

“’S Gween Man [mæn] ! ” : The Phonological Development of a Child Acquiring English as L1 in Japan*

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This paper represents the second of a series of analyses of the phonological development of a girl acquiring English as her first language (L1) in Japan. My previous case study of the child's spontaneous production at age 2 (Yamazaki, 1990) reveals many familiar phonological processes such as gliding, vocalization and deletion of final consonants. On the other hand, some well-known processes were not systematically observed including fronting as one example. It appears that although generalizations about children's acquisition of phonological features may exist, it is incorrect to assume that every child goes through the same stages of phonological deviations from the models of adults and/or audio-visual aids.

Also, since children exhibit such dynamic language acquisition, their pronunciations may not seem to be very consistent. It is often the case that a word is articulated in a notably different manner from the same word recorded only a few days before. Many such new pronunciations are refinements and fill the gap between the child's articulation and the adult model's. In order to record the changes in the production by children, longitudinal studies are most revealing and needed. Such studies also help linguistics distinguishing between relatively stable patterns of phonological productions and sporadic utterances.

I. DATA

The data collected and analyzed in this paper are part of an ongoing longitudinal study of one subject in the form of a cumulative diary. For this paper the subject's phonological development was recorded from the celebration of her second birthday until approximately 2;6,21 (12/28/89-7/18/90). Videotaping was also done occasionally to ensure the reliability of the diary, but it functions basically as a supplement to the diary. The videotapings were mostly mother-child interactions during their play, conversations or both.

The subject of this study is Erika Yamazaki, daughter of Stella Yamazaki and the author of this paper. Erika was born in Chicago on Dec. 27, 1987 and is the only child of the family. After a first three-month stay in the United States Erika came to Matsumoto, Japan. She has been living in Japan since then except for a temporary visit (one and half

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months) to her native country during the summer of 1989. Erika's mother is a native speaker of English and received her education through graduate degrees in the United States. She speaks only English and has been in Japan for approximately the last two years and three months. Erika's father is a native speaker of Japanese and finished graduate programs of both Japanese and American universities.

Erika interacts mostly with her parents. The family language is exclusively English, and most of Erika's TV programs, videos and audio tapes at home are in English. Her most frequently-viewed programs are Sesame Street and Disney films. Erika has not had much exposure to the Japanese language except for her weekly visit to a Japanese family and occasional mingling with children in the neighborhood. This author concludes from observation that she can produce less than twenty Japanese words including proper nouns.

II. PHONETIC CHARTS

Erika's consonants still have some gaps. The following traditional consonant chart and explanation will be of help in understanding the phonetic characteristics of her speech in terms of the manner and place of articulation (the phonetic symbols in parentheses in a cell show varieties of articulation less frequently used). By convention when two symbols appear within a single cell, the symbol on the left represents a voiceless sound and that on the right, a voiced sound. The date in parenthesis appearing after each example represents the date when it was *recorded* by the author rather than the subject's first utterance of the word. If the date is not clearly known to the author, a double digit zero (00) is used.

Fig. II. 1 Consonant Chart of Erika at Two-and-a-half Years Old

	Bilabial	Labiodental	Interdental	Alveolar	Palatal	Velar	Glottal
Stop	p b		t d	(t) (d)		k g	
Fricative		f v	θ ð		ʃ		
Affricate			tʃ		ç ʝ		
Nasal	m		n	(n)		ŋ	
Liquid							
Glide	w				y		h

Erika's stop consonants are fully developed but the [t] and [d] are usually articulated interdentally regardless of their position in a word. This has been the pattern since she began to speak. Her fricatives show some missing symbols: the alveolars [s] and [z] and the voiced palatal [ʒ]. The missing alveolar pair is usually replaced by the voiceless interdental fricative [θ] in such words as *pencil* and *close*. A notable difference between her fricatives at two-years-old and at two-and-half-years-old is that she produced [ð] in

