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Japanese-Acquiring Children's Self-Initiated Self-Repair of Speech in Conversation with their Parents

日本語獲得児の親との会話における自発的自己発話訂正

著者は先行研究において (Kubota 2020)、日本語獲得中の子どもが2歳代から4歳代での親との自然会話において、発話中の誤りを親から訂正される内容・頻度のほか訂正への反応を調査した。使用したデータは子ども発話コーパスCHILDES (MacWhinney 2000; Oshima-Takane, MacWhinney, Shirai, Miyata, & Naka 1998) に収録された日本語ファイルのうちMiiPro Corpus (Miyata & Nishisawa 2009, 2010; Nishisawa & Miyata 2009, 2010) に収録されている子ども4名 (Arika, Asato, Nanami, Tomit) と養育者との自然対話であった。結果的には、子供の誤りを大人が指摘して大人が修正することは他言語の研究よりも頻度が著しく低く、親が訂正する子どもの誤用は音韻的原因や語彙的要因・文法的原因において顕著であったが、大半の子どもの誤用に対して親はその発話意味や意図を理解して訂正しないで、あるいは確認しながら正用に言い換えて対話を続ける傾向が最も強かった。また、子どもは親からの誤りを指摘されたり聞き返されても、訂正せず会話を続ける傾向が強く、親の示した正用を真似て言い直しても直後に再び誤用を言う傾向があった。

このように子どもの発話が訂正されない確率が高いとすると、生後数年間で (主に小学校就学までに) 母語となる言語の文法体系の根幹知識を理解できず、その知識を同じ言語を母語とする話者と共有できないことになり、母語としての言語知識の習得が説明できないことになる。では子どもは自分がおかした誤りに気づいた場合、自己の言語運用が獲得中の母語の文法ルールに合わないと思われる場合はどのように、どのくらいの頻度で、どの部分を訂正するのか。この疑問点から、本研究では先行研究 (Kubota 2020) と同じデータを用いて子ども自身の発見による自己発話の訂正がどのようにどのくらいの頻度でなされたかを検証した。

主な結果として、こどもの自己発話訂正は先行研究 (Kubota 2020) にある親による子どもの発話訂正よりも多かったが、子どもの総発話ターン数で見ると6%以下であった。発話訂正の方法では発話の一部の言い換えが最も多く、年齢とともにその傾向が強まった。次いで繰り返すと大幅な変更が子供や月によって2番目あるいは3番目に多かった。タイプ別に見ると、発話の一部の言い換えでは主に音韻的要因によるものが大半を占め

た。これはまだ4歳代までは調音器官が未発達であるため子音の構音が円滑にできないことが主な要因とみられる。また、発話の一部の言い換えでは音韻的要因に次いで語彙的要因が多く、特に「これ」「この」などで直示してからすぐに対象指示物に置き換える傾向があった。次いで多かった形態・統語的要因では、動詞の活用形や格助詞の訂正が多く見られた。発話全体あるいは一部を繰り返す訂正では、多くの語や複雑な統語構造からなる長い発話を一度に言うのは幼児には困難であるため、ある語句を繰り返しながら次に言う内容を考え、繰り返して勢いをつけて発話を継続するために思い浮かんだ語を発するという助走をつけるような話し方がみられた。また、ある表現を繰り返しながらそれに該当する行動をとりつつ動作や順序を確認することもあった。他の訂正の方法として、内容や語彙を改訂する大幅な変更には、訂正前の発話から単語を削除あるいは追加したり、詳しい内容など補足説明を加えることがみられた。他にも、「あのね」「あのう」などのつなぎ語の使用が2歳代から見られ、繰り返しに見られたような助走的な役割をしており、自己発話の訂正に相手の注意を引きながら言いたい内容を考える時間稼ぎとしてつなぎ語を用いているのも特徴であった。

結論として、子どもがみずから発話を修正する頻度が極めて低いことは、母親が子どもの誤りを訂正する頻度も極めて低いことから、子どもは自分の発話が誤っていることが気づかずに会話を進めていることが主な原因であるとみられる。語彙的要因と形態・統語的要因とは異なり、音韻的要因の修正では、会話相手 (母親) に意味内容や意図を理解してほしいための発話訂正というよりもむしろ構音やり直しをするのが主な目的とも考えられるが、自己発話訂正がより対人的に聞き手を意識して、よりの確に迅速に行えるようになるのは、調音器官の発達がほぼ整い語彙や統語構造やつなぎ語の使用が進む5〜6歳以降になると予測される。

1. Introduction: Outlines of a sequence involving repair in conversation analysis

Repair or speech correction¹ is a highly organized, problem-solving practice, as posited in conversation analysis (CA) based on adults' mutual interactions (e.g., Hayashi, Raymond, & Sidnell 2013; Schegloff, Jefferson, & Sacks 1977). In CA, a repair process is basically in the "side sequence" (e.g., Jefferson 1972; Schegloff, Jefferson, & Sacks 1977), in which talking on a specific topic is suspended until the communication problem is solved. In general, repair is organized in the conversation as follows: First, one speaks with a trouble source, such as mispronunciation, incorrect word choice, and unintelligibility.² Second, either one of those in conversation detects the trouble source. Third, either one initiates the repair; the other participant in the conversation initiates it by repeating the trouble source with rising intonation, asking confirmation questions, requesting clarification, merely showing a puzzled look, and so on. Fourth, either one repairs the source of the trouble. Finally, both return to the original sequence and resume talking on the original topic. In the third stage, as argued by Schegloff et. al (1977), other-initiated self-repair is made when the turn to speak moves from one (i.e., self) to the other and returns to one, while self-initiated self-repair can be done within one's turn.³ This study does not strictly follow the tenets and techniques of CA, but it applies some of its basic principles to explain young children's self-initiated self-repair in interactions with adults.

