

## A Comparative Study of the Speech Development of Japanese and American Children (Part Eight)

—Structure and Function of One-word-sentences\*—

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### SUMMARY

We recorded the speech sounds of nine Japanese and three American infants in Japan and two American infants in the U.S.A., all of whom were under two years of age. Then we compared the differentiation process of one-word-sentences' structure and function of the three groups.

By the time when the infant is eight months of age his mother has become his love object, his significant person. From about eleven or twelve months of age the infant begins to pick up a few of his mother's words. The word corresponds to an object or a situation which he has cognized. The infant begins to use the word as his own. The word is a so-called one-word-sentence.

At the beginning of the second year the infant does not use the word differentiatedly either in structure or in function. He utters it either as a one, two, three or more syllable word, or as a mixture with another word. With his whole body he utters it not only to express the object but also without any reference to the object. His expression in speech sounds is also connected with his need.

From about the middle of the second year the infant begins to develop his phonemicization-symbolization process and at the same time begins to use his word, one-word-sentence, a little more differentiatedly both in structure and in function. But we do not think that at this stage the infant begins to use his word differentiatedly in grammatical function. We can not identify what kind of part of speech it is.

This kind of developmental differentiation of his word is based on the developmental interrelationship between his cognition of the object-, the situation-relationship and his talking with his parents.

As for the process mentioned above we do not find significant differences between the three groups.

### I. INTRODUCTION

In former articles (Nakazima, S., 1970, 1972, 1973, 1975) we described as follows. From about one month of age on the infant develops his babbling

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phonatory-articulatory-auditory mechanisms and from about nine months through seventeen or eighteen months he reorganizes his babbling phonatory-articulatory-auditory mechanisms at the level of language. At the last stage of the reorganization process, from about eleven or twelve months, the infant begins to use a few conventional words, which are so-called one-word-sentences. At this stage, i.e. during the first several months of the second year, he utters, in all sorts of situations, sounds of the words and meaningless sounds with various articulatory forms. Through his effort to express sounds, the infant begins to notice some kind of symbolic relationship between words and the world and to use words in reference to what he wants to express. At this stage phonemes and words uttered by him do not increase in number. At about the middle of the second year the infant ends his reorganization process and begins his phonemicization-symbolization process, i.e. he begins to systematize his speech sounds into his mother tongue phoneme system and at the same time begins to use his speech sounds as symbols, and he tends to utter more phonemes and more words.

In this article we are going to describe what kind of structure and function the infant's words, one-word-sentences, have, how he differentiates the structure and function of his words until the beginning of multi word utterances, and what kind of bases underlie the differentiation process.

## II. PROCEDURES

There were fourteen subjects, nine of whom were Japanese and five were Americans. As shown in Table 1, there were four female and five male Japanese and one female and two male Americans who were living in Kyoto, Japan and

Table 1. Subjects and recording conditions.

| Nationality | Place where S's sounds were recorded | Subjects (Sex) | Beginning of recording by tape recorder | One recording per |
|-------------|--------------------------------------|----------------|-----------------------------------------|-------------------|
| Japanese    | Kyoto, Japan                         | E. T. (f)      | 28 days (0 : 0, 28)                     | 1 wk.             |
|             |                                      | Ya. N. (f)     | 1 mo. (0 : 1)                           | 2 wks.            |
|             |                                      | Y. S. (f)      | 2 mos. (0 : 2)                          | 2 wks.            |
|             |                                      | N. O. (f)      | 6 mos. (0 : 6)                          | 2 wks.            |
|             |                                      | H. K. (m)      | 1 mo. (0 : 1)                           | 2 wks.            |
|             |                                      | T. Y. (m)      | 1 mo. (0 : 1)                           | 2 wks.            |
|             |                                      | T. T. (m)      | 7 mos. (0 : 7)                          | 2 wks.            |
|             |                                      | T. U. (m)      | 12 mos. (1 : 0)                         | 2 wks.            |
|             |                                      | Yu. N. (m)     | 13 mos. (1 : 1)                         | 2 wks.            |
| American    | Kyoto, Japan                         | F. P. (f)      | 6 mos. (0 : 6)                          | 2 wks.            |
|             |                                      | C. W. (m)      | 6 mos. (0 : 6)                          | 2 wks.            |
|             |                                      | E. D. (m)      | 7 mos. (0 : 7)                          | 2 wks.            |
| American    | Urbana & Champaign, Illinois, U.S.A. | M. O. (f)      | 15 mos. (1 : 3)                         | 2 wks.            |
|             |                                      | C. C. (m)      | 6 mos. (0 : 6)                          | 2 wks.            |