the word *these* (5/4) at the later stage, although her use of this phoneme is not consistent (e. g., *this* [θiθ]). When [θ] is expected, the voiceless labiodental [f] tends to be substituted in such examples as *three*, *thirsty*, and *mouth*. Her affricate consonants are well-developed, and she still produces an idiosyncratic version of the interdental voiceless affricate [θ̥]. This consonant, however, appears to be used far less frequently than during the last investigation. The main reason is that Erika's pronunciation is developing as evidenced by such examples as *banana* [banana] (1/18) (formerly [baθ̥iθ̥i]) and *paint* [pent] (formerly [peθ̥]). I assume that the affricate [θ̥] will soon be her only variation of [ts] in such words as *dots* or *pants*. Her nasal series became fully-developed after acquiring the velar [ŋ] in the word *cooking* [kikiŋ] (5/6). This nasal, however, is still very often replaced by [n] as in *swing* [šwɪn] (4/11) and *sleeping* [θipɪn] (4/1). Her alveolar [n] is again usually pronounced interdentially. Neither of the liquids, [l] and [r], are fully-developed at this stage, and they usually undergo a substitution process called gliding or a deletion process (to be explained later). More and more vocabulary items with [r], however, are starting to exhibit the 'color' of the retroflex as in *shower* [šadθ(r)] or an intermediate stage in the production of [r] and [w] as in *rhino* [w/ramo] (3/12). Her glides remain normal as in the last investigation and are actually overused in place of liquids as in *clean* [kwɪn] (6/9) and *sherry* [šewi] (4/1).

In sum, Erika has newly acquired two consonants; a voiced interdental fricative [ð] and a velar nasal [ŋ] in the last six or to seven months although they are not yet fully-utilized. Also, she tends to substitute interdentials for the alveolar consonants, [t], [d], [s], [z] and [n]. Liquids are on their way to full development, particularly a retroflex [r]. The following is the representation of Erika's vowel chart.

Fig. II. 2 Vowel Chart of Erika at Two-and-a-half Years Old

	Front	Central	Back
High	i ɪ		u ʊ
Mid	e ɛ	ə	o ɔ
Low	æ	ʌ	a

Erika completed her English vowel chart by acquiring a low front vowel [æ] as evidenced in the title of this paper: "(It)'s Gween *man* [mæɪn]" (6/4). This does not mean, however, that she invariably articulates required vowels in the correct manner. Oftentimes, vowels are switched, especially tense and lax pairs; [i] v. [ɪ], [e] v. [ɛ], [o] v. [ɔ] and [u] v. [ʊ]. Also, when she mumbles, her pronunciation is sometimes not clear enough for the author to decide which vowel is actually being articulated.

III. PHONOLOGICAL PROCESSES

Since Erika's spontaneous production is not made at random, there are some consistent overall patterns of phonological deviations from the model of adult speakers and audio-visual aids. As in the last research, this paper draws mainly upon Ingram's (1986) study for the format of presentation and many terminologies. The following four major categories for phonological processes are observed in Erika's speech: 1) substitution, 2) deletion, 3) epenthesis, and 4) assimilation. An additional category, 5) other phonological developments, has been added to present miscellaneous observations.

1. Substitution processes One well-known phonological process exhibited by L1 is stopping in which mainly fricatives are replaced with a stop consonant. Ingram (1986: 225) quotes from earlier works and cites examples from English (e.g., *sea* [ti:], *say* [t^hei]), French and Hungarian. Erika does not exhibit this English phonological process, but the voiceless alveolar fricative [s] is usually replaced by an interdental [θ] in her speech (e.g., *see* [θi], *sit* [θit]). The only possible examples of stopping in her speech would be *leaves* [wip(θ)] (3/30), in which a voiced fricative becomes a voiceless stop, *alphabet* [apabet] (4/19) in which a voiceless fricative changes to a voiceless stop; and *you* [bu] (4/3) in which a glide changes to a voiced stop. These are, however, more or less sporadic and isolated examples. The following are more productive substitutions that are worth noting.

1.1. Fronting. Velar and palatal consonants are replaced by alveolar consonants.

sleeping [θipm] [(4/1); *swing* [šwɪn] (4/11); *strong* [θtɔn] (4/19)

Fronting is one of the more common phonological processes among very young language learners, but Erika's productions are limited only to nasal changes. When she was asked to repeat a Japanese word *ohagi* [ɔhaŋi] by the author, she articulated the word as [hanɪ] with fronting as well. Generally, the stops [k] and [g] and a fricative [s] are also very often fronted to [t], [d] and [s] respectively among very young speakers, but her examples show no deviations as such; e.g., *cooking* [kukɪŋ], *good* [gut] and *shoes* [šuθ].

