A Comparative Study of the Speech Development of Japanese and American Children (Part Four)* —The Beginning of the Phonemicization Process—

Sei NAKAZIMA

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 between the ages of ten and twenty-two months. We then compared the beginning periods of the phenemicization process of the three groups.

During the first several months of the second year, the infant, through his effort to express sounds, begins to notice some kind of symbolic relationship between words and the world and he acquires one kind of learning set to use words in reference to what he wants to express.

The infant then begins to develop his phenemicization process. We think that the middle several months of the second year are the beginning period of the phonemicization process. During this period, phonemes and words uttered by the child increase in number, but even at the end of the period, phonemes are not articulated differentiatedly and words are not always used correctly. Most of the words he utters are names of objects. But by the end of this period, he begins to use some words which represent the objects' place and position and to construct a few two- or three-words-sentences. Although before this period, as a means of expression, he uses bodily expressions with or without speech sounds, during this period he begins to use speech sounds but not necessarily with bodily expression. Before this period in all sorts of situations he utters word sounds and meaningless sounds with various articulatory forms, but during this period he does this very little.

There are individual differences. In one case this period begins at the age of eighteen months, and in another case it begins at fifteen months.

We do not find significant differences among the three groups, except that the group of American infants in Japan shows slow developmental process as other bilinguals do.

1. INTRODUCTION

First, in order to clarify what we are going to say in this article, we would like to summarize our opinions which were stated in former articles (Nakazima,

Sei NAKAZIMA (中島誠): Professor, Department of Psychology, Kyoto University.

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S., 1962, 1966, 1970, in press).

From about the age of one month the infant begins to utter sounds and at two months he begins to change his pitch and articulation. Then the pitch and

Age	Development of Speech	Development of Sensorymotor Adaptations
Year Month		
0:0	1. Infants cry when they are in a state of discomfort.	1. The first stage : The use of reflex.
0:1	2. Development of phonatory-articula-	2. The second stage: The first acquired
	tory-auditory mechanisms during the	adaptations and the primary circular reac-
	period of babbling.	tions.
	1) Infants begin to utter calm sounds when they are cmfortable.	
0:2	2) Infants change the pitch and ar-	
0:3	ticulatory forms of these sounds.	
0:4		3. The third stage : The secondary circular
0:5		reactions and the procedures destined to
0:6	3) Repetitive babbling.	make interesting sights last.
0:7		
0:8		4. The fourth stage : The coordination of the
0:9	3. Reorganization of babbling phonato-	secondary circular reactions schemata and
	ry-articulatory-auditory mechanisms	their application to new situations.
	and their application to language.	
	1) Development of response and evoca-	and the second
	tion in simple sounds.	
0:10	2) Development of imitation and cogni-	
	tion of adult speech sounds.	
0:11	3) Infants begin to utter words. But	
1:0	they do not use these words as	5. The fifth stage : The tertiary circular re-
1:1	language. In all sorts of situations	actions and the discovery of new means
1:2	they utter word sounds and mean-	through experimentation.
1:3	ingless sounds with various articu-	
1:4	latory forms.	
1:5	4. Development of phonemicization and	
1:6	symbolization of speech sounds.	6. The sixth stage: The invention of new
1:7	1) The beginning of the phonemiciza-	means through mental combinations.
1:8	tion and symbolization process.	
1:9		
1:10	2) Development of the phonemicization	
1:11	and symbolization process.	
2:0		
2:1		
•		
•		
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Table 1. Development of Speech, by S. Nakazima, and Development of Sensorymotor Adaptations, by J. Piaget.

articulation becomes more varied and between the ages of six and eight months the child babbles repetitively. Until he is nine months old, he utters sounds, not as a means of communication but as if playing with his phonatory-articulatory organs. We think that the infant's utterance can be considered as one kind of what J. Piaget called "Circular reactions", especially the repetitive babblings as one kind of "Secondary circular reactions" (Piaget, J., 1959). And we believe that from about the age of nine months the infant begins to reorganize his babbling phonatory-articulatory-auditory mechanisms and apply them to language. At about nine months he begins to develop the ability to call to others and to respond to them with simple sounds; at about ten months he begins to be able to imitate and understand adult speech sounds; and at about twelve months he begins to use words. But he does not use these words as language. In all sorts of situations he utters word sounds and meaningless sounds with various articulatory forms. We think that during the first several months of the second year, the infant, through these efforts of expression in sounds, begins to notice some kind of symbolic relationship between words and the world and that he acquires one kind of learning set to use words in reference to what he wants to express. Thus he ends his reorganization process of babbling phonatory-articulatory-auditory mechanisms at the level of language and begins his phonemicization process. (Refer to Table 1)

In this article we would like to clarify the developmental process of the beginning period of the phonemicization process, that is during the middle several months of the second year. We describe how the infant's sounds begin to be organized into a phoneme system of language, how he begins to use his sounds as a symbol, what kind of relationship exists between the phonemicization, symbolization process and the developmental processes of other bodily, mental functions, and what kind of environmental factors have influence upon these processes.

II. PROCEDURES

There were fourteen subjects, nine of whom were Japanese and five were Americans. As shown in Table 2, they were four female and five male Japanese, and one female and two male Americans who were living in Kyoto, and one female and one male American who were living in the U.S.A. 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 recorder: 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 3db, that of the latter from 100 Hz to 7000 Hz \pm 5db, speed 7 1/2 inch/second. We analysed these speech sounds on a soundspectrograph.

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Nationality	Place where S's voices were recorded	Subjects (Sex)	Beginning of recording by tape recorder	One recording per
		E.T. (f) Ya.N. (f) Y.S. (f)	28 days (0:0,28) 1 mo. (0:1) 2 mos. (0:2)	1 wk. 2 wks. 2 wks.
Japanese	Kyoto, Japan	N.O. (f) H.K. (m) T.Y. (m) T.T. (m) T.U. (m) Yu.N. (m)	6 mos. (0:6) 1 mo. (0:1) 1 mo. (0:1) 7 mos. (0:7) 12 mos. (1:0) 13 mos. (1:1)	2 wks. 2 wks. 2 wks. 2 wks. 2 wks. 2 wks. 2 wks.
American	Kyoto, Japan	F.P. (f) C.W. (m) E.D. (m)	6 mos. (0 : 6) 6 mos. (0 : 6) 7 mos. (0 : 7)	2 wks. 2 wks. 2 wks.
American	Champaign, Illinois U.S.A.	M.O. (f) C.C. (m)	16 mos. (1:4) 6 mos. (0:6)	2 wks. 2 wks.

Table 2. Subjects and Recording Conditions.

III. RESULTS AND DISCUSSION

In order to save space we present two cases in Table 3, 4 and Fig. 1–6. Our hypothesis is that the middle several months of the second year are the beginning period of the phonemicization process and the four points, described below, are the characteristic features of this period.

1. During this period speech-sounds-units, uttered by the infants, increased in number, but even at the end of this period these units were not articulated differentiatedly. We would like to define speech-sounds-units as vowels, diphthongs, single consonants and affricates.

At the beginning of this period the infants tried to utter speech sounds spontaneously and in imitation, but they did not articulate these sounds correctly. Therefore, at first the number of speech-sounds-units, they tried to imitate, increased. Then there was increase in number of speech-sounds-units, they articulated spontaneously and correctly at least once (See Fig. 1, 2, 4, 5).

At the end of this period, when they imitated their parents' speech sounds, they articulated vowels, plosives and nasals, in one- or two-syllable-words, fairly well, but when they uttered them spontaneously, they did not articulate these sounds differentiatedly.

There are five vowels in the Japanese phoneme system, but more than five in the English phoneme system. Therefore it is more difficult to articulate vowels differentiatedly for an American infant than for a Japanese.

Refer to Table 3 and 4.

English /u/, /u/ and /w/ should be articulated with round lips, but Japanese

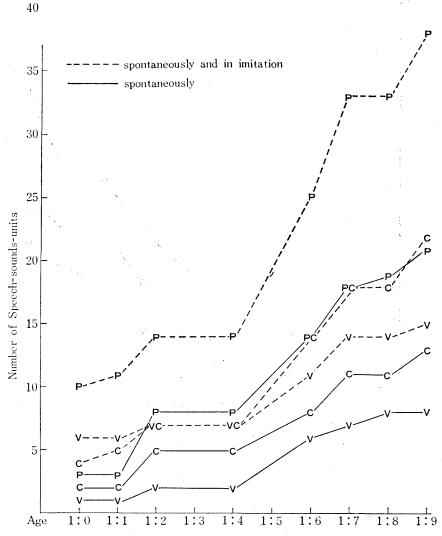


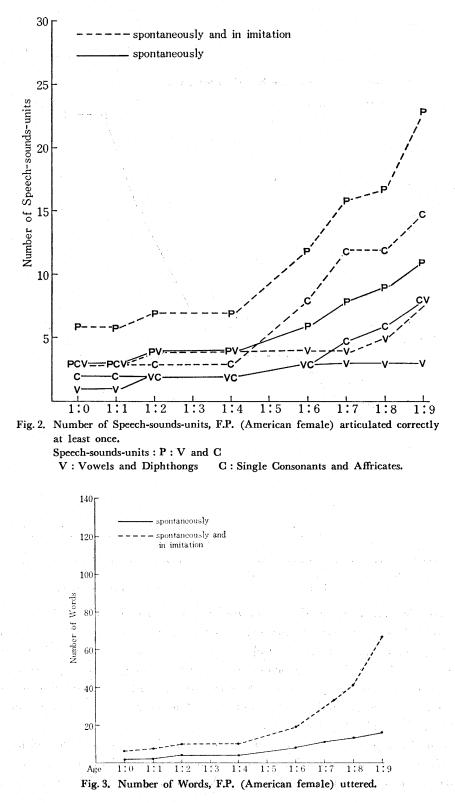
Fig. 1. Number of Speech-sounds-units, F.P. (American female) tried to articulate. Speech-sounds-units : P : V and C

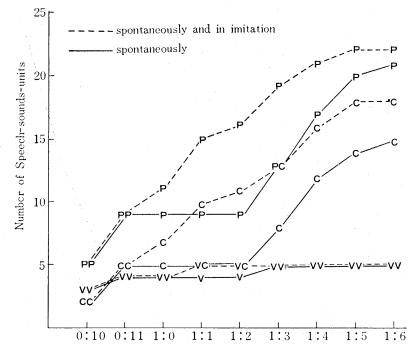
V: Vowels and Diphthongs C: Single Consonants and Affricates

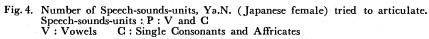
/u/ and /w/ are articulated without round lips (Nakazima, S., 1959). During this period the American infants articulated both /u/ and /u/ as [u], the same as the Japanese /u/, and /w/ as [w], the same as the Japanese /w/. At the end of this period some American infants sometimes articulated /u/ and /u/ correctly.

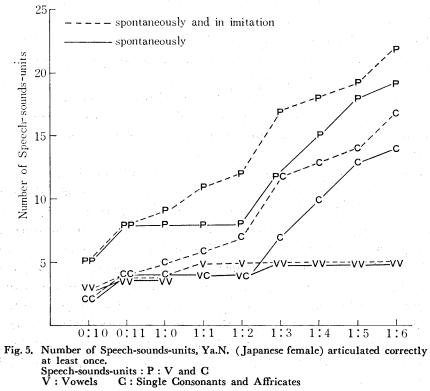
At the end of this period, the American infants did not distinguish in articulation between |i| and |I|, $|\mathfrak{I}|$ and |ou|, but they sometimes distinguished between |ei| and $|\epsilon|$, |a| and $|\alpha|$.