two Americans living in the U.S.A., one female and one male. We recorded on tape the speech sounds of each subject and those of his parents in the home and described the situations in which the child spoke and behaved. Each recording took about half an hour. We used two kinds of tape recorders: TEAC (TD 102, AR 11) for the subjects in Japan and SONY EM-1 for the subjects in the U.S.A. The overall recording and reproducing characteristic of the former was from 40 Hz to 15000 Hz  $\pm 3$  dB, that of the latter from 100 Hz to 7000 Hz  $\pm 5$  dB, speed 7 1/2 inch/second. We analyzed these speech sounds on a sound-spectrograph.

### III. RESULTS AND DISCUSSION

We would like to describe what we found in our study as follows.

1. What kind of words, one-word-sentences, did the infants begin to use?

As for the bases on which the infants began to use words, we show the following three points.

- 1) Affectionate relationship with parents.

As stated in the former article (Nakazima, 1976) by the time they were eight months of age the infants had cognized their mothers as their love objects, their significant persons, based on Erikson's so-called "Basic trust" (Erikson, E. H., 1950). As stated before (Nakazima, 1970) at about ten months of age the infants began to imitate and to cognize the speech sounds of their parents, especially of their mothers, and at about eleven or twelve months they began to pick up a few of their parents' speech sounds and to use the speech sounds as their own. These speech sounds used by them were not sentences but words. These words were so-called "One-word-sentences" (Stern, C. und W., 1907).

We think that this kind of special interest in parents' speech sounds is based on the affectionate relationship with them, described above, and that the formation of the affectionate relationship with them is based on one kind of so-called "Imprinting" (Lorenz, K. Z., 1952).

Some of the words, the infants began to use, were in reference to their parents. A Japanese girl began to say /mama/ when she was thirteen months of age (Nakazima, 1970) and an American girl living in Japan began to say "Mama" at twelve months (Nakazima, 1972). A Japanese boy began to say /papa/ when he was twelve months of age (Nakazima, 1966) and an American boy living in Japan began to say "Papa" at fourteen months (Nakazima, 1973). /Mama/ and /papa/ are imported words from English.

- 2) Development of their cognition of the world.

The Japanese girl began to say /baibai/ (bye-bye) when she was eleven months of age. She had been fond of being taken out for a walk by her nurse every morning and while in her nurse's arms had waved her hand when her mother had told her /baibai/ (Nakazima, 1962). /Baibai/ is also one of imported words from

English. The American boy began to say "Bow wow" when he was twelve months of age. He had been playing with a dog, which had become one of his family members (Nakazima, 1970).

Through their own pleasant experiences the infants had cognized a few objects or situations by the end of the first year and then they began to pick up a few of their parents' words to which the objects or situations corresponded and to use the words as their own.

### 3) Development of their phonatory-articulatory-auditory mechanisms.

When the Japanese girl was twelve months of age her mother taught her /papa/. But she could not articulate [papa]. At seven and eight months of age she articulated [pa] sounds very frequently as one of repetitive babblings (Nakazima, 1970). Thus when they began to use a few words the infants could not articulate the words correctly, though they had repeated almost the same articulations as those of the words at the level of babbling (Nakazima, 1962). Based on the development of their phonatory-articulatory-auditory mechanisms at the level of babbling the infants reorganized the mechanisms at the level of language. At the last stage of the reorganization process the infants began to pick up a few of their parents' words and to use the words as their own.

### 2. Structure and function of one-word-sentences before the phonemicization-symbolization process.

When they began to use a few words, one-word-sentences, at eleven or twelve months of age the infants uttered the words not only in various articulatory forms but also with various number of syllables, and sometimes mixed with other words.

