

# Japanese Relative Clauses in Spontaneous Child Speech<sup>†</sup>

Kazuko I. Harada

## ABSTRACT

This study has analyzed Japanese relative clauses spontaneously produced by three Japanese-speaking children for two reasons: (i) to fill a gap in acquisition studies of Japanese relative clauses, and (ii) to reveal exactly when a Japanese child starts to produce relative clauses, trying limits of experimental studies. Researchers usually choose children over 3;6 as subjects of experiments because it is generally agreed that children under 3;6 are too young for most of the experimental tasks. We have found that the children produced a variety of Japanese relative clauses, especially major ones such as external-head relative clauses, internal-head relative clauses, and pseudo-relative clauses, fairly early, around two years old, much earlier than had been considered.

**Key words:** syntax acquisition, Japanese relative clauses, spontaneous speech, production

## 1. Introduction

There have been accumulated a great deal of acquisition studies on relative clauses since 1970s. Earlier studies concentrated themselves on investigating children's comprehension of relative clauses in experiments employing either an imitation task or a toy-moving task (see O'Grady 1997, Diessel and Tomasello 2000, Diessel 2004 for an overview of the studies). The experimental studies on comprehension demonstrated that children have great difficulty to comprehend relative clauses (see Brown (1971), Smith (1974), Sheldon (1974), and Tavakolian (1981) for English and Harada et al. (1976) and Hakuta (1981) for Japanese among others<sup>1)</sup>). To cite just one example, Harada et al. reported that even children at the age of ten failed to comprehend correctly about half of Japanese relative clauses presented in their experiments.

More recent studies that are inspired by methodological improvements suggested by Hamburger and Crain (1982) revealed much earlier mastery of the construction. Crain et al. (1990), for instance, adopted Hamburger and Crain's elicited production task and tested production of relative clauses by Italian children. McKee et al. (1998) conducted a similar experiment on English children. Both studies demonstrated that children as young as two and three years of age produced correct relative clauses about 70-90 % of the opportunities,

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1) Researchers have proposed a variety of hypotheses, mostly adopting comprehension (or perceptual) strategies, to account for the difficulty that children showed, particularly to deal with the errors that children made in experiments, such as the noninterruption hypothesis (Slobin 1973), the filler-gap hypothesis (O'Grady 1997), the NVN-schema hypothesis (Bever 1970), the parallel-function hypothesis (Sheldon 1974), the conjoined-clause hypothesis (Tavakolian 1981).

thus claiming that children master relative clauses much earlier than had been suggested. Harada (2001, 2002) also conducted a similar experiment on Japanese children aged from 3;6 to 6;4 and revealed that Japanese children have no difficulty to produce relative clauses. Even the youngest group of subjects, i.e. 3-year-olds, demonstrated near adult-like performance.

On the other hand, production of relative clauses in naturalistic spontaneous child speech has not been studied extensively and systematically (see Menyuk (1969) and Limber (1973) for a discussion of some aspects of English relative clauses in spontaneous child speech). Diessel and Tomasello (2000) and Diessel (2004) are the first attempts to examine English relative clauses occurring in spontaneous child speech in a comprehensive way. The same situation has also held in the case of Japanese. The present study attempts to provide a systematic analysis of relative clauses that Japanese children produced in their spontaneous speech, thus filling a gap in acquisition studies of Japanese relative clauses. The naturalistic and observational study is also needed from another point of view. Researchers usually select children over 3;6 as subjects in experiments because it is generally agreed among acquisitionists that children under 3;6 are too young for experimental tasks (with some exceptions depending on specific forms of task). As Harada (2002) showed, Japanese children have already had an adult like command of Japanese relative clauses at the age of three. However, the result has not provided us the children's competence before three. We need a different approach to clarify exactly when Japanese children acquire relative clauses. We will thus investigate a different type of data, naturalistic longitudinal data in this study. Section 2 describes the data that will be analyzed in this study. Section 3 presents a systematic analysis of the data after a brief overview of Japanese relative clauses in adults and Section 4 concludes the discussion.

## 2. Data

This study is based on naturalistic spontaneous speech from three Japanese-speaking children aged 2;0 to 4;11: Taa-tyan, Kyooiti, and Eri.