In the Japanese phoneme system, some vowels should be distinguished in length, e.g. /meme/ means "Eye" and /mermer/ means "Goat or sheep". The Japanese infants confused them even at the end of this period. They confused





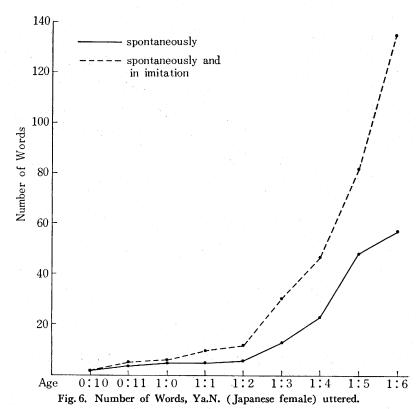












/kokko/(hen or cock) and /koko/(here), too.

Some American infants, who lived in Kyoto, articulated some words in the same way as Japanese do, e.g. both some American and Japanese infants articulated "Cookey" as [kukki] identically.

At the end of this period, the infants imitated plosives and nasals fairly well, but when they uttered sounds spontaneously, they did not articulate these differentiatedly, e.g. one American articulated "Baby" as [bepe], one Japanese confused /kaki/(persimmon) and /kagi/(key), etc.

Consonants other than plosives and nasals, especially fricatives, were difficult to articulate for the infants. English /r/[I] was sometimes articulated correctly, sometimes replaced by [w] or [j], sometimes omitted. Japanese /r/[f] was sometimes articulated correctly, sometimes replaced by [d], or by [I], the same as the English /r/, or by [1], the same as the English /1/, and sometimes omitted.

English /5/ and /3/ should be articulated with protruding lips, but Japanese [c], an allophone of /s/, and [z], an allophone of /z/, are articulated without protruding lips (Nakazima, 1959). When the American infants began to articulate /5/ fricatively, they articulated it as [c], e.g. some American infants articulated "Shoe" as [cu]. They also articulated /t5/ as [tc], the same as the Japanese [tc], an allophone of /ts/, and $/d_3/$ as [dz], the same as the Japanese [dz], an allophone of /z/.

English /f/ was sometimes articulated correctly, and sometimes replaced by $[\Phi]$, the same as the Japanese $[\Phi]$, an allophone of /h/, e.g. one American articulated "Foot" sometimes correctly, sometimes as $[\Phi u]$.

2. During this period, words uttered by the infants increased in number, but even at the end of this period words were not always used correctly. (See Table 3, 4 and Fig. 3, 6)

At the beginning of this period, they used much baby-talk. Then the amount of baby-talk decreased and the number of adult words increased. In Japan there are many baby-words, most of which are onomatopoeias, e.g. /ga:ga:/ (duck), etc. Therefore most of the words uttered by the Japanese infants at the beginning of this period were baby-words. In the case of the American female, shown in Table 3, the mother did not use as much baby-talk with her as with her siblings when they were her age. She uttered only a few baby-words.

At the end of this period, the infants uttered many words, but they did not always use these words correctly, e.g. one American infant uttered "Eye" pointing at her mouth, etc.

3. During this period, most of the words the infants uttered were names of objects. By the end of this period, they began to use some words which represented the place and position of the objects and to construct a few two- or threewords-sentences. (See Table 3, 4)

From the beginning through this period, most of the words they uttered were names of objects, e.g. mama, dada, bow wow, shoe, foot, etc. But by the end of this period, they began to use words which represented the place and position of the objects, e.g. the American infants' there, here, etc., the Japanese infants' [gofogofo] (lying down), [attci] (there), [kottci] (here), etc.

After they began to use these words which represented the place and position of the objects, they uttered the words, which represented the name of the objects, not always to express the name of the objects but sometimes they used these words in somewhat different ways. For example, one Japanese infant answered [to:tcan] (father) to her mother's question "Whose is this hat?". She was supposed to say "Father's". She was not able to change the form of the word to the possessive case but she modified the function of the word.

When they began to use the words which represented the place and position of the objects, they began to construct a few two- or three-words-sentences using these words. At first they constructed sentences with their parents. For example, one American infant answered [tüiə] to her mother's question "Where is dada?" and then responded to the mother's "Boy?" saying [tə]. [tüiə] and [tə] were variations of "There". She and her mother constructed a sentence "Boy there", which meant "The boy(brother) is there". Then they began to construct sentences by themselves. For example, one Japanese infant, pointing at a tea cup filled with tea, uttered [kə tçətçətçə], which meant "This is tea". [kə] was a variation of [kofe] (this), and [tcətcətcə] was a variation of [tcətcə] (tea).

Two other characteristic features, different from those of the preceding age level, were as follows, 4.1 and 4.2.

4.1 Although before this period, as a means of expression, the infants used bodily expressions with or without speech sounds, during this period, they began to use speech sounds but not necessarily with bodily expression. (See Table 3, 4)

Before this period, one American infant, when she wanted to express her positive feelings, shook her head up and down without saying "Yes", when she wanted to express her negative feelings, she shook it from side to side without saying "No". At the beginning of this period, she shook her head from side to side sometimes saying "No". At the end of this period, she shook her head from side to side almost always saying "No", and shook it up and down sometimes saying "Yeah".

One Japanese infant, before this period, put her hands on her head uttering [botci] sounds (hat or cap), when she wanted to be taken out for a walk. She had liked when her mother took her for a walk with her hat on her head. At the beginning of this period, she did not utter [botci] sounds. At the middle of this period, she uttered [botci] sounds as a name of a hat or a cap without any reference to her need to be taken out. [botci] is the adult pronunciation of [botci], which is baby-talk.

4.2 Although before this period in all sorts of situations the infants uttered word sounds and meaningless sounds with various articulatory forms, during this period they did this very little.

Before this period, the infants picked up a few of their parents' sounds, both meaningful and meaningless, and in all sorts of situations they uttered these sounds with various articulatory forms trying to use them as a means of expressing what they wanted to say. We consider this kind of utterance as one of Piaget's "Tertiary circular reactions" (Nakazima, 1970).

One Japanese infant, when she began to utter words at the age of ten months, uttered [əkətçə]-like sounds. These sounds were similar to [oka:tçaN] sounds (mother). She uttered these sounds frequently with various articulatory forms, with or without reference to her mother. At eleven months, she uttered [əkətçə]like sounds less frequently and [kətçə]-like ones frequently. The latter were similar to [kotço] sounds (to scratch with fingers). She uttered these sounds with various articulatory forms, and with or without scratching. At twelve months, she uttered [kətçə]-like sounds less frequently and [kette]-like ones frequently. The latter were similar to [akete] sounds (please open). She uttered these sounds with various articulatory forms while asking her mother to turn over the page of a picture book, or to open the door, or to do something. At thirteen months, she uttered [ŋanne]-like sounds frequently. We are not sure what word was

the origin of the sounds. She uttered these sounds mostly pointing at a picture of some thing as if asking its name, but she uttered the same sounds in other situations. But after fifteen months, i.e. during this period, she uttered [kette]-like sounds and [ŋanne]-like ones only a few times. (See Table 4)

Next, we would like to consider some factors which accelerate or disturb the phonemicization process.

During this period, the infants began to walk more freely than before. The enlargement of their life space made their experience more rich. The enrichment of their experience accelerated the differentiation process of their cognition of the external world. The differentiation of their cognition underlay the increase of the number of words they uttered. The mother's effort to enrich the infants' experience was also important.

O.H. Mowrer states that loving care combined with vocalization is very important (Mowrer, O.H., 1950). The infants, when they were comfortable, uttered speech sounds spontaneously or in imitation. Loving care by their parents, especially by their mothers, was one of the basic factors which made them comfortable. As stated, both speech-sounds-units, i.e. phonemes, diphthongs and affricates, and words which they tried to imitate increased in number rapidly during this period. The parent, especially the mother talking to the child was one of the basic factors which accelerated the phonemicization process.

By the end of this period, as stated, the number of words they uttered and that of speech-sounds-units they articulated correctly at least once increased. The influence of the parents' language upon their phonemicization process was observed more clearly than upon their reorganization process of babbling articulation mechanisms, which had occurred just before this period. The parents' phoneme system and word system began to work as one of the factors which determined the phonemicization and symbolization process.

As for the characteristic features of this period, described above, we did not find significant differences among the three groups, i.e. the Japanese and the American infants in Japan and the American infants in the U.S.A. But the group of American infants in Japan showed slower developmental process than the other two. They were bilinguals and had to learn two languages. For example, one American infant, at the end of this period, imitated a Japanese word /me/[me] (eye), uttered by her mother, with the same articulatory form as the Japanese, and she waved her hand to her mother's "Bye-bye" and bowed to a Japanese maid's "Sayonara (bye-bye)" as Japanese do.

There were great individual differences among the infants. For example, this period began at the age of eighteen months in the case of an American infant in Japan, and at the age of fifteen months in the case of a Japanese infant. In the former case, even at the age of twenty-one months the American infant imitated only one word "Foot" correctly in a right situation, and this she did only

once. As for the Japanese infant, at the age of seventeen months she uttered /miehen/(can not see), /wanwan e/(__ is a bow wow), and /kirin jawa/(__ is a giraffe). /miehen/ and /e/ are examples of the Kyoto dialect. In Japan males and females express themselves differently and /jawa/ is an example of female expression. /jawa/ or /e/ is placed at the end of a sentence. Their function is similar to a copula in English. (See Table 3 and 4)

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	Development of Articulation				
Age	Unit of	Words	Sounds artic	ulated by S* ²	Development of Speech
	Speech Sounds ^{*1}	words	spontaneously	in imitation	
1:0	/1/	baby		[Ivjaiva:I] [və:]	S patted her hands
		rounding round- ing		[dınawva:]	each other responding to M's "Patty-cake".
	/ei/	baby		[IVjaIVaII] [VəI]	S uttered /dada/ to
	/æ/	that		[zæː]	her brother and to M.
:	/a/	dada	[dadæ] [dædæ] [dædæe]	[nanaã] [dæ] [de]	S uttered /mama/ to M.
		mama	[mæmmæm] [mmə]	[mam] [maŋm:]	
	/ʊ/	book		[bɯ]	
	/au/	rounding round- ing		[dınauıvaː]	
	/b/	book		[bɯ]	
		baby		[IvjaIvaII] [vəI]	
1.16	/m/	mama	[mæmmæm] [mmə]	[mam] [mammr]	
			[ŋæː]		
	/d/	dada	[dadæ]	[dæ] [nanaã]	
		rounding round- ing		[dınauıvar]	
	/ð/	that		[zæː]	
1:1	/1/	what's it	1	[dzi]	S responded correctly
	/a/	mama		[vava] [daːdɪa]	to M's "Come here",
				[dæva] [jæjæ]	"Kiss me", "Give the
		dada		[dæː]	book to mama", etc.
	/ʊ/	book		[m ː]	/dada/ and /mama/
	/au/	bow wow		[w ː]	were not differentiated
	/b/	book		[mː] [ɯː]	in articulation.
	/m/	mama		[vava] [dæva]	
				[daːdɪa] [jæjæ]	
	/d/	dada		[dæː] [zæː]	
	/ts/	what's it	e^{-2} . (1)	[dzi]	
1:2	/ɛ/	there	[dææ] [dæ] [dæː]		M tried to teach /tata/
	<i>1</i>		[daː]		(thank you). S gave a
	/æ/	look at the book		[əmbɯ]	book to M saying [ada].
	/a/	mama	[mma]		S uttered there-sounds
• * •		tata (thank you)	[ada]		sometimes correctly, sometimes in place of
		dada		[da]	tata.
	/ʊ/	book		[bɯ]	S shock her head up
	/b/	book		[bɯ]	and down instead of say-
4.)	/m/	mama	[mma]		ing "Yes," and from side

Table 3. Speech Development of F.P., an American female. S:subject M:mother F: farher

*1 Vowels and diphthongs, and single consonants and affricates.