When the Japanese girl began to say /papa/ at twelve months of age she uttered /papa/ not only with two syllables properly but also with one or more than two, even eight syllables. She also uttered a mixture of sounds of /papa/ and /wanwan/ (bow wow), e.g. at fourteen months of age she uttered [mapapapo:wouwwou] to her father. [mapapapo:] was one of variations of /papa/ and [wouwwou] was one of variations of /wanwan/. At this stage she confused /papa/ with /wanwan/ and sometimes uttered /wanwan/ in reference to her father. The American boy living in Japan, who began to say "Papa", showed almost the same tendency as the Japanese girl. He also uttered a mixture of sounds of "Papa" and "Bow wow" in reference to his father, e.g. at fifteen months of age he uttered [waãp'a]. [waã] was one of variations of "Bow wow", [p'a] was one of variations of "Papa" (Nakazima, 1970).

The infants also made up a few words themselves. When she was thirteen months of age a Japanese girl uttered frequently [ɲənnə] like sounds, meaningless sounds, pointing at a picture of some things. She seemed to be asking "What is this?" (Nakazima, 1972). At fifteen months of age an American girl living in the U.S.A. uttered [a:ɪ] like sounds, which seemed to be in reference to an airplane (Nakazima, 1974).

We think that at the beginning of the second year, before the phonemicization-symbolization process, the infants' words, one-word-sentences, are undifferentiated in structure.

At the beginning of the second year the infants also uttered the words, one-word-sentences, in various situations. The Japanese girl, who confused /papa/ with /wanwan/, at twelve months of age uttered /papa/ not only in reference to her father but also to a toy dog. At twelve months of age she also uttered /papa/ sounds when she was playing alone without relation to any particular objects. The American boy, who confused "Papa" with "Bow wow", at fourteen months of age uttered "Bow wow" sounds when he was turning over the pages of his book without reference to any objects (Nakazima, 1970).

As Stern stated (Stern, 1907), the meaning of the infants' one-word-sentences was ambiguous and connected with their needs. Their verbal expressions were not differentiated from their whole bodily expressions either. The Japanese girl, who uttered meaningless [ɲanne] like sounds, at eleven months of age began to use /bosi/ [boçi] (hat) and uttered [botçi] like sounds. [botçi] was one of variations of /bosi/. When she found her mother changing her coat to go out she moved closer to her mother on her knees, putting her hands on her head, uttering [botçi] sounds, and asked her mother to take her out. She had been fond of being taken out by her mother when she had worn her hat. She uttered [botçi] sounds not to mention a hat but to ask her mother to take her out. To put on a hat had become for her the sign of going out (Nakazima, 1972).

We would like to say that during the first several months of the second year, before the phonemicization-symbolization process, the infants do not use their words, one-word-sentences, differentiatedly either in structure or in function and they do not utter their speech sounds, one-word-sentences, differentiatedly from meaningless sounds either. We think, therefore, it is nonsense to try to identify what kind of parts of speech the infants are using.

As stated above, through their experiences of expressing words the infants began to find some kind of symbolic relationship between words and the world and they passed to the next stage: the phonemicization-symbolization process. They began their new process almost at the middle of the second year.

3. Structure and function of one-word-sentences after the beginning of the phonemicization-symbolization process.

From about the middle of the second year, on the one hand the infants began to develop their phonemicization-symbolization process and on the other hand they began to use their words, one-word-sentences, a little more differentiatedly both in structure and in function.

The Japanese girl, who uttered /papa/ with various articulatory forms and in various situations, at seventeen months of age began to say /papa/ not only in almost correct situations but also with almost correct articulatory forms (Naka-

zima, 1970). The American boy, who uttered "Papa" in the same way as the Japanese girl, at eighteen months of age began to say "Papa" not only in almost correct situations but also with almost correct articulatory forms (Nakazima, 1973).

We can say the infants began to use their words, one-word-sentences, a little more differentiatedly in structure.

The infants began to use their words a little more differentiatedly in function, too.

The Japanese girl, who uttered [boʧɪ] /bosi/ (hat) sounds asking her mother to take her out, at fifteen months of age stopped uttering [boʧɪ] sounds and at seventeen months began to say [boʧɪ] /bosi/ sounds in reference to a hat, e.g. pointing at a hat or at a picture of a hat. [boʧɪ] was one of variations of [boʧɪ] (Nakazima, 1972).

At this stage the infants began to use their words correctly in reference to particular objects or situations, though not always. They also began to use their words further more differentiatedly.

