to others	than speak			- •		
C	2- 2	2.29					•		
C	2-3	-0.99					•		
C	3-1	2.45	like to think about dit	fficult proble	ems		•		
C	3-2	-0.45					- •		
С	3-3	-0.85					- •		
С	4-1		make merry often				. •		
c	4-2	2.66					•		
C	4-3	1.42					•		
С	5- 1		get in tune with other	s			•		
C	5- 2	12.74					•		
С	5- 3	-1.18					•		
С	6– 1		put into practice when	n it is right v	vithout				
C	6-2		considering others				•		
C	6-3	1.99					*	-	
C	7- 1	10.59	not recognized fully b	y others			•		
C	7- 2	0.40					•-		
C	7- 3	-1.34					•		
C	8-1		like to indulge in idle	fancies			•		
С	8-2	1.14					•		
C	8-3	1.02					•		
C	9- 1		often feel that others	are annoying	5		•		
-	9- 2	2.32					•		
	9-3	3.61							
	10- 1		have no self-confidence	œ			•		
	10- 2	-3.06					•		
	10- 3	1.07					•		
-	11- 1		easily excited				•-		
	11- 2	2.26					•		
_	11- 3	-2.54					•		
	12- 1		feel lonely in a group				:		
_	12- 2	-1.22					•		
_	12- 3	2.62					•		
	13- 1 13- 2	-0.35	speak often in class				•		
	13 3	0.57							
	14-1		take leadership in wor	·k					
	14- 2	5.14							
	14- 3	-2.59							
	15- 1		take leadership in play	v					
	15- 2	-5.02	make removerselly in pia,	,					
	15- 3	0.09				-	•		
-		0.03							

C 16- 1	-1.93	the best friend is in the same class		
C 16- 2	3.92			
C 16-3	-2.76		•	
C 17- 1	-2.65	clean the classroom diligently	•	
C 17- 2	3.83			
C 17- 3	-0.94			
C 18- 1	-0.04	experienced important roles at school		
C 18- 2	0.18			
C 18-3	-3.80			
C 19- 1	3.47	have friends in other schools		
C 19- 2	-3.22			
C 19-3	2.71			
C 20- 1	2.28	prefer after-school activities to lessons		
C 20- 2	-0.39		-•	
C 20- 3	-3.82			
C 21- 1	0.82	use vulgar words		
C 21- 2	-8.17		••	
C 21-93	1.28			
C 22- 1	-2.34	be good at Japanese	•	
C 22- 2	0.90			
C 22- 3	0.06			
C 23- 1	-4.54	teach classmates often		
C 23- 2	-1.11		•	
C 23- 3	4.35			
C 24- I	7.40	don't play with friends when prohibited by	,	
C 24- 2	1.11	mother		**
C 24- 3	-6.28		• • • • • • • • • • • • • • • • • • • •	
C 25- I	0.80	have a try at a dangerous game		-
C 25- 2	0.97		•	
	-3.06			
C 26- 1	1.47	want to be popular in class	•	••
C 26- 2	-0.64		- •	
C 26- 3	-1.93		•	
C149- 1	-6.36	Grade	••••••	
C149- 2	2.19			****
C149- 3	4.49			
M	0.75			-
F	-0.89			

Fig. 5. Degrees of influence of psychological questions on the use of tarui.

Figure 5 is only one example of the result of Hayashi II. The two downmost variables (three grades and sex) show only short lines. Wide ranges are shown by questions such as:

- (5) get in tune with people around,
- (7) not recognized fully by people,
- (14) tend to take leadership when working with others, and
- (15) tend to take leadership when playing with others.

When Hayashi II was applied to all the forty questions including social behavior, the action of sex and age was even smaller. By another analysis using Hayashi II, it became clear that of the fifteen words, *kyapikyapi* is the word the use of which is the most influenced by sex (girls use it more than boys). But even the use of this *kyapikyapi* is governed largely by some of the psychological factors, sex being only a concomitant factor.

In most sociolinguistic studies done so far in Japan, (socio-)psychological factors were often conjectured to affect the use of language. But results repeatedly showed that other factors, for example, age, sex, occupation, and educational background of informants are main factors, and that psychological factors only have a disturbing effect. By selecting pupils of Uptown Tokyo, the sociopsychological factors appeared foremost, showing that new dialect forms and other forms (including standard Japanese forms) are adopted (and used) by some sociopsychologically characteristic pupils.

9. Discussion

In this paper, differences of language among pupils of the same age level in the same area have been studied. New dialect forms are prevalent among the active pupils, standard Japanese form among the serious pupils, whereas older, 'incorrect' expressions are found to be used by the unserious pupils. This shows that language change is not so simple as was once assumed.