*2 We described here only examples which show different articulations in regard to the unit of speech sounds.

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	/t/	tata	[ada]		to side instead of "No,"
	/d/	dada		[da]	almost correctly.
	/ð/	there	[deæ]		When M waved her
	/r/	there	[deə] [dea] [dɛæ]		hand saying "Bye-bye",
					S waved her hand.
1:4	/a/	dada		[naː]	S waved her hand to
	/U/	book		[bu:ə] [bu]	M's "Bye-bye".
1. C.	/b/	book		[bu::ə]	A Japanese maid
	/d/	dada		[naː]	bowed saying "Sayonara
					(bye-bye)". S bowed.
1:6	/1/	milk	[mɪə]	[m1ə]	When S wanted to ex-
		pritty		[putti]	press her negative feel-
	/ei/	baby		[bə]	ing, S shook her head
	/ε/	there	[da] [tə] [tüiə]	[deə]	from side to side with
		chair		[t6ə] [teə]	or without saying "No",
	/a/	dada		[da] [daə]	when positive, S shook
	/၁/	more	[mo] [mə]		it up and down, without
	///	come		[kə] [ka]	saying "Yes", almost
	/ou/	no	[now] [njow] [nəẅ]		correctly.
		go		[goɯ]	M "Where is dada?"
	/υ/	book	[bɯ] [bɯː] [bə]	[bu] [bu:] [bə] [ba:]	S [tüiə] pointing at F.
	/u/	shoe		[çɯː]	M "Boy?" S [tə]. M
	/p/	pretty		[putti]	"There, yeah." M and
	/b/	baby		[bə]	S seemed to construct
		book	[bɯ]	[bɯ]	a sentence : "(The) boy
	/m/	milk	[mɪə]	[m1ə]	(is) there."
		more	[mo]	· · ·	
	/t/	pretty		[putti]	
	/d/	dada		[da]	
		drink		[ücb]	
	/n/	no	[now] [njow]		
	/k/	come		[kə]	
	/g/	go		[gow]	
	/1/	milk	[m1ə]	[mɪə]	
	/ð/	there	[da] [tüə]	[deə]	
	/ r /	there	[tüə] [tə]	[deə]	
		chair		[t6ə]	
		more	[mə]		
	/S/	shoe		[çmː] [¢ɯː] [ɯː]	
	/t ʃ /	chair		[t6ə]	
1:7	/ɛ/	there	[dɛə] [daː] [dəː]	[dɛə] [da]	S did not utter tata-
		bear		[cd] [cad]	sounds.
		chair		[də] [də]	S uttered there-sounds
		get up		[cag]	sometimes correctly, i.e.
	/a/	mama		[mə]	to M's "Where is your
		dada		[da]	shoes?", sometimes in
		what	[hɯə]		place of tata, i.e. when
		yeah	[jə]		S gave a book to M,

	1.5.84	Johny		[da]	sometimes in place of
		(brother's name)			yeah, i.e. to M's "Can
	/a/	box		[bə]	you say baby?", some-
	/ə/	dog		[də]	times playing alone
	/ A /	duck		[də] [da]	without any communi-
		get up		[gɛə]	cation functions.
	/u/	Ruth		[cm] [m1]	S uttered yeah-sounds
	i i ta g	(sister's name)			sometimes correctly,
	a	cute P		[kəː]	sometimes in place of
	/∂•/	purse		[pə]	there, i.e. to M's "Where
		girl	[gəː]	[gə]	is baby?"
	/ai/	bye-bye		[bə]	When S wanted to
ĺ	/au/	flower		[Фшаш] [fla]	express 'no', S shook her
	/ ə i/	boy		[bə]	head from side to side
	/p/	purse		[pə]	
	/b/	bye-bye		[bə] .	almost saying "No",
		box		[bə]	sometimes without "No",
		boy		[bə]	when to express 'yes',
	/m/	mama		[mə]	shook it up and down
	/d/	dada		[da]	almost without saying
		dog	•	[də]	"Yes", sometimes with
		duck		[də]	"Yeah", almost correctly.
	/k/	cute		[kəː]	
	/g/	get up		[g6ə]	
	101	girl	[gəː]	[gə]	
	/1/	flower		[fla] [Quau]	
	/~/ /w/	what	[hwə]		
	,,	flower		[Duam]	
	/.i/	yeah	[jə]	[1]	
	/J/ /f/	flower	[]°]	[fla] [Q waw]	
	/ð/	there	[cat] [cab]	[cab]	
		Ruth	[apa] [roa]	[uu] [uu]	
	/ r /	there	[zeb] [zab] [aab] [cab]		
		chair	[apa] [apa] [aav] [aav]	[dettə] [də]	
		bear		[defi] [def]	
	1.51	chair		[tatta]	
	/t§/				
•	/dʒ/	Johny Timy		[da] [4-]	S uttered there-sounds
8	/1/	(brother's name)		[tɪ]	with various articula-
		"Ti", yeah		[tɪjə]	tory forms and in various
		kiss		[k1]	•
		kitty		[kıçı]	situations, i.e. [dze] to
		baby	[berbs]		M's "Where is baby?",
		cookey		[twe]	[deə] to M's "Mama kiss
		what is this		[tuc]	baby.", [teə] to M's
		what is that		[ti] [tja]	"What's that?", [tute]
	/ei/	baby	[be:ba]	[-]~]	to M's "Say bunny.",
	/с1/	Jaby	[nerno]		etc.
	•	,	•		

1:8

ε a æ U u ai	(S's name) there dress yeah dada "Ti", yeah what is that cookey Ruth	[dɛə][dɛə][düə][tɯɛ]	[t&ə] [dwe] [da] [t1jə]	çı]-] "Yo sour two
/a/ /æ/ /U/ /u/	dress yeah dada "Ti", yeah what is that cookey		[dwe] [da]	sour two
/æ/ /v/ /u/	yeah dada "Ti", yeah what is that cookey	[jaː] [ja]	[da]	two
/æ/ /v/ /u/	dada "Ti", yeah what is that cookey			1
/ʊ/ /u/	"Ti", yeah what is that cookey			
/ʊ/ /u/	what is that cookey		[•_]•]	S
/ʊ/ /u/	cookey		[tja]	say
/u/ .	-	1	[twe]	"By
			[u] [ul]	sile
/ all	bye-bye	[baːba1]	["u] ["u]	ma
/b/	baby	[berbe]		bye
/0/				
1+1		[baibai]	[++]	
/4				
				1
/ɑ/				
/k/				
			[twe] [tw]	
/j/	1 .	[jaː]		
		Contraction of the second		
			[Φ eɪ]	
/ð/		[dɛə] [tɯɛ] [dʑe]	[cat]	
/r/	Ruth		[ut] [ut]	
	dress		[dwe]	
	there	[dsə] [tws]		
/i/	ear		[tɪjɯ]	S
	tree		[tw1] [t j1]	eat
	Sweepee		[wipi] [piə]	S
/1/	milk	and the second	[m1ə] [mə]	sou
	Timy	· · · · · ·	[t1m]	
	here	[çıə] [hwə]		
	twinkle		[tɪŋkə]	
	cookey	[kukki]		J
				COO
/ei/	-			
, - ,	1			a
				[me
/ 6 /				
1-1				
				-
1-1				
	/t/ /d/ /k/ /j/ /j/ /j/ /i/	bye-bye/t/Timy "Ti", yeah kitty what is this what is this what is that/d/dada dress/k/kiss kitty cookey/k/kiss kitty cookey/j/yeah "Ti", yeah/f/Faith dress there/r/Ruth dress there/i/ear tree Sweepee/i/milk Timy here twinkle cookey baby/ei/baby cake plane/ɛ/pencil bed bear chair bread	bye-bye[ba:ba1]/t/Timy "Ti", yeah kitty what is this what is that/d/dada dress/k/kiss kitty cookey/k/kiss kitty cookey/j/yeah "Ti", yeah/f/Faith dress there/k/Ruth dress there/i/Faith/i/Faith dress there/i/Ruth dress there/i/Ear tree Sweepee/i/milk Timy here/i/frimy baby/i/[beb1][bep2]/kbaby/ei/baby/ei/baby/beljbeb1]/ei/baby/beljbeb1/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/baby/i/bed/i/bed/i/bed/i/bear/i/bab/i/bab/i/bab/i/bed/i/bear/i/bead/i/bead/i/bead/i/bead/i/bead	bye-bye [ba:ba1] /t/ Timy [t1] "Ti", yeah [t1] kitty [ksg1] what is this [t1] what is this [t1] what is that [t1] /d/ dada [da] dress [due] /k/ kiss [k1] kitty [ja:] [t1] /k/ kiss [ja:] /j/ yeah [ja:] "Ti", yeah [t1] /j/ yeah [ja:] "Ti", yeah [t1] ff/ Faith [deə] /j/ yeah [ja:] "Ti", yeah [t1] [t1] /j/ Ruth [ju] /j/ Ruth [ju] /j/ Ruth [ju] /j/ ear [tim] /j/ milk [ma] /j/ milk [ma] /j/ /j/ mil

S uttered [mapa:sauat]-like sounds to M's 'You say mama." The ounds seems to construct wo-words-sentence.

S waved her hand saying "Bye-bye" to M's "Bye-bye", and S bowed silently to Japanese maid's "Sayonara (byebye)".

S named everything to eat and drink as "milk". S did not utter thereounds.

Japanese pronounce cookey as [kukki]. S imitated M saying a Japanese word /me/ [me] (eye) correctly.

1				1
	pants		[pə]	
	bag		[bə]	
	banana		[bnæ]	-
	dady		[dæ]	
	can		[kjə]	
	thank you		[tɪŋkɯ]	
	branch		[bwə]	
-	cracker	[kwə]	[kwə]	
/a/	dolly		[da]	
. ,	darling	÷	[də]	
	car		[kaː]	
	Johny		[dza] [dzə]	
	stocking		[sta]	
/ə/	more		[mo]	
1-1	water		[cm]	·
/ʌ/	button		[bə]	
/11/	bufallo		[bə]	
	brush	: .	[20]	
/ou/	no		[no]	
/0u/	nose		[now] [no] [dw]	
/ U /	book		[bu] [bə]	
/0/	cookey		[bo] [bo] [kukki]	
	cuckoo		[kuku]	
	foot		[fut] [Φ m]	Suttered [fut] pointing
les l	Ruth		[m] [m]	at her foot. This is
/u/			[.u.] [.u.]	only one case S articu-
	room		[cm]	lated and used correctly.
	shoe			fateu anu useu correctry.
	shooting		[ţçɯ]	
	school		[kjɯ]	
	cuckoo		[kuku]	
	thank you		[tɪŋkɯ]	C
/ai/	eye		[a1]	S uttered [a1] pointing
	bye-bye		[baɪbaɪ] [bə]	at her mouth.
/au/	mouth		[bo]	
/ ə i/	boy		[bo1]	
/p/	pencil		[pjüpjü	
	pants		[pə]	
	plane		[eq]	
	apple		[bæpɯ]	
	Sweepee		[wipi]	
/b/	baby	[beb1] [bepe]	[berb1]	
	bear		[bə]	
	bed		[bə]	
	bag		[bə]	
	boy		[boɪ]	
	bufallo		[bə]	
	button		[bə]	4
	book		[bu]	
1				