1.2. Gliding. A glide is substituted for a liquid.

[r] → [w]: *red* [wɛd] (4/1); *run* [wʌn] (3/12); *Rubber Ducky* [wawadʌki] (5/29);
roll [wo] (1/14); *hurry* [hʌwi] (2/21); *mirror* [miwʌ] (12/30); *zero*
[θiwo] (5/22); *toothbrush* [tu bwaš] (4/3)

[l] → [w]: *leaves* [wip(θ)] (4/1); *pillow* [piwo] (1/18); *clean* [kwɪn] (6/9); *blocks*
[bwɔkθ] (4/9); *Olivia* [wiwʌwʌ] (7/15)

[l] → [y]: *lady* [yɛdi] (7/18); *yellow* [yɛyo] (3/11); *Guy Smily* [gai θmɛyi] (4/19)

The definition of gliding is more generalized in this paper than in the last research, in which only the retroflex is replaced by a glide [w]. The liquid [l] was formerly either deleted (e.g., *blocks* [bakɪθ]) or replaced by another consonant (e.g., *hello* [hadu]). In

addition, at that time there were no words recorded which began with <l>. Gliding is not always a mandatory process for Erika, but more and more lexical items appear to be undergoing this phenomenon. The pronunciations of the words *grandma* and *Sherry* were formerly [gΔmΔ] and [šɛdi] respectively, but *grandpa* [gwΔpΔ] and *Sherry* [šɛwi] with the glide [w] were recorded on 4/21 and 4/1 respectively. Apparently, the pronunciation of liquids may roughly undergo the following stages of development :

- 1) a liquid is deleted or a substitute consonant is used,
- 2) a glide is frequently used as the substitute,
- 3) the "color" of a liquid appears and
- 4) full liquid develops.

This is merely a hypothetic model of general tendency and a speaker could bypass any stage depending on the development of a particular word or its phonetic environments. At present (9/22/90) many examples of Erika's pronunciation of [r] are in stages 3) or 4) and her pronunciation of [l] still in 2);

e. g., <i>giraffe</i> [jraf] (10/21/89)	→ [jiw/raf] (9/22/90),
<i>Sesame Street</i> [θitič] (12/21/89)	→ [θɛθa θtrit] (9/19/90),
<i>clock</i> [kak] (10/21/89)	→ [kwək] (6/00/90),
<i>hello</i> [hadu] (11/4/89)	→ [hawo] (8/00/90).

1. 3. Vocalization. A vowel replaces a syllabic consonant.

apple [apu] (4/1); *careful* [kɛθfu] (1/14); *button* [bati] (12/29); *pencil* [penθɔ] (2/00)

The first three pronunciations have remained constant since the last investigation. Since Erika has not shown any sign of a liquid [l] in any position of a word, it seems reasonable to conclude that all occurrences of syllabic [l] at the end of a word are vocalized. The syllabic [n], on the other hand, does not always undergo this process. For example, the word *button* [bati] mentioned above became [bantə/n] on 3/16 and 3/30 by acquiring the final [n].

1. 4. Vowel substitution. A vowel is replaced with a different vowel.

alphabet [apabet] (4/19); *stamp* [θtamp] (4/4); *stand* [θtant] (4/4); *black* [buak] (4/1); *telephone* [tafon] (2/21); *teddy bear* [tɛbaba] (4/29); *Big Bird* [bi/ibət] (4/22); *lady* [yɛdi] (7/19); *gone* [gɔn] (4/4)

As mentioned earlier, Erika acquired the low front vowel [æ] but continues to substitute a low back vowel [a] for the front variety in many words. Also, the mixing of tense vowels with lax ones exists and generally it is not predictable. But it is also true that the approximation of many of her vowels improved to the extent that words containing them could be recognized without much difficulty by this author: e.g., *Big Bird* [bi/ibət] (4/22) was formerly pronounced [bɔbɔt], and *car* [ka] and *cow* [kau] were articulated before as [kɔ] and [ko] respectively. In addition, her schwa ([ə]) tends to occur far more often in the correct environment; e. g., *elephant* [ɛfənt] (4/1), *thirsty*

[fəθtɪ] (5/4), *sure* [suə] (12/31).

1.5. Consonant substitution. A consonant is replaced by another consonant that has the same or a similar articulatory position. Consonant substitution is the term chosen by this author.