Taa-tyan is the child that Kokuritu Kokugo Kenkyuusyo (The National Institute for Japanese Language) investigated. Taa-tyan's family members speak the standard Japanese language. The institute audio recorded spontaneous speech by Taa-tyan as one of their research projects. The research started when Taa-tyan was 1;0 and ended when the child became 4;0. Taa-tyan's speech was audio recorded about two hours every month and about twelve hours on his birthday by his mother<sup>2)</sup> and was later transcribed and published in six volumes. The present study examines the data in three out of six volumes, Kokuritu Kokugo Kenkyuusyo ed. (1982-1983), which contain the speech by the child be-

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2) Taa-tyan's speech was recorded by his mother whenever she noticed him speaking a lot. Thus the recording time for one opportunity was not long but the recorded time added up reached about two hours each month. On the other hand, Kyooiti and Eri's speech was collected by the investigator about two hours in one day at intervals of about one month.

tween the ages 2;0 and 3;11. The number of utterances in the three volumes reached 17,456<sup>3)</sup> and the number of relative clauses obtained during the period was 242.

The other children, Kyooiti and Eri, were the first-born and the second-born children of a middle class family speaking the Nagoya dialect. Their spontaneous speech was audio recorded about two hours every month by the investigator and was later transcribed for analysis. The recording started when Kyooiti was 3;2 and Eri was 1;4 and ended when the children respectively became 4;11 and 3;1. There are a gap in Kyooiti's data at the age of 4;9 and a gap in Eri's data at the age of 2;11. The data under investigation contain the speech by Kyooiti from the age 3;2 to 4;11 and the speech by Eri between the ages 2;6 and 3;1. The number of utterances under examination is 14,669 for Kyooiti and 5,736 for Eri. The numbers of relative clauses spontaneously produced by Kyooiti and Eri are respectively 196 and 54. Table 1 provides an overview of the data.

**Table 1**

Overview of the data

Children	Sex	Age range	No. of Utterances	No. of Relative clauses
Taa-tyan	M	2;0-3;11	17,456	242 (1.39%) <sup>a</sup>
Kyooiti	M	3;2-4;11	14,669	196 (1.34%)
Eri	F	2;6-3;1	5,736	54 (0.94%)
Total		2;0-4;11	37,861	492 (1.30%)

<sup>a</sup>The figure in parentheses shows the percentage of relative clauses of the utterances the child produced.

### 3. Analysis

Before analyzing the data, a brief overview of Japanese relative clauses in adult grammar is in order. Relative clauses in Japanese are one of the structures that have been studied extensively and many different analyses have been proposed (see Kuroda (1998) for an overview of the studies on Japanese relative clauses and see references therein for particular analyses)<sup>4)</sup>. It is generally agreed that Japanese relative clauses involve no movement (see Fukui and Takano (2000) and Kayne (1994) among others for the contrasting claims) and that Japanese relative clauses are classified based on two properties: (i) whether a relative clause has a gap or is gapless and (ii) whether a relative clause has a head within itself or outside of the clause. Among various types, relative clauses presented in (1) - (3) are especially well known (examples are from Kuroda (1998))<sup>5)</sup>.

3) The number of utterances produced by Taa-tyan during the age range under investigation was calculated by Tomoko Furuta.

4) We will basically assume Kuroda's (1998) analysis in this study.

5) The other types of relative clauses are given below. Again the examples and the terms are taken from Kuroda (1998).

- (1) Tanaka ga [ $\phi_i$  aruitekuru] gakuseitai<sub>i</sub> ni deatta.  
 Tanaka NOM walking students DAT meet  
 'Tanaka ran across the students who were walking (toward him).'
- (2) Tanaka ga [gakuseitai ga aruitekuru no] ni deatta.  
 Tanaka NOM students NOM walking DAT meet  
 'Tanaka ran across the students who were walking (toward him).'
- (3) [kaeru ga mizu ni tobikomu] oto  
 frog NOM water into jump sound  
 'the sound of a frog jumping into water'