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	1 · · · · ·		1	
		banana		[bnæ]
		bye-bye	4	[baɪbaɪ] [bə]
		branch		[bwə]
		bread		[bwe]
		brush		[bwə]
	/m/	milk		[mɪə]
		more		[mo]
		mouth		[bo]
		Timy	•	[t1m] [t1]
	/t/	Timy		[tɪm]
		twinkle		[tıŋkə]
		tree		[tw1]
		stocking		[sta]
		foot		[fvt] [Φա]
	/d/	dolly		[da]
		darling		[də]
	/n/	no		[no]
	· · · .	nose		[now] [dw]
		banana		[bnæ]
	/k/	cake		[kei]
		can		[kjə]
		car		[kaː]
		cookey		[kwkki]
· .		cuckoo		[kukw]
		cracker		[kwə]
		school		[kjɯ]
		twinkle		[tɪŋkə]
		thank you		[tɪŋkɯ]
	/ŋ/	twinkle	Ś.,	[tıŋkə]
		thank you		[tıŋkɯ]
	/1/	milk		[mtə]
	1995 - 1985 - 19	twinkle		[tɪŋkə]
		apple		[bæpɯ]
	/w/	water		[ɯə] [mə]
		twinkle		[tıŋkə]
		Sweepee		[wipi]
	/f/	foot		[fvt] [Φա]
	/0/	thank you		[tɪŋkɯ]
	/s/	stocking		[sta]
	/r/	Ruth		[mr]
		room		[mt]
		branch		[bwə]
		bread		[bw6]
·		brush		[bwə]
		tree		[tw1] [tj1]
		cracker		[kwə]
		car		[kaː]
		chair		[tçeə]

	here	[çıə] [hɯə]		
/\$/	shoe		[¢ɯ]	
	shooting		[tcu]	
/h/	here	[çıə] [hwə]		
/t§/	chair		[tcsə]	
/dʒ/	Johny		[dza]	

M did not use as much baby-talk with S as with S's siblings when they were S's age. We could not get S's data when S was eleven, fifteen, and seventeen months of age and after twenty-two months of age. When S was ten months of age, S uttered only meaningless

Table 4. Speech Development of Ya.N., a Japanese female. S: subject M: mother F: father Development of Articulation Sounds articulated by S*2 Development of Speech Age Unit of Words Speech (meaning) Sounds*1 spontaneously in imitation 0:9 M asked S "Where is /kokko/(hen or cock)?" S looked for it in the garden. 0:10 /i/*³ [i]*⁴ /hai/ [haijə] [hai] S uttered /kokko/ look-[haijə] [hai] (response to ing at a hen and at a calling name) canary. [hai]*5 [hai] [əiijə] [hai] /a/ S uttered [a11ja a1de /kokko/+ [koko] /0/ (hen or cock) azijə azjə] to M's calling. It seems to be one of /k/ [kokko]+ [koko] /h/ [hai] [ha1] [a11] [hai] variations which show developing process from repetitive babblings to multi-words sentences. S uttered [əkəţçə]-like sounds frequently. These sounds are similar to

- *1 Vowels and single consonants and affricates.
- *2 We described here only examples which show different articulations in regard to the unit of speech sounds.

[oka:tçan] (mother). S uttered these sounds not only to M, but also to F, and even when S was alone without any ref-

erences to M.

*3 Phonemical descriptions.

sounds.

- *4 Phonetical transcriptions. Hereafter we omit phonetical transcriptions which are the same as the phonemical descriptions.
- *5 We omit phonemical descriptions from the second.
- + These are Japanese baby-words, most of them are onomatopoeias.

0:11	/i/	[hai]	[aːi]		S uttered [kokkoko kə].
		/botsji/			Conventionally /kokko
		(hat or cap) [botçi]+	[potci] [bitcə]	[botci]	ka/ means "Is it a hen
	/e/	/kore/	[hoid] [midd]	[]	(cock)?" We are not
	1-1	(this)	-1 -1		sure whether S asked
		[kofe]	[koe]		or not.
	/a/	/ka:tsjan/ (mother)			S uttered [əkəţçə]-like
		[ka:tçan]		[kotçö]	sounds less frequently
		[hai]	[aːi]		and [kətçə]-like ones
	/0/	[boţçi]+	[poţçı] [piţçə]	[botçı] [bötçı]	frequently. The latter
			[petçə]		sounds are similar to
		[kokko]+	[koko] [kəkə]	[kokko][kaka][kəkə]	
		[kofe]	[koe] [kəje]		fingers). Suttered these
	/b/	[boţçi]+	[bɪtçə] [potçı]	[botçı]	sounds scratching with
	/k/	[kokko]+	[kəkkə] [koko]	[kokko] [kaka]	her fingers on the floor,
				[kokkoko]	F's foot, etc., and with-
		[kofe]	[koe]		out scratching.
	/r//ſ/	/kore/ [koſe]	[koje] [koe]		
	/h/	[hai]	[azi]		
	/#/ /ts/[tç]	[boţçi]+	[potçi]		
1.1	149/[44]	[ka:tçan]	[L.11.]	[koţçö]	
1:0	/i/	[boţçi]+	[potci]	[botci] [pottə] [botci]	S uttered [kətçə]-like
	1-1	[hai]	[hai]		sounds less frequently
	/a/	[ka:tçan]	[kəţçeː]		and [kette]-like ones fre-
	1-1	/wanwan/			quently. The latter
		(bow wow)		[waãwaã] [mæmmæ]	sounds are similar to
		[wanwan]+		[wowo]	[akete] (please open). S
		[hai]	[hai]		uttered these sounds
	/0/	[boţçi]*	[potçı]	[boţçi]	mostly when S wanted
		[kokko]+	[kokko]	[kəkə]	to ask someone to turn
	/b/	[boţçi]+	[potçi]	[botçi] [pottə]	over the page of a book
н. Т	/k/	[kokko]+	[kokko][koko][kokoko]	[kəkə]	in order to find pictures
			[gokko] [koxo] [xokko]		of hens or cocks.
		[kartçan]	[kətçer]	- ~ ~	S uttered /kokko/ look-
	/N/	[wanwan]+		[waãwaã] [mæmmæ]	ing at birds, dogs, horses,
	/w/[w]	[wanwan]+	r1	[waãwaã] [mæmmæ]	etc.
	/h/	[hai]	[hai]		S uttered [koko wa].
	/ts/[ţç]	[boţçi]+	[potci]	[boţçi] [pottə]	Conventionally /kokko
		[ka:ţçan]	[kəţçeː]		wa/ means "Where is a
					hen (cock)?" We are
					not sure really S asked
		F1 C-3	ri- 21-1	•	or not.
1:1	/e/	[kofe]	[köje]		S uttered [kette]-like
	/a/	[ka:tçan]	[kətçə]	Francia 1	sounds asking M or F to turn over the page, to
		[wanwan]+		[wanjə] [wayyay]	open the door, or to do
		/kjakkja/ * (monkey)		[yaiyai]	something.
·			1		

	/0/	/poppo/+		[0]	S uttered frequently
	101	(dove)		[~-]	[ŋanne]-like sounds
		/moː/+ (cow or ox)		[mmö]	pointing at a picture of
		[kokko]+		[koko] [kəkkə]	something. S seemed to
		[kofe]	[köje]		be asking "What is this?"
	/ս/[ա]	/burbur/			S uttered [kətçə köje].
		(pig)		[] [-1] []	S might said "Mama,
		[bu:bu:]+		[ɯːɯː] [əbɯə] [ɯːə]	what is this?"
	/p/	[poppo]+		[ox]	
-	/b/	[bu:bu:]+		[əbɯə] [gɯː] [ɯːɯː] [mmö]	
	/m/	[mox]+	[]	[mmo]	
	/k/	[ka:tçan]	[kəţçə]	[1-1-1-1-1-1-1-1-1-1-1	
		[kokko]+		[kəkkə] [koko] [gəkə]	
		F1 6 3		[ɣəkə]	
		[kofe]	[köje]	F 1	
		[kjakkja]+		[yaːyaː]	
	/N/	[wanwan]+		[wanjə]	
	/r/[ſ]	[kofe]	[köje]		
	/w/[w]	[wanwan]+		[wanjə]	
	/j/	[kjakkja]+		[ya:ya:]	
	/ts/[ţ ç]	[kaːţçan]	[kəţçə]		
1:2	/i/	[boţçi]+		[oːţçə]	S uttered /kokko/
	/a/	[wanwan]+		[wa:ã] [wãwa]	almost in regard to hens
		/njannjan/+ (kitty)		[jə̃jə̃]	or cocks.
		[kjakkja]+		[kəkə] [gakax] [æ]	S named everything to eat and drink as [tcatca].
		/tsjatsja/	· · · ·	5. C.	S pointed at a picture
		(tea) [tçatça]+	[tçətçə]* ⁶		of a sleeping girl and
	/o/	[botci] ⁺	Įėčaėčal	[oːtçə]	uttered [nanne]-like
	101	[kokko]+		[ke] [kü]	sounds asking M to sing
	/u/[ɯ]	[pm:pm:]+		[bɯə]	a lullaby.
	/u/[ɯ] /b/	[burbur]+		[bwə]	
	/0/ /n/	[njannjan]+		[jə̃jə̃]	
	/k/	[kokko]+		[]0]0] [küi]	
	/*/	[kjakkja]+		[kəkə] [gakax] [æ]	
	/N/	[wanwan]+		[waiã] [waãwa]	
	1-1	[njannjan]+		[iə̃jə̃]	
	/w/[<i>w</i>]	[wanwan]+	· · · ·	[waːã] [waãwa] [waː]	
1	/i/	[njannjan]+		[ˈəulu] [əuləu] [əul] [jəjə]	
	/ J/	[kjakkja]+		[kəkə] [gakax] [æ]	
	/ts/[tc]	[tçatça]+	[tcətcə]	[uevel [gurav] [m]	
	/13/[49]	[botçi]+	Γάλαάλα]	[oːţçə]	
1:3	/i/	/pijopijo/+		[pijopi] [poːjə]	S uttered [kette]-like
1.5	14	(chicken)		[pijopila]	sounds less frequently.
		/mimi/		[mīme]	Instead of these, S utter-
	-	(ear)		f	ed [koţţçi] (here or this
					- fuotion (ucre or runs

*6 In the Japanese phoneme system, [a] and [ə] are considered to be single vowel /a/.

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Ì					
		/hihin/+ (horse) [çiçin] /kottsji/		[1]	one) and [attci] (there or that one). S uttered both sounds asking M or F to turn over the page,
		(here or this one) [kottçi]	[kotçı]	· · · · ·	to tell the other animal's
		/attsji/ (there or that one) [attçi]	[ətçı] [ədze]		name, etc., undifferenti- atedly.
	/e/	/meme/+ (eye)		[meme]	S uttered [ŋanne]-like
		/meimei/+ (goat or sheep)	[me:mme:] [me:me]	[meme] [mma]	sounds less frequently. M asked S "Which is
		/tete/ ⁺ (hand)		[tete]	your eye?" S uttered [ŋanne]-like sounds
		[kofe]	[kwe] [kwə] [kə]		pointing at her eye.
	/a/	/atsu/ (hot) [atsüï]		[aːtçɯ]	S uttered [kə tçətçə- tçə] (This is tea).
		[attci]	[əţçı]		S uttered [koe wa] (What is this?).
		/anjo/ + (foot)		[aãjo]	M said to S "Go to
		/mamma/+ (food)		[mamma] [memme]	bed soon." S pretended to be sleeping uttering
		/gaːgaː/+ (duck)		[gaːgaː]	[gu:gu:]. [gu:gu:] is a
		[wanwan]+	[wanwan]	[waãwaã]	onomatopoeia showing
		[tçatça]+	[ətçətçə]		snoring.
	1. A.	[njannjan]+		[njaːn] [njaŋgəe]	
		[kjakkja]+		[k1kak][gəkjə][kəkə]	
		/botan/ (button)		[boja] [bojə]	8
	/0/	[botan]	a di seconda di seconda Seconda di seconda di se	[boja]	an a
		[moː]+		[mmo] [mma]	
		[kokko]+	[koko]	[kokko] [kəkə]	
		[kofe]	[goe] [kɯə] [kə]		
	-	[kottci]	[koţci] [kəţçı]		
		/gorogoro/ (lying down) [gologolo]		[googoo]	
		/tsjoːtsjo/ (butterfly) [tçoːtço]	[tçətçə] [tjotjo]	[tutu] [dzətə] [tçə]	
			[tjutju]		
		[pijopijo]		[pijopi] [poːjə] [pijopila]	
	/u/[ɯ]	[buːbuː]+	[w:bw:]	[bɯːɯː] [bɯbɯ]	
		/kutsu/ (shoe)			
		[kutsü]*7		[kutsüi]	
		/guːguː/ (sound of snoring) [gɯːgɯː]	[gɯgɯ]		
J					l i i i i i i i i i i i i i i i i i i i

*7 In the Japanese phoneme system, [11] and [11] are considered to be single vowel /u/.