New dialect forms in other parts of the country have been surveyed earlier, and it has been established that such new dialect forms represent a change in a different direction from standardization. Differences in social and linguistic behavior between the users of new dialect forms and those of standard forms have been found already. For example, the characteristics of users of standard forms are clear from much research in sociolinguistics (Nomoto (1975)). The sporadic distribution of standard Japanese forms on dialect maps also shows that there are users of standard forms in every community, besides those of newer or older dialect forms. These changes in two directions were also found in Tokyo, which is considered to be the headspring of standard Japanese. Thus, the new dialect forms which represent changes from below, and standardization which represents a change from above, are both prevalent in the modern Japanese language; see figure 6.

Figure 6 is designed to show an historical process, but it can also be used to characterize three typical groups of users of language at a certain time. That is: progressive and ascending (aiming at standard forms); progressive and descending (aiming at new dialect forms), and regressive, or conservative (late in adopting either forms).

These three groups can further be correlated with some of the above five sociolinguistic groups, in the following way: the progressive and ascending are

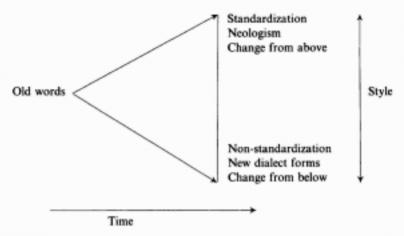


Fig. 6.

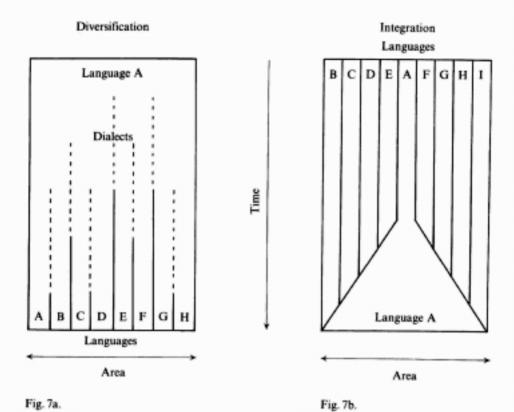
the pupils with seriousness (and leadership); the progressive and descending are the pupils with activeness, and the regressive (conservative) are the unserious pupils.

The differences between descending and ascending as to the new words which are adopted can be explained by the symbolic functions of language and by young people's social behavior. The tendency towards standardization can be easily explained by social motivation towards upward mobility, and a widening of communication networks in the modern world. Use of non-standard forms can be explained mainly in two ways: first, because the forms are learnt unconsciously early in childhood (as a natural linguistic change), secondly, because the words have social implications: some youngsters adopt stylistically low (informal) forms just to show their group consciousness (i.e. friendliness with peer group members).

10. Conclusion

The new dialect forms thus far discussed are not words which are ephemeral and soon die out. They can be differentiated from fashion words. They are typical examples of natural language changes — change from below — which have been constantly occurring throughout language history. This kind of change has been clearly attested also in Tokyo. The same or similar changes should be found in other languages, too. Ample examples are given in Labov (1966, 1972), Trudgill (1972, 1974), and Foster (1968). Sporadic reports about Asian languages can be found in Li (1984), Hattori et al. (1981), and elsewhere.

Language standardization and new dialect forms can be further interpreted to approximately represent two typical trends of language change: diversification and integration (or unification).



Diversification of a language in an area can be represented as in figure 7a. Differences in language between geographically distant areas become greater, so that a language becomes divided into dialects; later, the differences become even greater so that dialects can be called separate languages. This process is reflected on a smaller scale as incessant births of new (dialect) forms in various localities. Constant and repeated births of new dialect forms will thus lead to diversification of a language.

Integration (unification) of languages is realized on a large scale by the spread of a powerful language (as in the case of Latin or English) absorbing or driving away (users of) small languages. The same process can be seen on a smaller scale within a language in the form of language standardization. (This process is also reflected by the use of loan-words, or by the increase in the number of bilingual speakers.)

This schema is, of course, too simplistic to explain all the complicated and various aspects of actual language change. But at least it can be said that new dialect forms are not a peculiar phenomenon in modern Japan. It has a wide theoretical background, as a form representing a process of language divergence.

The rate of language change for a person is a function of frequency of usage of linguistic forms and of possibility of his/her contact with the form. This relation can be represented as follows:

$$R = f(F.C)$$

The present paper is concerned with the factors which may affect the possibility of contact with words. The social differences were already clear. The degree of action of psychological factors was what was measured here.

This kind of research might have been done on a smaller scale with fewer informants. But the validity of the result would remain doubtful in such a study. Therefore, a large scale survey was designed, and multivariate analysis was applied in our study.

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