[s, z] → [θ] : *oops* [ɔpɪθ] (1/4); *pencil* [pɛnθɔ] (3/30); *Alice* [aθɪθ] (6/2); *slide* [θaɪt] (4/4); *flakes* [fekθ] (4/16); *close* [koθ] (2/11); *Zip-A-Dee-Doo-Dah* [θɪpɪduda] (3/30); *zero* [θɛwo] (1/18)

[θ] → [f] : *thirsty* [fəθtɪ] (5/4); *mouth* [maʊf] (3/30); *three* [fi] (6/2)

[t] → [č] : *tissue* [čišu] (3/25); *street* [θtič] (12/28)

[l] → [n] : *Telly* [teni] (12/29); *lion* [nani] (7/00); *Little Bird* [nɪtʊbəʔ] (7/00); *lamb* [nam] (3/00)

This category, consonant substitution is a tentative grouping to account for certain regular substitutions in Erika's speech. Since Erika does not have control of the alveolar fricatives [s] and [z], she regularly replaces these with a voiceless interdental variety [θ] except for *swing* [šwɪn] (4/11) and *sausage* [šəʒiθ] (7/00).

Another regular substitution is a labiodental fricative [f] in place of the interdental equivalent [θ]. When she was asked to repeat the words *this* and *that* with a voiced interdental [ð] by the author, she also produced the labiodental equivalent [v].

There exist only a few examples of the substitution of palatal affricate [č] for the alveolar stop [t]. The word-final [t] in many words is now pronounced with her interdental variety of [t].

Erika has not successfully pronounced a single word with [l] so far. As indicated earlier, the liquid undergoes gliding, but it also changes less commonly to a nasal [n]. The phonological environment for this change is not always predictable, but [l] followed by a low vowel [a] seems to change more consistently to [n]. There is a single example of the change of [l] to [ŋ] in the word *dolly* [daŋi]. This may be an isolated and semifossilized example, because the phonological change is not productive and Erika's pronunciation for this word has not been changed since her early utterance of the word.

2. Deletion processes

There are some consonants that are acquired relatively later than others. Liquids [l] and [r] are well-known examples. As referred to earlier, Erika's production of liquids is undeveloped or an example of under-development. Therefore, it is plausible that she avoids and eliminates such sounds because of their difficulty.

Also it is often the case that children delete a consonant to reduce a consonant cluster. They may further eliminate a larger linguistic unit as a syllable or even a word. Simplifying a syllable structure and, eventually, their utterance seems to be closely associated with children's limited competence of production of certain sequences of sounds. The following are examples of such deletions commonly observed in Erika's speech.

2.1. Deletion of consonants.

2.1.1. Deletion of liquids.

A liquid [l] or [r] is deleted.
elephant [ɛfant] (2/17); *alphabet* [apabet] (4/19); *telephone* [tafon] (2/21);
blue [bu] (4/1); *close* [koθ] (2/11); *flakes* [fekθ] (4/16); *sleeping* [θipɪn] (4/1);
orange [onč] (3/14); *corn* [kɔn] (4/16) *drum* [dʌm] (2/17)

This is a case of the deletion of sounds difficult for Erika to articulate. Nevertheless, as previously mentioned in terms of gliding, her pronunciation of liquids in many words has begun to approach that of glides in terms of articulatory points and manner of articulation. The greater the number of liquids she articulates as glides the fewer the number of lexical items included under **deletion of liquids**. Eventually this category will cease to exist.

2.1.2. Cluster reduction.

“A consonant cluster is reduced to a single consonant”
 (defined by Ingram, 1986).

C + [l] : *please* [piθ] (6/27); *close* [koθ] (2/11); *flakes* [fekθ] (4/16); *flowers* [fədðθ] (1/11); *sleeping* [θipɪn] (4/1); *slide* [θait] (4/4)

C + [r] : *try* [čai] (1/1); *truck* [čak] (1/3); *train* [tɛɪn] (1/10); *drum* [dʌm] (2/17);
frog [fɔk/g] (1/1); *three* [fi] (6/4); *street* [θtič] (12/28); *strawberry* [θtɔbebi] (3/14)

C + nasal : *monkey* [mʌki] (3/12); *Snuffy* [θafi] (1/3); *monster* [maθɔr] (6/5); *kangaroo* [kɛwawu] (6/5); *orange* [ɔči] (1/3); *don't* [dɔn] (5/14)

Since more and more liquids in the structure, C + liquid are undergoing gliding, deletion of this type is naturally less often performed.

As a general rule, an alveolar nasal consonant, [n] did not appear as frequently in the last research, but many words with the nasal are more correctly approximated in this study; e.g., *hand* [hɛnt] (formerly [haθ]), *blanket* [b(w)ankɛt] (formerly [bakɛt]). Therefore, deletion of a nasal in the structure of C + nasal (or nasal + C) is comparatively less frequent in occurrence. The general pattern of deletion of this structure seems to be a deletion of the nasal rather than of the preceding or following consonant. The last example, *don't*, appears to be an exception to this pattern. But this last phenomenon may occur because [t] is in word-final position and, hence, not pronounced.