		/tsjuxtsjux/ (rat or mouth)			
		[tçw:tçw:]+		[tçɯjɯ]	
		[atsüi]		[a:tçm]	
	/p/	[pijopijo]+		[pijopi] [pijopila] [poːja]	
	/b/	[botan]		[boja]	
		[bu:bu:]+	[u:bu:] [u:u:]	[bubu] [buːɯː]	2
		[pm.pm.]	[m.nm.] [m.m.]	[bubu] [burur] [wrβwr] [wrwr]	
	/m/	[mimi]		[mime]	
		[meme]+		[meme]	
		[me:me:]+	[me:me][me:mme:]	[meme] [mma]	
		/mamma/+ (food)		[mamma][mmemme]	
		[moː]+		[mmor]	
	/t/	[tete]+		[tete] [tcetce]	
		[botan]		[boja]	
	/n/	[njannjan]+		[njaːn] [njaŋgəe]	
	/k/	[kokko]+		[kokko] [kəkə]	
		[koțțci]	[kotçi] [gotçi]		
		[kɯtsüi]	and the second	[kɯtsɯ̈]	
		[kjakkja]+		[kəkə] [kıkak] [gakjə]	
	/g/	[gaːgaː]+		[gaːgaː] [aːgaː]	
		[gologolo]		[googoo]	
		[gu:gu:]	[gɯgɯ]		
	/N/	[anjo]+		[aãjo]	
		[njannjan]+		[njam] [njaŋgəe]	
		[wanwan]+	[wanwan] [waãwaã]	[banwan] [waãwaã]	
				[wauwauı]	
		[çiçin]+		[1]	
	/r/[f]	[kofe]	[goe]		
		[gofogofo]		[googoo]	
	/w/[w]	[wanwan]+	[wanwan]	[waãwaã] [banwan]	
		/wa/*8 [wa]	[wa]		
	/j/	[pijopijo]+		[pijopi] [pijopila]	
		[anjo]+		[aãjo]	
		[njannjan]+		[njam] [njangpe]	
		[kjakkja]+		[kıkak] [gakjə]	
	/h/[ç]	[çiçin]+		[1]	
	/ts/[ts]	[atsüi]		[aːtçɯ]	
		[kutsüi]		[kutsüi]	
	[ţç]	[tçatça]+	[əţçəţçə]		
		[tço:tço]	[tçətçə] [tjotjo]	[ţçə] [dzatə] [tütü]	
		[tçw:tçw:]+		[ţçɯjɯ] [jɯjɯ]	
÷.,		[attçi]	[ətçı] [ədze]		
		[koţţçi]	[kotçı] [kədzı]	.*	
1:4	/i/	[pijopijo]+	-	[bɪəpəɪ]	S uttered [ŋanne]-like
		[mimi]		[miːmi] [mem1]	sounds little and [kowa]-
				[mëmë]	like ones frequently.

*8 /wa/ follows a noun in a sentence and shows that the noun is a nominative case.

/nixtsjan/ (elder brother) [nirtçan] [çiçin]+ /aita/ (ouch) /hasi/ (chopstick) [haçi] [attçi] [kottçi] /kuzi/ (nine o'clock) [kwdzi] /bambi/+ (deer) /sensei/ (teacher) [mermer]+ [tete]+ [kofe] [sensei] [aita] [atsüi] [anjo]+ [attçi] /pan/ (sound of explosion) [bambi]+ [ka:ţçan] [ga:ga:]+ /gakko:/ (school) [wa] [wanwan]+ [haçi] [njannjan]* [kjakkja]+ [tçatça]+ /obatsjan/ (aunt) [obaţçan] /to:tsjan/ (father) [to:tçan] [poppo]+ [mor]+ [to:tçan] /dondon/ (sound of drum) [kokko]+ [kofe] [kotțçi]

[tçı:tã] [çīː] [içī]

[aʑ1] [atçi] [kətçi] [kətçi]

[mermer] [meme]

[koe] [koə]

[atci]

[ga:ga:] [gaga]

[wanwan] [uuwa]

[njan] [njən]

[gake] [ki:ke]

[mmo] [mməː]

[kokko] [kəkkə]

[koe] [guue]

[kotçi] [kətçi]

[ţçaţça]

[pэ̃]

[wə]

[az1]

[içi]

[a1ja1]

[hatçi]

[kudzi] [kudzüi] [məmbir]

[çejex]]tçejex]

[date] [tetje]

[çejeː] [aıjaː] [ad,zw] [aãjo]

[məmbı] [ka:ţçan]

[gakko]

[wa] [hatçi]

[kjəke] [gəke] [tçatça]

[bətçaã] [ba:bə]

[təţçaã] [bopo] [mox] [mma] [tcotaã] [tətcaã] [djodjon]

The latter sounds seemed to be /kore wa/(What is this?).

S uttered [tçutã põ] (Brother, shot the toy gun).

F said "Elefant". S responded [googoo]. F and S seemed to construct a sentence "An elefant is lying down".

/e/

24

/a/

/0/

/koņkon/+ (fox) [kõ] [gofogofo] [googoo] /zoː/ (elefant) [do] [dzoi] [do] [tço:tço] [tjotjo] [dzotça] [gakkoi] [gakko] [axjo]+ [aãjo] [pijopijo]+ [burpəi] /u/[ɯ] [bu:bu:]+ [kutsŵ] [kwtçw] [gudzã] [kwdzi] [kwdzi] [gw:gw:] [gwgə] [bw:βw:] [tçcwitçcw]+ [tçwtçw] /tsjuntsjun/ (sparrow) [tşwitçə] [tjwtjw] /p/ [pijopijo]+ [biəpəi] [poppo]+ [bopo] [bobo] [βο/	
/zo:/ (elefant) [dzo:] [do] [dzo:] [do] [tco:tco] [tjotjo] [dzotca] [gakko:] [gakko] [awjo]+ [aãjo] [pijopijo]+ [biepən] /u/[w] [bw:bw:]+ [bambw:] [kwtsŵ] [kwtcw] [gudzã] [kwtsŵ] [gutçu:] [kwdzi] [kwdzi] [kwdzi] [gw:gw:] [gusga] [bu: βw:] [tcut;cw] /tsjuntsjun/ (sparrow) [dzwtca] [tjutjw] /p/ [pijopij]+ [dzwtca] [tjutjw]	
(elefant) [dzo:] [do] [dzo:] [tjotjo] [dzotça] [gakko:] [gakko] [gakko:] [gakko] [aNjo]+ [aãjo] [pijopijo]+ [btepp] [bu:bu:]+ [bambu:] [kutsüi] [kutçu] [gudzõ] [kudzi] [gurgo] [bu:βu:] [kudzi] [gugo] [bu:βu:] [tçcurtçcui]+ [tcutçu] /tsjuntsjuN/ (sparrow) [dzutço] [tjutju] /p/ [pijopij]+ [dzutço] [tjutju]	
[dzo:] [do] [tco:tco] [tjotjo] [dzotca] [gakko:] [gakko] [anjo]+ [aãjo] [pijopijo]+ [btepəi] [bu:bu:]+ [bambu:] [kutsüi] [kutsui] [gudzã] [kudzi] [guzgu] [gu:gu:] [guzg] [bu:fu:] [tcu:tcu:]+ [tcutcu] /tsjuntsjun/ (sparrow) [tcuntcun]+ [dzutca] [pijopij]+ [btəpəi]	
[gakko:] [gakko] [anjo]+ [aãjo] [pijopijo]+ [biepəi] [bu:bu:]+ [bambu:] [kutsüi] [kutçu] [gudţž] [kudţi] [kudţi] [gu:gu:] [gug] [bu:βu:] [tçcu:tçcu:]+ [tçcutçcu] /tsjuntsjun/ (sparrow) [tçcuntçun]+ [dzutçcə] [pijopijo]+ [brəpəi]	
[anjo]+ [aãjo] [pijopijo]+ [biepəi] [pijopijo]+ [bambux:] [bu:bux:]+ [bambux:] [kutsüi] [kutçu] [gudzõ] [kutgi] [kutçu] [gudzõ] [kutgi] [kutşi] [gu:gu:] [gugo] [bu:βu:] [tçcu:tçcu:]+ [tçcutçcu] /tsjuntsjun/ (sparrow) [tçcuntçunn]+ [dzutçcə] [tjutju] /p/ [pijopijo]+ [brəpər]	
[pijopijo]+ [brepə1] /u/[u] [bu:bu:]+ [bambu:] [kutsüi] [kutçu] [gudzõ] [kutsüi] [gutçu:] [kudzi] [kudzi] [kudzi] [gu:gu:] [gugo] [bu:βu:] [tçu:tçu:] /tsjuntsjun/ (sparrow) [tçuntçun]+ [tgutço] [tjutju] /p/ [pijopijo]+ [tsutço] [tjutju]	
/u/[ɯ] [bա:bu:]+ [bambu:] [kɯtsɯ] [kɯtsɯ] [gɯdʑã] [kɯtsɯ] [gɯtçı:] [kɯdʑi] [kɯdʑi] [kɯdʑi] [gɯ:gɯ:] [gɯɡa] [bɯ:βω:] [kɯdʑi] [tʃcɯ:tʃcɯ:]+ [tʃcɯtfcɯ] /tsjuntsjun/ (sparrow) [tʃcɯtfcʉ] [tjɯtjɯ] /p/ [pijopijo]+ [tʃutfcʉ] [tbrəpər]	
[kutsüi] [kutçui] [gudçã] [kutsüi] [gutçı:] [kudzi] [kudzi] [gu:gu:] [gug3] [bu:βu:] [tçu:tçu:]* [tçutçu] /tsjuntsjun/ (sparrow) [tçuntçun]* [tçuntçun]* [dzutça] [pijopijo]* [btəpən]	
[kudzi] [kudzi] [gu:gu:] [gug3] [bu:βu:] [tçu:tçu:] ⁺ [tçutçu] /tsjuntsjun/ (sparrow) [tçuntçun] ⁺ [dzutça] [tjutju] [tjutju] /p/ [pijopijo] ⁺	,
[gu:gu:] [gugə] [bu:βu:] [ţcu:ţcu:]* [ţcutçu] /tsjuntsjun/ (sparrow) [ţcunţcun]* [dzutcə] [tjutju] /p/ [pijopijo]* [brəpər]	-
[tçu::tçu::]+[tçu::tçu:]/tsjuntsjun/ (sparrow)[tjuntsjun][tçu::tçu::]+[dzu:tçə][tjutjui][dzu:tçə]/p/[pijopijo]+[biəpəi]	
/tsjuntsjun/ (sparrow) [tçuntçun]+ [dzutçə] [tjutju] /p/ [pijopijo]+ [brəpər]	
(sparrow) [ţçunţçun]+ [dzutçə] [tjutju] /p/ [pijopijo]+ [biəpəi]	
[ţcunţcun]+ [dzutçə] [tjutju] /p/ [pijopijo]+ [biəpəi]	
/р/ [ріјоріјо]+ [bтәрәт]	
reshed from the	പ
/b/ [bambi]+ [məmbi]	1
[bu:bu:]+ [bambu:]	. (
[obatçan] [bainbail] [bəţçã]	
[meːmeː]+ [meːmeː] [moː]+ [mmo] [moː] [mma]	
[toːţçan] [təţçað] [tjojan] [ţçotaã]	
[aita] [aɪjaː] /d/ [dondon] [djodjon] [jojon]	
/n/ [njannjan]+ [njan] /k/ [ka:tçan] [ka:tçan] [ga:jan]	
[kokko]+ [kokko] [goko]	
[koţţci] [koţci] [gəţci]	
[kofe] [koe] [gue]	
[koŋkon]+ [kõ]	
[kutsü] [kutçu] [gudzu] [kutsü] [gutçı:]	
[kudzi] [kudzi]	
[kjakkja]+ [gake] [k1:ke] [kjak6] [gəke]	
[gakko:] [gakko]	
/g/ [ga:ga:]+ [ga:ga:]	
[gakko] [gakko]	
[googooo]	
[gu:gu:] [gu:βu:]	
[bu:u:]	
/n/ [anjo]+ [aī] [aãjo]	
[obaţçan] [bəţçə]	