The relative clause in (1) (put in square brackets) shows the most typical relative clause in Japanese, which contains a gap (indicated by the symbol  $\phi$ ) in itself that is coreferential with its head, *gakuseitai*,<sup>6)</sup> and is usually considered as corresponding to an English relative clause.<sup>7)</sup> The relative clause is referred to as *syubu gaizai kankeisetu* 'external-head

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- (i) *zyootai henka gata kankeisetu* 'change-of-state relative clause'  
 otamazyakusi ga kaeru ni natta no ga niwa o haneteiru.  
 tadpole NOM frog into became NOM garden in jumping  
 'The frog that was transformed from a tadpole is jumping up and down in the garden.'
- (ii) *bessi kankeisetu* 'pejorative relative clause'  
 otamazyakusi ga kaeru ni natta yatu ga niwa o haneteiru  
 tadpole NOM frog into became fellow NOM garden in jumping  
 'The frog that was transformed from a tadpole is jumping up and down in the garden.'
- (iii) *hanbun kankeisetu* 'half-relative'  
 Taroo wa Ziroo ga yatin ni tukau hanbun o gyanburu ni tukau  
 Taro TOP Ziro NOM rent for spend half ACC gambling for spend  
 'Taro wastes the amount of money for gambling half of which Ziro spends for his rent.'
- (iv) *de-kankeisetu* 'de-relative clause'  
 ookina ringo de akai no ga tukue no ue ni aru  
 big apple COPULA red NOM desk GEN on exist  
 'There is an apple that is big and red on the desk.'
- (v) *no-kankeisetu* 'no-relative clause'  
 ookina ringo no akai no ga tukue no ue ni aru  
 big apple GEN red NOM desk GEN on exist  
 'There is an apple that is big and red on the desk.'
- (vi) *tokoro-kankeisetu* 'tokoro-relative clause'  
 keikan ga doroboo ga nigeyooto suru tokoro o tukamaeta  
 policeman NOM robber NOM try-to-run away ACC arrested  
 'The policeman arrested the robber that was going to run away.'

6) Putting the same index on relevant forms indicates coreferentiality, following the usual convention.

7) Note, however, that the English counterpart shows two different properties: it involves movement and usually employs a relative pronoun or a complementizer *that*.

relative clause' by Kuroda. The relative clause in (2) illustrates what Kuroda calls *syubu naizai kankeisetu* 'internal-head relative clause'. The internal-head relative clause is characterized by two properties: no gap in the relative clause and no head appearing outside of the clause. The relative clause in (3) is referred to by Kuroda *gizi kankeisetu* 'pseudo-relative clause'. The pseudo-relative clause has a lexical head just as the external-head relative (1) does but one difference lies between the two, the former having no gap in the clause but the latter containing a gap.

### 3.1. Criteria of relative clauses

Turning now to the relative clauses spontaneously produced by the three Japanese children, this study only considered the following utterances as relative clauses: finite relative clauses marked by a gap in the argument structure, that is, head-external relative clauses such as (4), relatives without gaps, i.e., internal-head relative clauses such as (5) and pseudo-relative clauses as illustrated in (6).

- (4) *kore wa matteru kumasan* (Eri 2;8)<sup>8)</sup>  
 this TOP waiting bear  
 'This is the bear that is waiting.'

- (5) *oniku mada katai no ga aru* (Kyooiti 4;8)  
 meat still tough NOM exist  
 'There is some meat that is still tough.'

- (6) *kureenkaa no gaatteyuu* oto (Taa-tyan 2;10)  
 crane truck GEN [onomatopoeia, harsh sound] sound  
 'the sound of a crane truck making a noise *gaa*'

We excluded from analysis such headless expressions as (7)<sup>9)</sup>, nouns modified by a single adjective or a single adjectival noun presented in (8) as well as nouns modified by the appositive *-to iu* phrase illustrated in (9)<sup>10)</sup>.

- (7) a. *kirokatta nai no* (Taa-tyan 2;2)  
 was-yellow not-exist SP  
 'There are not (the ones that) were yellow.'

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8) The name of the child who uttered the example is given together with her or his age in parentheses after the example. The italic part of an example utterance stands for a relative clause.

9) The utterances in (7) are not grammatical in adult grammar though the italic parts are functionally considered as relative clause. They might be precursors of relative clause or instances of speech error.