The combination *st* (pronounced [θt] by Erika) is another high frequency consonant cluster in Erika's speech, but it is usually pronounced without deletion: e. g., *strawberry*, *street*, *stamp*.

2.1.3. Deletion of unstressed syllable.

An unstressed syllable (cluster) is deleted, especially if it precedes a stressed syllable (see Ingram, 1986).

Locomotion [muši] (1/4); *potato* [teto] (4/29); *Zip-A-Dee-Doo-Dah* [θɪpɪduda] (3/30); *inhalation* [ešɔn] (5/6); *tomatoes* [metoθ] (4/4); *butterfly* [bʌfai] (7/8)

When this deletion takes place, a stressed syllable is usually never eliminated but the immediately neighboring syllable is usually missing. This may be because these syllables,

being unstressed or reduced are difficult to hear and, hence, to reproduce.

2.1.4. Deletion of a word. A word (or a large portion of a word) is deleted from a longer linguistic unit.

Happy to you! [hapi tu yu] (5/17)

This is the only example recorded in my data for the present paper, and is Erika's attempt to reproduce "Happy *birthday* to you!". The mechanism of this deletion seems different from that of the unstressed syllables discussed immediately above. The supposed full utterance here simply seems too long for a young child to remember or pronounce in a single breath. In the last paper there were three examples under this category, but all of those missing words are now fully or almost fully pronounced: *Big Bird* [bi/ibət]; *Cookie Monster* [kuki maθtə]; *Sesame Street* [θeθaθtič]. It appears likely that Erika will soon produce "Happy birthday to you" in full, especially because she knows the word *birthday*.

Deletion of final consonants is recognized as a very common phonological process and is defined as follows: "A CVC syllable is reduced to CV by deleting the final consonant (Ingram, 1986)". In the last research Erika exhibited a number of examples of this change including *five* [fai], *ten* [tɛ/i] and *fourteen* [fɔti]. Over the last six months, however, she has added so many final consonants that her file does not include a single example of a deletion of that kind; *train* [ten] (1/10), *chicken* [čikin] (1/19).

Some examples may seem to suggest final consonant deletion. For example, the pronunciation of *zipper* [θipə] (7/00) does not include the final consonant. But this is not mainly a word-final consonant deletion, but because the sound [r] itself has not been acquired fully and is consequently subject to deletion.

3. Epenthesis processes

Epenthesis is the addition of sounds to a syllable structure, and this process facilitates children's pronunciation of consonant clusters. Epenthesis is closely related to deletion, both processes restructuring a syllable structure. The former, however, is much less commonly observed in children of this age.

Epenthesis of vowels. A vowel is added or inserted to break a CC syllable structure.

box [bakɪθ] (7/5); *oops* [ɔpiθ] (1/4); *eggs* [ɛkɪθ] (1/3)

The high front lax vowel [ɪ] is inserted between two voiceless consonants and becomes phonetically voiceless. However, some other words that provide the same phonetic environment exhibit less prominent or no epenthetic phenomena: *flakes* [fekθ], *stops* [θtapθ].

4. Assimilatory processes

Altering one segment of a word to resemble another in terms of voicing or place of articulation is assimilation. Children may be able to pronounce almost every phoneme of their language in isolation, but some particular phonetic arrangements may prompt an assimilatory process. Erika exhibits the following assimilations.

4. 1. Devoicing.

- Consonants tend to be devoiced at the end of a syllable or a word.
- Stops : *Bob* [bɔp] (12/31); *red* [wɛd/t] (4/1); *outside* [aɪθaɪt] (6/27); *slide* [θaɪt] (4/4); *stand* [θtant] (4/4); *dog* [dɔk] (1/1); *frog* [fɔk] (1/1)
- Fricatives : *leaves* [wɪpθ] (4/1); *fingers* [fɪŋgənθ] (7/00); *songs* [θɔnθ] (4/22); *eggs* [ɛkɪθ] (1/3)
- Affricates : *orange* [ɔtʃi] (1/3)

Some lexical items show both voiced and devoiced alternatives in word-final position. This list is far from exhaustive, but stops and fricatives appear to be most common with the word-final [z] consistently devoiced.

4. 2. Consonant harmony.