	1	[kartçan]	1	[ka:tçan]	
		[njannjan]+	[njan] [njam] [njaã]	[Karøgan]	
		[wanwan]+	[wanwan] [wwa]		
		[çiçin]+		[rot]	
			[çī]	[IÇĪ]	
		[dondon]		[djodjon]	
	/m/[[]]]	[koŋkon]+	[]]	[kõ]	
	/r/[f]	[kofe]	[koe]		
		[gologolo]	[googoo]		
	/w/[w]	[wanwan]+	[wanwan] [uwa]	[wa]	
		[wa]	[wə]		
	/j/	[anjo]+		[aã] [atjo]	
		[pijopijo]+		[btəpət]	
		[njannjan]+	[njan]		
		[kjakkja]+	[gake] [k1:ke]	[kjakc] [gəke]	
	/s/* ⁹ [s]	[sensei]		[çejeː] [tçejeː]	
	[¢]	[haçi]	[azı]	[hatçi]	
	/z/*10[dz]	[dzoː]		[do]	
	[dz]	[kwdzi]		[kudzi] [kuzi]	
				[kɯdzɯ̈]	
	/h/[h]	[haçi]	[azi]	[hatci]	
	[\$]	[çiçin]+	[ıçī] [çīː] [īː]	[ıçī]	
	/ts/[ts]	[atsüi]		[adzw]	
	[tc]	[tçatça]+	[tcatca] [dzatca]	[tçatça] [tçadza]	
		[tço:tço]	[tjotjo] [dzotçə]		
		[tçw:tçw:]+		[tçwtçw]	
		[tçuntçun]+	[dzwtcə]	[tjɯtjɯ]	
		[kottçi]	[kotçi]		
		[attçi]	[atci] [adzi]		
		[obaţçan]	L. I. J. L. HALL	[bəţçə] [baːbə]	
		[to:ţçan]		[təţçaə̃] [tçotaã]	
				[tjojan]	
		[ka:tçan]		[kaːţçan] [kaːjan]	
1:5	/i/	/ija/	[iːjaː]	[izja]	S said /kirin jawa/
- • •	/*/	(no)	[1.ja.]	[1•]ա]	(This is a giraffe). /jawa/
		[pijopijo]+	[buibui] [bepei]	[bшіbī] [ріјері]	is one of female's ex-
			[bebe]		pressions. In Japan fe-
		/miehen/		[mːçıın] [mıçe]	
		(can not see)	ALC: NOT A CONTRACT OF A		male's expressions are somewhat different from
		[ni:ţçan]		[ţçiːtan]	
		/niŋgjoː/		[gıŋgjo]	male's.
		(doll)		A State of the second	S said /miehen/ and
		/kirin/ (giraffe)		·	/wanwan e/. These ex-
		[kifin]	[kiin] [tidī] [ţçin]		pressions are examples
		/kiŋgjo/		[ŋɪʌ]	of the Kyoto dialect.
		(goldfish)	-		/jawa/ or /e/ is placed
		/riŋgo/ (apple)			at the end of a sentence.
		[fiŋgo]		[ninnjo]	Their function is similar
*9	In the Ia	nanese nhonene	system. [s] and [c] are	considered to be sin	gle consonant /s/

*9 In the Japanese phonene system, [s] and [c] are considered to be single consonant /s/. *10 In the Japanese phoneme system, [z] ([dz]) and [z] ([dz]) are considered to be single consonant /z/.

	/risu/			to a copula in English.
	(squirrel)	Fee 1 - 1		M asked S "Whose is
	[ſisü]	[tɪjə]		this hat?" pointing at
	[çiçin]+	[çīː] [çɪː] [ıçı]		F's hat. S answered
	[aita]		[ataː]	[to:tçan] (father). It
	/ozitsjan/ (uncle)			means "Father's".
	[odzitcan]	[dzi:tçan]	[ţçıtan]	S uttered /kore wa/-
	/wani/			
	(crocodile) [wani]	[wo1:] [a:ni]		like sounds less frequen-
	/peŋgin/	[woii] [aiii]	[mõi]	tly.
	(penguin)		[mẽi]	
	[bambi]+	[maime]	[mamm1]	
	/raion/			
	(lion)	[intia]		
	[faion]	[jaːjo]		
	[haçi]	[hatçı]		
	/boːsi/ (hat or cop)	-		
	[boː¢i]		[bozi]	
	[kw¢zi]		[kwd.zi]	
	/tokei/ (clock)	[geːkoː]		
	[sensei]		[tçeẽjeɪ]	
/e/	/e/	[je]		
	[peŋgin]		[mẽi]	
	[meme]+		[meme]	
	[meːmeː]+	[me:][meime][meme]	[me:me:]	
	[tete]+	[dete]	[tite]	
	/densja/			
	(street car) [dença]		[de:tan]	
	/nenne/+	•	[nen je]	
	(sleeping)		[nen je]	
	[sensei]		[tçeẽjeɪ]	
	[miehen]		[mıçıın] [mıçe]	
	[kofe]	[gɯə]		
/a/	[aita]		[ata:] [əta:]	
	[anjo]+	[anjo]	[aījo] [ojõ]	
	[bambi]+	[maːme]	[maãbi]	
	/kaba/ (hippopotamus)	[gabaː] [baba]		
	[ka:tçan]		[kaːtçan]	
	[gaːgaː]+	[gaːgaː] [gagaː]	[]	
	10 0 1	[gorgar]		
	[gakkoː]	10-0-1	[gaːkoː]	
	[faion]	[jaːjo]		
	[wani]	[woi:] [a:ni]		
	[wanwan]+	[wanwan] [waiwain]		
	/jawa/	[jawə]		
	[haçi]	[hatçı]		
	/hato/	[harto]		
	(dove)			

pula in English.

i a	/zaːzaː/ (sound of rain [dzaːdzaː])	[dzaja]
	[tçatça]+	[tcatca] [detca]	
	[njannjan]+	[njannjan]	
	[kjakkja]+	[kukikie] [kikki]	and the second
		[kjekje] [kja]	
	[obatçan]	[bartan]	[batan]
	[botan]		[bətən][botjan][botan]
	/tora/		
	(tiger) [tola]	F4 3	
		[tço]	F*_ * 3
	[ija]	[iːjaː]	[i:ja]
	[to:tcan]	[toːtjan]	[toːtçan] [toːtçə̃]
	[ni:tçan]		[tçi:tan]
	[odzitçan]	[dzi:tçan]	[tçitan]
	[dença]		[deitan]
'o/	[poppo]+	[poppo][pobɯ][pabo]	
	[botan]		[botjan] [bətən]
	[bo:çi]	1 / C - C - C - C - C - C - C - C - C - C	[bozi]
	[moː]+	[mbwon] [məmmo]	and the second second
		[bom]	
	[tokei]	[geko:]	
	[tofa]	[tço]	
	[kokko]+	[koko]	[gokko]
	/koko/ (here)	[kə]	
	[kofe]	[gɯə]	
	[gologolo]	and the second se	[godogodo]
	[dzo:]	[to:] [to]	[dox]
	[tço:tço]	[tjotjo] [toto]	
	[pijopijo]+	[buibui][bepei][bebe]	[bաւթւ] [թւjəթւ]
	[anjo]+	[anjo]	[atjo] [ojõ]
	[gakkoː]		[gaːkoː]
	[niŋgjo:]		[gındo] [gıŋgjõ]
	[faion]	[jaːjo]	
	[kiŋgjo]		[ŋɪn]
	[ſiŋgo]		[ninnjo]
	[hato]	[ha:to]	
ս/[ա]	[buːbuː]+	[bɯːbɯː] [βɯːβɯː]	
-/[]	[]	[bobox]	
	[kɯtsüi]	[kutsüi] [guidzo]	[kutsü] [kudzu]
	[Kutsu]	[tjw]	[ransa] [randbal
	fkmd ail	լւյայ	[kwd,zi]
	[kudzi] [fisiii]	Ittial	[ռապոս
	[fisü]	[tɪjə] [timtim]	[t junt jun]
-	[tou:tou:]+	[tjutju]	[tjutju]
'p/	[pijopijo]+	[buibui] [bepei]	[bɯɪbɪ] [pɪjəpɪ]
	[peŋgin]		[mẽi]
	[poppo]+	[poppo] [pobu]	. ~
/b/	[bambi]+	[maːme]	[maãm1] [mamb1]

	[boːçi]		[bozi]
	[botan]		[bot jan]
	[buːbuː]+	[buːbuː] [βuːβuː]	[]]
	[obaţçan]	[ba:tjan]	[batan]
	[kaba]	[gabax] [babax]	[satar.]
/m/	[miehen]	[Bapar] [papar]	[mːçıın] [mıçe]
//	[meme]+		[meme]
	[meimei]+	[meɪme]	[meːmeː]
	[moː]+	[mbuon] [məmmo]	[me.me.]
	[mov].	[bom]	
/t/	[tete]+	[dete]	[tɪte]
/4/		[to:tjan]	[to:tçan] [dodzaã]
	[to:tçan]		[lorgan] [uugaa]
	[tokei]	[geːko]	
	[tofa]	[tço]	
	[hato]	[haːto]	[botax] [betiev]
	[botan]		[botan] [botjan]
41	[aita]		[atax]
/d/	[dença]		[detən]
/n/	[nixtçan]		[ţçiːtan]
	[niŋgjoː]		[gɪndo]
	[nenne]+		[nen je]
	[njannjaN]+	[njannjan]	
a .	[wani]	[woix] [a:ni]	
/k/	[kifin]	[kiin] [ţçin]	[tɪdī]
	[kiŋgjo]		[ŋɪn]
	[ka:tçan]		[ka:tçan]
	[kaba]	[gaba:] [baba:]	
	[kokko]+	[koko] [goko] [koyo]	[gokko]
		[gogo]	
	[koko]	[kə]	
	[kofe]	[gwə]	
	[kudzi]		[kwdzi]
	[kɯtsüi]	[kutsü] [gudzo]	
		[tjɯ]	
	[kjakkja]+	[kıkkı] [kjəkjə] [kja]	
		[kwkikie]	
	[gakko:]		[gaːkoː]
	[tokei]	[gerkor]	
/g/	[ga:ga:]+	[gaːgaː]	
	[gakko]		[gaːkoː]
	[gologolo]		[googoo]
	[peŋgin]		[mẽi]
	[kiŋgjo]		[ŋın]
	[niŋgjoː]		[gɪndo]
	[fiŋgo]		[ninnjo]
/N/	[anjo]+	[anjo] [aijo]	[aījo] [ojõ]
	[dença]		[de:tan]
	[to:tcan]	[to:tjan]	[to:tan] [dod.zaã]
	1 -	17 7 7	