10) Relevant parts of the examples in (7) - (9) are shown in italics.

- b. *kono mawaru katte, syorekara [=sorekara]<sup>11</sup> ...* (Taa-tyan 3;0)  
 this turn-around buy then  
 'Buy this (one that) turns around, then...'
- (8) a. *akai buubuu [=kuruma]* (Taa-tyan 2;0)  
 red car  
 'a red car'
- b. *motto tookui [=tooi] depaato* (Taa-tyan 2;7)  
 more far department store  
 'Lit. the farther-away department'
- c. *siroi no, kore?* (Eri 2;4)  
 white one this  
 '(Is it) the white one, this?'
- d. *ookii booru* (Kyooiti 3;2)  
 big ball  
 'a big ball'
- e. *kireina kyuukyusya* (Taa-tyan 2;9)  
 beautiful ambulance  
 'a beautiful ambulance'
- f. *henna yatu* (Eri 2;2)  
 queer guy  
 'a queer guy'
- (9) a. *yamabikotte yuu densya* (Taa-tyan 2;5)  
 yamabiko train  
 'the train *yamabiko*'
- b. *kore patokaatte yuu namae no zidoosya na no* (Taa-tyan 2;5)  
 this patrol car name GEN car be SP  
 'Lit. This is a car with the name "patrol car".'
- c. *'ni'tte yuu zi sitteru no* (Taa-tyan 2;8)  
 character know SP  
 '(I) know the character "ni".'
- d. *kotti wa ippoo tuukoo ga owattekara zidoosya ga* (Taa-tyan 3;3)  
 this TOP one-way traffic NOM end-after car NOM  
*itte kudasaitte yuu sirusi ga kaite aru no*  
 go-POLITE sign NOM write SP  
 'Lit. In this, is the sign saying that cars may go after a one-way street ends written?'

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11) When the child's utterance contains some baby talk or a form that is considered incorrect in adult grammar or a dialectal expression, standard adult forms are provided in square brackets.

### 3.2. Developmental analysis

Looking back to Table 1, we notice that the number of relative clauses observed is very small. Taa-tyan produced 242 relative clauses, Kyooiti 196, and Eri 54, 492 in total, that is, merely 1.30% of 37,861 utterances they produced during the period under investigation.<sup>12)</sup> The frequency itself, however, would not necessarily show developmental characteristics of relative clauses. In a sense the data in Table 1 are of no use in revealing exactly when the children begin to produce relative clauses. For this purpose we need a developmental analysis. The results of the developmental analysis conducted are given in Table 2.

**Table 2**

Relative clauses spontaneously produced by Taa-tyan, Eri, and Kyooiti

Age	Taa-tyan	Eri	Kyooiti	Total
2;0	0	- <sup>a</sup>	-	
2;1	1	-	-	
2;2	15	-	-	
2;3	4	-	-	
2;4	3	-	-	
2;5	2	-	-	
2;6	0	8	-	
2;7	10	12	-	
2;8	9	7	-	
2;9	8	9	-	
2;10	24	4	-	
2;11	16	-	-	132
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3;0	11	4	-	
3;1	13	10	-	
3;2	18	-	1	
3;3	20	-	1	
3;4	8	-	5	
3;5	9	-	1	
3;6	12	-	5	
3;7	6	-	16	
3;8	14	-	10	
3;9	14	-	2	
3;10	10	-	5	
3;11	15	-	13	223
<hr/>				
4;0	-	-	8	
4;1	-	-	10	
4;2	-	-	2	
4;3	-	-	12	
4;4	-	-	15	
4;5	-	-	23	
4;6	-	-	10	
4;7	-	-	15	
4;8	-	-	22	
4;9	-	-	-	
4;10	-	-	6	
4;11	-	-	14	137
<b>Total</b>	242	54	196	492

<sup>a</sup>The symbol '-' shows that the data are not available.