- A consonant assimilates to a preceding or following consonant in terms of manner and/or point of articulation or a new assimilated consonant is added in a preceding or following syllable.
- Progressive : *hungry* [hʌŋgwin] (6/2); *fingers* [fɪŋgənθ] (7/00); (Jpn) *onbu* [ɔmbun] (6/28); *strawberry* [θtɔbebi] (3/14)
- Regressive : *teddy bear* [tɛbaba] (4/29); *quiet* [kwʌtɛt] (7/15); *Alice* [aθiθ] (6/2); *coconut* [kɔnɔnəθ] (2/23); *button* [bantən] (3/16); “*Hop on Pop*” [pɔpənpɔp] (7/00)

The terms progressive and regressive refer to the direction of the assimilation. Especially noteworthy is the frequency of **nasal assimilation**. An interesting difference between the last research and the present study is that in the former nasal assimilation occurs on adjacent phonemes in a consonant cluster (e.g., *Ernie* [ɛnni], *onbu* [ɛmmɔ]), whereas in the latter such nasalization occurs in non-adjacent phonemes.

4. 3. Duplication.

- A CV syllable structure is copied to make an adjacent identical CV structure.
- Rubber Duckie* [wawa dʌki] (5/29); *Olivia* [wiwʌwʌ]; (7/15); *swing* [θiwawa] (1/14); *temperature* [tɛpʌtʌ]; *penguin* [pɛnpɛn] (3/20)

Children seem to be fond of duplicating a syllable to make a word rhythmical and to ease its pronunciation. The duplication in the first two examples does not appear to copy any existing sounds, but, obviously, those liquids undergo gliding, and those glides are duplicated.

There were two examples of duplication in my last paper : *paper* [pepe] and “gogo” [gogo]. The first word is now pronounced as [pepə], which is one step closer to the adult model. The second word is now a “family word” for indicating a particular kind of mixed juice (see Yamazaki, 1990 for the explanation how this word evolved), and her parents also use this expression as a model. Therefore, the word is not considered as a duplication of the syllable “go” any longer.

5. Other phonological developments.

Metathesis is a process in which two phonological segments are interchanged. An example from the previous data is Erika’s pronunciation of *sausage*, [ʃaʃiθ] (7/00). She

also spontaneously pronounces the word *mask* as [makθ] interchanging two consonants [θ] and [k] (12/29). She also exhibits metathesis in her pronunciation of the word *kitchen* [čiki] (1/4) as repetition of a parent model. No other examples of metathesis were recorded.

Another phonological and also functional problem is that Erika exhibits **identical pronunciations** of different lexical items. For example, the word *English* in the phrase "Hello to English," (title of a TV program) and the word for a machine for *inhalation* are both pronounced [ešən]. I believe that this pronunciation is the outcome of the deletion of unstressed or secondarily-stressed syllables before the subsequent primary stress syllable in the word *inhalation*. Subsequently, she started to watch the TV program mentioned above and generalized the pronunciation of inhalation to that of *English*. Also, the word *telephone* and a Japanese word *tofu* are sometimes pronounced identically, the same pronunciation, [ta/ofu], existing for both. Similarly, the word *open* [ob/pn] and the Japanese *onbu* were once identically pronounced. This appears to be the result of forgetting the pronunciation of *onbu* due to disuse. An identical pronunciation appears for a non-spontaneous word as well. Her family name *Yamazaki*, formerly pronounced as [θaki] is now repeated as [wawadaɰki], which is the same pronunciation as that of *Rubber Duckie*. The pronunciation of the last letter of the alphabet, *Z*, remains unchanged as [θi/ɪpə] (1/1) and collides with the word *zipper*. Generally speaking, however, identical pronunciations of different phonological forms gradually begin to diverge, approximate and finally match their adult models. For example, the words *banana* and *bread*, now pronounced respectively [banana] and [bwəd], used to share the same monosyllabic pronunciation, [ba].

IV. SUMMARY

This paper represents a continuing investigation of the language development of Erika Yamazaki, age two and a half years old, acquiring English as L1 in Japan. Erika clearly shows evidence of language development since the first study. First of all she has acquired new sounds; the interdental voiced fricative [ð], velar nasal [ŋ] and front low vowel [æ]. Secondly, she shows a pronounced tendency to glide liquids and has acquired words with initial <l> in the last six months. Thirdly, she enunciates many vowels more distinctively and exhibits less neutralization among the members. Finally, she exhibits less avoidance of the pronunciations of consonant clusters due to the gliding process.

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