	[ka:tçan]		[kaːtçan]	
	[ni:tcan]		[tçi:tan] [tçi:taã]	
	[odzitçan]	[dzi:tçan]	[tçiːtçan] [tçiːtçaã]	
	[obatçan]	[baːtjan]	[batan]	
	[botan]		[botjan]	
	[kifin]	[kun] [kui]	[tɪdɪ]	
	[wanwan]+	[wanwan] [wa:wan]		
		[wanwaã] [wawan]		
	[faion]	[jaːjo]		
	[njannjan]+	[njannjan][njannjan]		
	[peŋgin]		[mẽi]	
	[miehen]		[mːçıın] [mıçe]	
/r/[f]	[fiŋgo]		[ninnjo]	
, ,, ,	[ſisü]	[tɪjə]		
	[faion]	[jaːjo]		
	[kifin]	[kun]	[tɪdī]	
	[kofe]	[gɯə]	[]	
	[tofa]	[tço]		
	[gologolo]	[170]	[or.ogor.og][obogobog]	
	[gologolo]		[googoo]	
/w/[w]	[wani]	[woix] [anix]	[200200]	
/ / []	[wanwan]+	[wanwan] [baba:n]		
	[jawa]	[jawə]		
/j/		[jawə]		
/ 3/	[jawa]	[iːjaː]	[iːja]	
	[ija] [anjo]+	[11]a1] [anjo]	[aījo]	
		[buibui] [beper]	[n]o] [pijəpi] [buipi]	
	[pijopijo]+ [njopnjoy]+		[խվերվ [թաւթվ	
	[njannjan]+ [njanio1]	[njannjan]	[gıŋgjo] [gındo]	
	[niŋgjoː] [kingio]		[ŋɪn]	
	[kiŋgjo] [kiakkia]#	Ikiakial Ikikkil	[0.14]	
	[kjakkja]+	[kjəkjə] [kıkkı]		
/a /Ta1	[]	[kukikie] [kja]	[tceõiet]	
/s/[s]	[sensei]	[tria]	[ţçeẽjeɪ]	
[.]·	[fisü]	[tījə]		
[¢]	[haçi]	[haţçı]	[dartay]	
	[dença]		[de:tan] [boz1]	
/_ // 1_1	[boːçi]			
/z/[dz]	[dzaːdzaː]	[4]	[dzaja]	
r t n	[dzoː]	[tox]	[dox]	
[dz]	[odzitcan]	[dzi:tcan]	[tçi:tçan]	
/1. /51-1	[kudzi]	[harta]	[kudzi]	
/h/[h]	[hato]	[ha:to]		
	[haçi]	[hatçı]	[myouth]]myor]	
	[miehen]	[]	[mːçiin]]miçe]	
[ç]	[çiçin]+	[çīː] [Içɪ]	ri	
/ts/[ts]	[kutsü]	[kutsüi] [gudzo]	[kwtsü] [kwtçw]	
F 4 T	F4 . 4 . 34	[tju]	[kwdzw]	
[ţç]	[ţçaţça]+	[tcatca] [detca]	4.2	

[ţçu::ţçu:]+ [tjutjui] [tjutjui] [to:tçan] [to:tjan] [to:tçan] [dodzaã] [ka:tçan] [ko:tçan] [ka:tan] [ka:tçan] [ni:tçan] [tçi:tan] [tçi:tan] [odzitçan] [dzi:tçan] [dzi:tan] [tçi:tçaã] [tçitan] [obatçan] [ba:tan] [ba:tan] [obatçan] [ba:tan] [ba:tan] [obatçan] [bi:tjan] [ba:tan] [ba:tan] [pijopijo]+ [nippe] [peppe] tçto:]. [koe]/kore/ mea [mimi] [mimi] "This". [kuoo:] /goi [mit; çan] [ni:tçan] [mieçen] [meçeçen] [ni:tçan] [ni:tçan] down". [tçto:] is one [ningjo:] [niŋjjo] variations of /sitter		1	Iteetcol	[tjotjo] [toto]		
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[katçax] [katçax] [kattax] [hitçax] [dzitçax] [dzitcax] [toitcax] [obstçax] [battjax] [toitcax] [toitcax] [battjax] [batty] [ja] Sutterel [koc kux [rijopio]+ [nippe] [pepe] [mini] [mini] [mini] [michex] [nippe] [pepe] [mitçax] [mini] [mini] [michex] [nitçax] [nitçax] [mini] [mini] [mitcax] [kii] [kii] [kii] [kii] [kii] [nitçax] [nitçax] [nitçax] [mino] "mino] "mino] [mitcax] [kii] [kii] [kii] "mino] "mino] [nitçax] [kii] [kii] [kii] "mino] "mino] [iii] [kii] [kii] [kii] "mino] "mino] [iii] [kii] [kii] [mino] "mino] "mino] [iii] [iii] [gii] [gii] [gii] [gii] [iiia] [gii] [gii] [gii] [gii] <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>						
initçaxi [dzitçaxi] [dzitçaxi] [dzitçaxi] [to:titxi] jobaţcaxi] [dzitçaxi] [dzittqaxi] [to:titqaxi] [to:titqaxi] jobaţcaxi] [pairjaxi] [bataxi] [bataxi] [bataxi] [pijoj [nippe] [ija] S utered [kee kuu toto], [kee]/koe//mea [mimi] [mirgi] [mirgi] [mirgi] "This", [kuoci] /goo [mittitaxi] [kingi] [kingi] [kingi] "Atree-word [figgo] [miro] [ininj] which means "Is", [figgo] [miro] [ita] [figuif] a three-word [figgo] [figi] [figuif] [figuif] a three-word [figi] [jajo] [figuif] [figuif] a three-word [figi] [jajo] [figuif] [figuif] [figuif] [fif				Lionijanij		
[odzitcan] [dzi:tcan] [tdzi:tcan] [to:trcan] [to:trcan] [jia] [jia] [jia] [jia] Suttered [koc kum [jia] [nippe] [peppe] [to:trcan] [to:trcan] [to:trcan] [mimi] [mippe] [peppe] [mitcan] [mitsan] [to:trcan] [gordown". [to:o]. [gordown". [gor					-	
5 /// [battan] [battan] [ija] S S uttered [kee kuu tott] 5 /// [ija] [nipp] [peppe] Immi] S uttered [kee kuu tott]. [kee]/kore/mean tott]. [kee]/kore/mea				[dzitcan] [dzitan]		í .
5 /i/ [ija] Suttered [koc kuc tett]. [koc]/koc/ means "This". [kucoc]. /goo "This". [kucoc]. /goo "This". [kucoc]. /goo "This". [kucoc]. /goo "This". [kucoc]. /goo gor/ means "Lyi down". [tett] is one variations of /siter which means "Is". [kiggjo] [higgjo] [kii] [ki] [kus] [kus] [higgjo] [kii] [kii] [kiiggjo] [kii] [kii] [kiiggjo] [kii] [kii] [figgo] [ninnjo] sentence. [figgo] [inon] sentence. [figgo] [inon] [kii] [kiij] [siii] [attsar] [aita] [aitsar] [attsar] [faioN] [jajo] [teauo] [daidjox][jaijo][jajo] [kani] [canni] [kaki] [kani] [canni] [kaki] [kani] [kaki] [kaki] [kani] [kagi] [kagi] [kugi] [kugi] [kugi] [kagi] [kagi] [kagi] [kagi] [kagi] [kagi] [kaki] [mani] [mani] [kaki] [kaii] [kaii] [kaii]			-			
[7] [0] jopijo]* [nippe] [peppe] [mtm1] [mtm1] [mimin] [mim] [mtm1] "This", [kucoi] /goi [mitheas] [mithiggo] [mithiggo] gord means "Ls", [nitggo] [nitgi] [kins] [kingj] gord means "Ls", [kingj] [kii] [ki] [kins] [kurs] down", [fere] is out is out is out down", [fere] is out is out down", [fere] is out is out is out down", [fere] is out is out is out down", [fere] is out is out is out is out down", [fere] is out	-			[barijan] [barian]		S uttered [koe_kuuoo:
Imini]Immail[mmmi]"This". [kuoo:] /gou[miches][micpax][micpax]"This". [kuoo:] /gou[mitpax][mitpax][mitpax][mitpax][minjgjo][kin][kin] [kin][kin][kink][kii] [ki][kink] [kin][kink][kingjo][kink][kink] [kin][kink][kink][kin][kink][kink][kink][kin][kink][kink][isim][sinh][sinh][sinh][sinh][sinh][sinh][sinh][sinh][sinh][sinh][sinh][kank][jajo] [teauo][daidox][jajo][jajo][sinh][jajo] [teauo][daidox][jaijo][jajo][kani][cranh][kaki][cranh][zanni][kaki][cranh][zanni][kaki][kani][kaki][kaki][kani][kaki][kaki][kugi][kugi] [kui:][kaki][kugi][kugi] [kui:][kagi][kugi][kugi] [kui:][kagi][kugi][kugi] [kui:][kagi][kugi][kugi] [kui:][main][harin][main][main][harin][main][main][harin][main][main][harin][main][main][harin][aki] [ai][aci] [ai][boroi][boroi] [botte1][hiru][aki] [ai][aci] [ai][kudzi][kudzi][kudzi])	/1/		Inippel Ineppel	[ت]م]	-
[michest] [micçest] [meççest] gord/means "Lyiddown". [teto1] is one [nittcax] [nittfax] [nittfax] down". [teto1] is one [kifiy] [kii] [kii] [kii] which means "Is". [kifiy] [kii] [kii] [kii] which means "Is". [kifiy] [kii] [kii] [kii] which means "Is". [kiggio] [ninnjo] [ininjo] sentence. [fisiii] [fisii] [fisii] [fisii] [fisii] [fisii] [fisii] [fisii] [fisii] [fisii] [fisii] sentence. [fisii] [fisii] [fisii] senti]				[mpbe] [bebbe]	[mm]	
Initçax] [ni:tçax] down". [tçtot] is one [higgjo] [kii] [ki] [kux] [kux] which means "Is". [kiggjo] [kii] [ki] [kux] [kux] which means "Is". [liggo] [ninnjo] [sentence. [liggo] [ninnjo] sentence. [liggo] [ninnjo] [sentence. [liggo] [ninnjo] sentence. [sentence] [figund] [sentence. [sentence] [figund] [sentence. [sentence] [sentence. sentence. [sentence] [sentence. sentence. [sentence] [sentence] sentence. [sentence] [sentence] <td></td> <td></td> <td></td> <td></td> <td></td> <td>• • •</td>						• • •
Iningjo:] [ningjo:] variations of /siter [kifiy] [kii] [ki] [kuy] [kw] which means "Is". [kiggo] [ninnjo] sentence. [figgo] [ninnjo] sentence. [figgo] [ninnjo] sentence. [fiswi] [cst] [himo/ (string) [fiswi] [gimo] [imo] [string] [dzi:tçan] [atta] [atta] [faix] [jajo] [teawo] [daidjox][jajo][jajo] [kani/ (cicada) [kani] [ceani] [kani/ (cicada) [kani] [kaki] [kaki/ (persimmon) [keiki] [kaki] [keiki/ (cake) [kagi] [kagi] [kugi] [kugi] [kugi] [keiki] [kagi] [kagi] [keiki] [kagi] [kagi] [keiki] [man] [man] [kagi] [kagi] [bippm] [kagi] [ati] [bo:ci] [keiki] [ati] [bi:ci] [keiki] [ati] [bi:ci] [keiji] [aki] [a1] <						
[kifix] [kii] [ki] [kus] [kus] which means "Is". [kifix] [kii] [ki] [kus] [kus] told a three-word sentence. [figgo] [ficutocu] [ficutocu] sentence. [figgo] [ficutocu] [ficutocu] sentence. [figgo] [ficutocu] [ficutocu] sentence. [figgo] [ficutocu] [diatas] [ficutocu] [gimo] [fimo] [diatas] [ficutocu] [diata] [ficutocu] [diatas] [diatas] [aita] [ficaca] [diatas] [ficutocu] [diata] [ficacac] [diatas] [ficacac] [ficaos] [jajo] [teauo] [diatajos][jajo][jajo] [seni] [cicada) [jajo] [teauo] [daidjos][jajo][jajo] [seni] [kaki/ [pemi] [kaki] [pemi] [cicada) [kaki] [kaki] [kaki] [keki/ [kai] [kaki] [kaki] [kecki/ [kagi] [kagi] [kagi] [kecki/ [kagi] [kagi] [kagi] [kecki/ <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>• • • •</td>					-	• • • •
[kingjo] [kirgjo] [kirgjo] [kingjo] [kirgjo] told a three-word sentence. [fisüi] [fcutford] [ficutford] [fisüi] [fcutford] [ficutford] [kingjo] [ficutford] [ficutford] [kati] [ficutford] [ficutford] [kati] [ficutford] [ficutford] [kaki] [ficutford] [ficutford] [kaki] [ficutford] [kaki] [kaki] [kaki] [kaki]				n.::) n.:)		
[1:050] [ninjo] sentence. [[iigg0] [[iinjo] sentence. [[iigg1] [[icutçwu]] [[icutçwu]] [[cisii] [[cisii] [[imo] [[cisii] [[imo] [[imo] [[cisii] [[imo] [[imo] [[cimo] [[imo] [[imo] [[cimo] [[imo] [[[cimo] [[aita] [[atca1] [[atca1] [[ati] [[ati] [[ati] [[kwgi] [[kwgi] [[kwgi] [[kwgi] [[kwgi] [[ku] [[kwgi] [[ki] [[ati] [[kwgi] [[ati] [[ati] [[bo:ci] [[bo:ci] [[bo:ci] [[aitw] [[ati] [[ati]				լեսյ լեսյ		
[fishi] [fisurj+ [[isin]] [[fisurj+ [[isin]] [[fisurj+ [[imo] [[imo] [[imo] [[dzi:tan] [[aita] [[atcan] [[aita] [[atcan] [[aita] [[atcan] [[aita] [[atcan] [[aita] [[aijo] [tçauo] [[aita] [[atcan] [[aita] [[aita] [[[aita] [[aita] [[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[-	
[çiçix]* [çrç1] /himo/ (string) [imo] [çimo] [imo] [gimo] [imo] [aita] [atca:] [faion] [jajo] [tçawo] [daidjon][jajo][jajo] [semi/ (cicada) [jajo] [tçawo] [daidjon][jajo][jajo] /kani/ (crab) [wanni] [pemi] [wani] [wani] [kaki] [weni] [wani] [kaki] [keiki/ (crab) [wani] [ani] [wani] [weni] [wani] [kaki] [keiki/ (crake) [keiki] [keiki] [keiki/ (cake) [kugi] [kwi:] [kugi] [kkgi/ (tail) [kugi] [kugi] [kwgi] [kagi] [kagi] [kagi/ (teur.lippu] [bippw] [bippw] [maii] [mai] [mai] [haçi] [ati] [ati] [bo:çi] [bo:çi] [bo:çi] [bo:çi] [bo:çi] [kwdzi] [aki] [ai] [atia]						semence.
/himo/ (string) [imo] [şimo] [imo] [yittsjax/ (grand father) [dźittax] [dźitsjax/ (grand father) [dźitsja] [aita] [atça:] [laita] [atça:] [faiox] [jajo] [tçawo] [daidjox][jajo][jajo] /kani/ (cicada) [kani] /kani/ (crab) [kani] [zvani] [zvani] [kaki] [kaki/ (persimmon) [kaki] [ke:ki] /keki/ (cake) [kugi] [kwi:] [kagi] /kugi/ (nail) [kugi] [kugi] [kwi:] [kugi] [kugi] [kugi] /kagi/ (key) [bippw] [bippw] /mari/ (ball) [mai] [mai] [haçi] [ati] [bo:çi] [bo:çi] [bo:çi] [bo:çi] [bo:çi] [bo:çi] [bo:çi] [ajitw] [aki] [ai] [açi] [ajo] [aai] [ajitw] [aki] [ai] [açi] [azi]				f1	լուծաքծալ	
(string) [imo] [çimo] [imo] /vittsjax/ [dzi:tan] [aita] [attça:] [aita] [baid]ow][jaijo][jajo] /kani/ [kani] (ccaka) [kani] /kani/ [kani] [wani] [wani] [wani] [wani] [kaki] [kaki] (cake) [kaki] /kaki/ [kugi] [kwi:] [kugi] [kugi] [kugi] [kugi] [kugi] [kagi] [kugi] [mai] [kagi] [mai] [kagi] [mai] [hajo] [ati] [bo:qi] <td></td> <td>-</td> <td></td> <td>[çıçı]</td> <td></td> <td></td>		-		[çıçı]		
[çimo] [imo] /zittsjan/ [grand father) [dzittjan/ [atta] [aita] [attça:] [faioN] [jajo] [tçawo] [daidjon][jajo][jajo] /semi/ [pemi] /ccada) [kani] /kani/ [kani] (ccada) [kani] /kani/ [kani] (crab) [wanni] [ani] [wani] [wani] [wani] [kaki] (persimmon) [ke:ki] [ke:ki] /kegi/ [kugi] [kugi] [kwi:] [kwgi/ [kagi] [kagi] (cake) [kagi] [bippw] /kagi/ [kagi] [mai] [kwgi] [mai] [mai] [hqil] [mai] [mai] [hqil] [mai] [mai] [hqil] [ati] [bipwi] /mari/ [duk] [ati] [hqil] [ati] [ati] [kwgi] [aki] [al] [acitan] [hodzitçan] [ditan] [mai] [himai]				3		
(grand father) [dzi:tax] [diita] [aitca:] [aita] [jajo] [tçauu0] [daidjox][jajo][jajo] /semi/ [cicada) [pemi] /kani/ [kani] (crab) [wanni] [wani] [wani] [wani] [wani] /kaki/ [kaki] [kaki] (persimmon) [ke:ki] [ke:ki] /kexi/ [kwgi] [kwi:] [kugi] (nail) [kwgi] [kugi] [kugi] [kugi] [kugi] (ke:y) [kagi] [kugi] /kagi/ [mai] [mai] [haçi] [mai] [mai] [hait] [mai] [mai] [hait] [mai] [mai] [hait] [ati] [ati] [bo:ci] [bo:ci] [bo:to!] [ditax] [ditax] [ati] [ati] [kudzi] [kudzi] [ditax]					[imo]	
[dźi:tçan] [dźi:tan] [aita] [atça:] [Iaios] [jajo] [tçawo] [daidjox][jajo][jajo] [semi/ [pemi] (cicada) [kani] /kani/ [kani] (crab) [wanni] [ani] [wani] [kaki] [persimmon) [kaki] /ketki/ [ketki] [kɛtki] (cake) [ketki] [kɛtki] /kugi/ [kugi] [kwi:] [kagi/ [kagi] (tulip) [kagi] [typpu] [bippw] /mari/ [mai] [bo:çi] [bo:ci] [bo:tçt] [haçi] [ati] [bo:çi] [bippw] [mati] [mat] [bo:çi] [bo:ci] [bo:tçt] [kudki] [ati] [bo:çi] [ati] [bo:çi] [ati] [bo:ci] [ati] [bo:ci] [ati] [bo:ci] [ati] [bo:ci] [ati] [bo:ci] [ati] [bo:ci] [ati] [cdzitç						
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[faiov] [jajo] [tçauuo] [daidjov][jaijo][jajo] /semi/ [pemi] /kani/ [kani] (crab) [wanni] [wani] [wani] [wani] [wani] /kaki/ [kaki] (persimmon) [ke:ki] /ketki/ [ke:ki] [ke:ki] (cake) [ke:ki] [ke:ki] /kugi/ [kugi] [kuui:] [kwgi] [kagi] [kwgi] [kagi] [kwgi] [kagi] [kagi] [kagi] [kogi] [bippm] /mari/ [ball) [mafi] [mal] [haçi] [bici] [bo:ci] /ahiru/ [duitan] [qçifu] [aki] [a1] [açi] [a1] [cdzitçcan] [kudzi] [kudzi] [kudzi]			-			
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	/baitsjan/ (grand mother) [baitçan]	- 111 -	[baţçã]	
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Sei Nakazima