The first occurrence of relative clause was at the age of 2;1 for Taa-tyan, 2;6 for Eri, and 3;2 for Kyooiti. Recall that the age range under investigation varies from child to child: Taa-tyan's age range is 2;0-3;11, Eri's 2;6-3;1, and Kyooiti's 3;2-4;11. We should point out that each child produced their first relative clause in the first month of the investigation period<sup>13</sup>. If earlier data are available (especially in the case of Eri and Kyooiti), it will be most likely to observe relative clauses much earlier. At this stage of my examination, it is only said that a Japanese child can produce relative clauses as young as 2;1. Japanese children produce relative clauses much earlier than experimental studies (e.g. Harada (2002)) demonstrated.

### 3.3. Analysis by types of relative clauses

We have observed at the beginning of this section that Japanese relative clauses in adult grammar are classified into several types. The most common ones are external-head relative clauses, internal-head relative clauses, and pseudo-relative clauses. External-head relative clauses are further subcategorized for analysis on the basis of the syntactic role of the relativized NP (that is, a gap in the relative clause): subject<sub>i</sub> relative when the relativized NP is the subject of intransitive relative clause, subject<sub>t</sub> relative when the relativized NP is the subject of transitive relative clause, object relative when the relativized NP is the object of relative clause, oblique relative when the relativized NP is the oblique, and genitive relative when the relativized NP is the genitive. External-head relatives of each type are illustrated in (10)-(14).

- (10)a. *suguni tobidasyu*[=tobidasu] syooboosya (Taa-tyan 2;4) subject<sub>i</sub> relative  
 immediately rush-out fire engine  
 'the fire engine that rushes out immediately'
- b. *go no tonari ni mieteru no ga nee* (un)<sup>14</sup> syan [=san] na no (Taa-tyan 2;7)  
 five GEN next at be-seen one NOM SP (yes) three be SP  
 'The one that is seen next to five is three.'
- c. *kore nobottekuru doosan* [=zoosan] (Kyooiti 3;4)  
 this coming up elephant  
 'This is the elephant that is coming up.'

12) Notice that the Japanese children produced relative clauses about six times as many as the English children. The English children that Diessel and Tomasello (2000) investigated produced 146,014 utterances in total but the number of relative clauses is 329, 0.225% much lower than 1% of all the utterances. See Harada (in print) for a comparative study on the acquisition of Japanese and English relative clauses in spontaneous speech. She examines both experimental and observational studies on the development of Japanese and English relative clauses, observes that children acquire a language where no movement is involved much earlier than a language where movement is involved, and concludes that movement imposes much burden on children in the course of acquisition.

13) Strictly speaking, Taa-tyan produced his first relative clause in the second month of the research period. But we suspect that it might be a coincidence that Taa-tyan didn't produce any relative clause at the age of 2;0.

14) The adult's utterance appearing in the child's utterance and its English gloss are given in parentheses.

- d. *osoto ni iru doobutu wa kore* (Kyooiti 3;8)  
outside be animal TOP this  
'The animal that is outside is this.'
- e. *naru mon [=mono] nai yo* (Eri 2;6)  
ring thing not-be SP  
'There is not a thing that rings.'
- f. *Kore wa matteru kumasan.* (Eri 2;8)  
this TOP waiting bear  
'This is the bear that is waiting.'
- (11)a. *kimono kita obake* (Taa-tyan 2;2) subject<sub>t</sub> relative  
wear ghost  
'the ghost that wears *kimono*'
- b. *soyode [=sorede] koko ga zidoosya kaetekureta ozisyan [=ozisan]* (Taa-tyan 2;11)  
then here NOM car change man  
'Then, this is the man that changed a car.'
- c. *orenzi siranai ko dake da yo* (Kyooiti 4;6)  
know-not child only be SP  
'only the children that do not know Orenzi'
- d. *Kyooiti-kun wa outi o tukuru hito, konkonkonkon te* (Kyooiti 4;8)  
TOP house ACC build person making sound  
'Kyoichi is the person that builds a house, making noise.'
- e. *Yadaa, yaku hito ga iru* (Eri 2;10)  
no bake person NOM need  
'no, (we) need the person that bakes (it)'
- (12)a. *obaatyan ni moratta are* (Taa-tyan 2;5) object relative  
grandmother by be-given that  
'that (one) that (I) was given by (my) grandmother'
- b. *Taa-tyan ga kanda tokoro doko na no?* (Taa-tyan 2;7)  
NOM bit spot where be SP  
'Where is the spot that Taa-tyan bit?'
- c. a, *kaita no wa nai.* (Kyooiti 3;4)  
ah drew one TOP not-be  
'Ah, the one that (someone) drew is not found.'
- d. *konomae katta origami zya nai no?* (Kyooiti 3;10)  
a few days ago bought be not SP  
'Isn't (this) the *origami* that (we) bought a few days ago?'
- e. *kore minna de tukau mon [=mono]* (Eri 2;7)  
this everyone use thing

'This is the thing that all of us use.'