The Japanese girl, who uttered [boʧɪ] (hat) sounds, at sixteen months of age began to say [to:ʧan] /totsjan/ (daddy). At seventeen months her mother pointing at her father's hat asked her "Whose hat is this?" She answered [to:ʧan]. She knew it was her daddy's, but did not know the form of the possessive case [to:ʧan no] (daddy's) (Nakazima, 1972). The American boy living in Japan, who used "Papa", said in the same way. When his mother took his father's brush in her hand and asked him "What's this?" at twenty-one months of age he answered [p'apa:] (Nakazima, 1973).

At the same time on the one hand the infants began to use the same words in reference to different objects or situations and on the other hand they began to use different words in reference to the same objects or situations.

The Japanese girl, mentioned above, at fourteen months of age began to use [ʧatʧa] /tsja/ (tea) in reference to drinking tea and at seventeen months she began to use the word in reference both to a tea cup and to a tea kettle. [ʧatʧa] is a baby word of [ʧa] /tsja/. When she found a picture of an elephant sitting on the ground, at sixteen months of age she sometimes said [do] /zo/ (elephant), sometimes [googoo] /gorogoro/ (lying). The American girl living in the U.S.A., who made up [a:ɪ] sounds herself, at seventeen months of age said [bəm] (bombed) in reference to any situations which were disordered. When she found her mother sipping a cup of coffee, at sixteen months of age she sometimes said [haʧɛ] (hot), sometimes [kəki] (coffee) (Nakazima, 1974).

It seems that the girls used nouns and adjectives. But we do not think that at this stage they used nouns and adjectives differentiatedly. The American boy living in Japan, who used "Papa", at seventeen months of age began to use "Car" and at twenty-one months began to use [bu]. [bu] /bu/ is a Japanese

baby word and means "Car". Japanese infants usually use the word /bu/ to express "Car", but sometimes to express any kind of vehicle, sometimes to express car's or vehicle's movement undifferentiatedly. The American boy tried to use "Car" and [bu] differently, i.e. he said "Car" to express his toy car and [bu] its movement, though not always (Nakazima, 1973). At this stage we can not identify [bu] either as a noun or an adverb.

We think that after several months of the phonemicization-symbolization process infants begin to use their words, one-word-sentences, a little more differentiatedly both in structure and in function. But we do not think that at this stage infants begin to use their words differentiatedly in grammatical function and that it is worthwhile to try to identify what kind of parts of speech the words are.

At the next stage the infants began to say two or three word utterances and prepared for their syntacticization process.

4. Basic factors which underlay the differentiation process of the infants' words, one-word-sentences.

As for the basis on which the infants began to use their words, one-word-sentences, differentiatedly, we would like to mention the following points.

During the first several months of the second year, the infants expanded their living sphere, walking around their houses. Through experiences dealing with many new objects in their expanded living sphere, the infants differentiated and coordinated their sensory-motor schemata further and began to cognize the object-, the situation-relationship. Based on their cognition of the object-, the situation-relationship the infants in talking with their parents began to use old and/or newly picked up words to describe such kind of relationship.

In the case of the Japanese girl, who used [t̚at̚a] (tea) in reference both to a tea cup and to a tea kettle, she asked her mother to drink a cup of tea saying [t̚at̚a]. Her mother poured tea into a tea cup from a tea kettle and said "Let's drink tea". The girl found that the tea cup and the tea kettle were closely related with tea drinking. But she did not know either the word "Tea cup" or the word "Tea kettle". She used her old word [t̚at̚a] (tea) in talking with her mother to describe such kind of relationship between tea drinking and the tea cup, the tea kettle.

In the case of the American girl, who said [bəm] (bombed) in reference to any situations which were disordered, when she scattered her toys, her books, etc. she heard her mother saying "Oh, it's like bombed". The girl found that the word [bəm] (bombed) was in reference to any situations in which some materials were scattered. And she said [bəm] to her mother describing such situations.

Based on their cognition of the object-, the situation-relationship, the infants found new meaning of old words and/or new words in talking with their parents. And through their use of these words, the infants' cognition of such kind of relationship became more stable.

We think that this kind of developmental interrelationship between the infants' cognition of the object-, the situation-relationship and their use of the words in reference to such kind of relationship in talking with their parents is the basis of the developmental differentiation of the infants' words, one-word-sentences, in form and in function.

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