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	[tçɯːſippɯ]		[bippu]	
	[kofe]	[kwe]	[koe]	
	[tofa]	[powa] [poːdʒa]	[toJa] [toa]	
	[gologolo]	[kwoo:]	[gologoo]	
	[safw]	[[tadjul] [tçajul]	
	[açifɯ]	[aki]	[açi] [aɪjo]	
/w/[w]	[wanwan]+	[wanwan]		
1	[wani]	[ani] [wanni]	[wani]	
/j/	[wann] [kjakkja]+	[kækjə] [kekja]	[kjəkkjə]	4
/J/	[njannjan]+	[njannjan]	[v]avv]a]	
I	[ija]	[11]aiii]aii]	[ija]	
	[pijopijo]+	[nippe] [peppe]	[¹]a]	
	[anjo]+	[anjo]	[a1j0]	-
	[niŋgjox]	[unjo]	[niŋŋjo]	
	[kiŋgjo]		[kigjo]	
/s/[s]	[sensei]		[tçieētçie] [teja]	
/5/[5]	[semi]		[pemi]	
	[safw]		[tçaju] [tadju]	
	[südzüme]		[uwe]	
	[ſisüi]		[liçutçu]	4
	[basüi]		[baţçu]	
[¢]	[haçi]		[ati]	
[*]	[boːçi]		[boːçi][boːçi] [boːţçi]	
	[dença]	[de:ta]	[detça] [deta]	
/z/[dz]	[dza:dza:]	[monul]	[da:ja:]	
/=/[a=]	[dzoː]	[dzoː] [doː] [tçoː]	[doː] [goː]	
	[]	[joː] [toː]	[001] [801]	
[dz]	[dzi:tçan]		[dzi:tan]	19 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -
L~Y%]	[odzitcan]	All	[ditan]	r
	[kudzi]		[kwdzi]	
/h/[h]	[hato]		[ato]	51, 513 1
//LJ	[haçi]		[ati]	
	[miehen]		[mieçen] [meçeçen]	
[ç]	[çiçin]+	[çıçı] [ıçı]	T-me2ord fune2o2014	
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· ,		[odzitcan]		[ditan]	
		[dzi:tcan]		[dzi:tan]	
				[barjan] [obartan]	
		[obatçan]	and the second second	[baxtçan] [batjan]	
		[ba:tçan]		[baţçã]	
	1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 -	[nixtçan]	A de la construcción de la constru La construcción de la construcción d	[niːtçan] [niːtan]	
		and the second second	[kaijan]	and the second second	
		[ka:tçan]	[ka:tçan] [ka:tan]	[ka:tçan]	
		[to:tcan]		[to:tcan] [tco:tjan]	
		[tçu:fippu]		[bippu]	* ·
		[tçɯːtçɯː]+	[tjwtjw] [dzwdzw]		
		[ţçoːţço]	[tjoːtjo] [tjotjo]		
	[tc]	[tça]	[tça]		
		[atsüi]		[atour]	
	/ts/[ts]	[kɯtsüi]	[kɯţçɯ]	[kutçu]	
	the tare	[açifɯ]	[aki] [a1]	[açi] [a1jo] [aa1]	and the second
		[çimo]		[imo]	

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