- f. *okaasan hiku yatu* [pointing to Mother's *koto*<sup>15)</sup>] (Eri 2;8)

mother play one

'the one that Mother plays'

- (13)a. *tyuiteru* [= *tuiteru*] *tokoro tarebu* [= *taberu*] *no* (Taa-tyan 2;2) oblique relative  
stick part eat SP

'(I will) eat the part (of a cake) which (the brown one is) sticked to.'

- b. *kore nimotu o nosyeru* [= *noseru*] *torakku* ... (Taa-tyan 2;8)

this goods ACC put truck

'This (is) the truck on which (they) put goods.'

- c. *kore simau mon* [= *mono*] *nai mo* (Kyooiti 3;2)

this keep thing not-be SP

'(I) don't find the thing in which (I) put this.'

- d. *Doosite kaidan ga aru tokoro ga nai no?* (Kyooiti 3;5)

why steps NOM exist place NOM not-exist SP

'Why isn't there a place where some steps lie?'

- e. *hootyoo hootyoo, pan yaku* [= *yaru*] *yatu wa?* (Eri 2;7)

knife knife bread do thing TOP

'Where is a knife, the one with which (I will) cut bread?'

- f. *kore tateru mon* [= *mono*] (Eri 2;8)

this stand thing

'the thing on which I will put up this'

- (14)a. *teete kanda oziisan dattee* (Eri 2;10) genitive relative  
hand bite old man they-say

'(They say) it's the old man whose hand (a dog) bit.'

- b. ... *gakkoo ga oyasyumi* [= *oyasumi*] *no otoosan*<sup>16)</sup> (Taa-tyan 2;11)  
school NOM off be father

'Lit. Father whose school is out; my father who has a day off from the school'

- c. ..., *onaka akai hune kau* (Taa-tyan 3;2)

bottom red boat buy

'Buy a boat whose bottom is red.'

- d. *kokoro no yasaki oziisan* (Taa-tyan 3;9)

heart GEN tender grandfather

'Lit. the grandfather whose heart is tender'

15) *Koto* is one of the traditional Japanese stringed instruments.

16) There might be some arguments against the decision that (14b) contains a genitive relative. One might argue instead that the noun *otoosan* is modified by the noun *oyasumi* just as in a familiar N *no* N pattern, *no* being the genitive case particle. I assume that (14b) has a genitive relative on the ground that *ga*-phrase occurs in the presumed relative clause. *Ga*-phrase occurs only in a clause. If *gakkoo ga oyasumi* (*no*) is not a clause, we cannot account for the occurrence of the *ga*-phrase in it.

- e. *kao ga nai okaasan* [when only Mother's hands are seen by the  
child but not her face] (Kyooiti 4;7)  
face NOM is-not-found mother  
'Mother whose face is not seen.'

Examples of pseudo-relatives and internal-head relatives<sup>17)</sup> are respectively given in (15) and (16).

- (15)a. *Kureenkaa no gaatteyuu oto.* (Taa-tyan 2;10)  
crane truck GEN [onomatopoeia, harsh sound] sound  
'the sound of a crane truck making a noise "gaa" '  
b. *hikooki no kasai o kesu rensyuu da* (Taa-tyan 3;8)  
airplane GEN fire ACC extinguish practice be  
'(It) is the practice of putting out a fire of planes.'  
c. *ottyau [=otitesimau] kanzi daa* (Kyooiti 3;6)  
fall feel be  
'I have the feel of falling.'  
d. *futaatu [=futatu] atta ki ga suru* (Kyooiti 3;10)  
two was think  
'I think that I saw two (dogs).'

- (16)a. *Taa-tyan no makura nagai no kure*<sup>18)</sup> (Taa-tyan 3;10)  
GEN pillow long give  
'Give me Taa-tyan's pillow that is long.'  
b. *Oniku mada katai no ga aru.* (Kyooiti 4;8)  
meat still tough NOM exist  
'There is some meat that is still tough.'

The number of relative clause of each type is summarized in Table 3. The numbers of internal-head relatives and pseudo-relatives are put together and given under 'Others'.

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17) An example given below may be what Kuroda calls *no*-relative clause but we take it as an instance of internal-head relative here.

(i) *ookii kyuukyusya no kireina no haitteru no* (Taa-tyan 2;9)  
big ambulance be beautiful enter SP  
'A big beautiful ambulance is kept (here).'

18) *Taa-tyan no makura nagai no* might be ambiguous in structure. One is the structure in which the whole expression constitutes an internal-head relative and *Taa-tyan no makura* is an internal head. The other is the structure in which *makura nagai no* is an internal-head relative, *makura* being an internal head, and *Taa-tyan no* modifies the internal-head relative. Whichever structure being correct, it holds that (16a) involves an internal-head relative.

**Table 3**

Number of subject<sub>i</sub>, subject<sub>t</sub>, object, oblique, and genitive relative clauses and others produced by the three children: Taa-tyan, Kyooiti, and Eri

	subject <sub>i</sub>	subject <sub>t</sub>	object	oblique	genitive	Others
Taa-tyan	77(31.8) <sup>a</sup>	18(7.4)	42(17.4)	92(38.0)	5(2.1)	8(3.3)
Kyooiti	65(33.2)	7(3.6)	41(20.9)	77(39.3)	1(0.5)	5(2.6)
Eri	13(24.1)	1(1.9)	8(14.8)	31(57.4)	1(1.9)	0(0)
<b>Total</b>	155(31.5)	26(5.3)	91(18.5)	200(40.7)	7(1.4)	13(2.6)

<sup>a</sup>The figure in parentheses indicates percentage.

We first notice that about 40% of Japanese relatives are oblique relatives and that nearly one third of Japanese relatives are subject<sub>i</sub> relatives. Combining subject<sub>i</sub> and subject<sub>t</sub> relatives together, about 40% are subject relatives where a gap in the relative clause is subject regardless of either intransitive or transitive clause. Object relatives amount to about 20% and genitive relatives and others are very few, less than 2% and 3% respectively. With the facts in mind that the number of relative clause of each type varying between less than 2% and a little over 40%, the most remarkable fact is that major relative clauses observed in adult grammar were produced in the children's spontaneous speech. Japanese children can easily produce a variety of types of external-head relative clauses, internal-head relative clauses and pseudo-relative clauses.<sup>19)</sup>

#### 4. Concluding remarks

The acquisition studies have first focused on the comprehension aspect of relative clauses in experiments and have revealed that children have a great difficulty to comprehend relative clauses. Then production studies have been promoted by a new experimental task devised by Hamburger and Crain (1982), i.e. an elicited production task, and have demonstrated that children have a good command of relative clauses much earlier than had been considered. In contrast, systematic and comprehensive studies on relative clauses in the child's spontaneous speech have not been enough in acquisition literature.

We have analyzed Japanese relative clauses spontaneously produced by three Japanese-speaking children for two reasons: (i) to fill a gap in acquisition studies of Japanese relative clauses, and (ii) to reveal exactly when a Japanese child starts to produce relative clauses, trying limits of experimental studies. Researchers usually choose children over 3;6 as subjects of experiments because it is generally agreed among acquisition researchers that children under 3;6 are too young for most of the experimental tasks. We have found that the children produced a variety of Japanese relative clauses, especially major ones such as external-head relative clauses, internal-head relative clauses, and pseudo-relative

19) This is in contrast to English children observed in Diessel and Tomasello (2000). Diessel and Tomasello observed that nearly 90% of English relatives are subject and object relatives and that oblique relatives account for a little over 10%. For some differences between Japanese and English relative clause acquisition, see Harada (in print).

clauses fairly early, around two years old, much earlier than had been considered.

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