2. Previous studies on adult-initiated adult- and child-repair

Researchers of language acquisition, in particular nativists (e.g., Chomsky 1981; Pinker 1984), regard other-initiated other-repair by adults as a trigger for a child's resetting of the acquired grammatical rules. Although adult input sometimes contains errors and is meager, it should provide a child with direct negative evidence of ungrammatical rule applications. This view is supported by Saxton (1997) with the "contrastive hypothesis" (p.224): when adults show correct forms in grammar, children perceive them in contrast to their incorrect forms and choose the former. Saxton tested the contrastive hypothesis of 36 five-year-old children's English acquisition. When they made errors in six novel and irregular, past tense forms, adults stated their correct forms immediately. Consequently, children reproduced correct forms more often than incorrect ones. This input of negative evidence seems to have worked effectively on children's reanalysis of grammar. Saxton (2000) also tested the contrastive theory on three English-acquiring children from 1;6⁴ to 5;0 in the Brown corpus (1973) of the CHILDES database (MacWhinney 2000) by comparing the negative input with positive input and adult follow-up moves. It was found that the children reproduced adult correct forms following negative evidence and negative feedback more frequently than positive input and follow-up moves. These studies show that negative evidence presented in adult-initiated adult-repairs should enable English-acquiring children to correct their rules to attain the grammatical level of adults.

Schegloff, Jefferson, and Sacks (1977) indicated that in children's conversations, other-initiated self-repairs are more prevalent than self-initiated self-repairs. In the case of the former, Chouinard and Clark (2003) studied monolingual English- and French-acquiring children from 2;0 to 4;0 and argued that about two-thirds of their errors in phonology, morphology, lexicon (i.e., word choice), and syntax are assumed to have triggered adult-initiated child-repairs rather than adult-initiated adult-repairs. Adults reformulated children's errors through confirmation and clarification questions with even frequency for all children and both languages. The children tended to repeat or admit such

reformulations, although more than half of the errors were left uncorrected, followed by the children's bare continuation of talking.

However, several studies on adult-initiated child-repairs have pointed out that children do not necessarily repair their speech upon adult initiation. For example, Kulinich, Royle, and Valois (2014, 2019) conducted four different elicitation tasks (i.e., correction, clarification questions, repetition, and none) on Russian-acquiring three-year-old children's errors in verb inflections and found no significant difference in these feedback types and no efficiency. Kubota (2010) examined five monolingual English- and Japanese-acquiring children's speech from 2;4 to 4;11, focusing on the following parental initiations: non-specific clarification requests (e.g., *Nan te?* "Pardon?" and *Ha?* "Huh?") and specific clarification requests (e.g., *Dare ga?* "Who (did you say)?" and *Doko te?* "Where (did you say)?"). Three English children and one Japanese child most likely repeated what they had said, while another Japanese child most likely repaired her speech by adding contextual information. Kubota argues that these individual differences depend on how the children understood parent-initiated repairs, either as simple rerun requests or as backchannels, that is, listening signals for floor holding. These findings suggest that these clarification requests "signaled communication failures rather than implicit negative feedback for wrong forms" (Kubota 2010: 77). Furthermore, to analyze the effects of negative input on grammar revision, Kubota (2020) compared mother-initiated mother-repairs of four Japanese children's errors with their responses to their mothers' repairs from 2;0 to 4;11. The children mostly corrected phonological and phonetic errors, especially the codas at the beginning of words, followed by morphological and syntactic errors by changing transitivity and inflection, adding words, and changing word order. However, such error corrections were rare. Despite maternal initiation, the children moved most frequently without repairing themselves. Moreover, in most repair opportunities, mothers did not initiate or make the children's repairs when they understood children's intentions. Thus, Kubota argues that the negative evidence posited by nativism in this case was too meager and ineffective. Thus, with the low frequency of adults' initiation, children are rarely given an opportunity to find their errors and the method to correct these errors.

3. Previous studies on adult- and child-initiated child-repair

According to previous studies, both adults and children prefer self-initiated self-repairs to other-initiated other-repairs (Clark 2014; Schegloff, Jefferson, & Sacks 1977). Self-initiated self-repair is equivalent to "spontaneous self-repairs" (Zigları & Ozfidan 2016: 52), since without the other's elicitation, one spots a trouble in one's speech and attempts to solve the problem by keeping the speaking turn. In doing the task, children's spontaneity to clarify their intentions seems to help them employ metalinguistic operations in speaking. One example is Laakso (2010), who examined the development of self-initiated self-repairs in Finnish children. Before two years of age, they changed words or pronunciations after abruptly cutting off their speech. At around two years of age, they began to employ more syntactically complex repairs, such as word additions and replacements, in addition to speech act changes (e.g., from telling to asking). After three years of age, these children's self-initiated self-repairs became more elaborate, except that Finnish lexical particles for repairs were not fully uttered in their turns. At around four years of age, their self-initiated self-repairs became quite similar to those of adults, including the repair of lexical particles and both grammatical and interactive changes.

Some research has shown that child-initiated child-repairs become frequent in contrast to other-initiated other- and child-repairs. For example, as observed by Forrester (2008, 2015), an English-acquiring child from 1;0 to 3;6 produced self-initiated self-repairs more frequently than other-initiated self-repairs, especially when adults did not focus on her. Her self-initiated self-repairs at 1 and 4 were

statistically more predominant than mother-initiated self-repairs. The child repaired herself to draw the other's attention and request. By 2;5, she repaired herself to clearly ask questions, tell a story, and work in relation to social status and positioning. Before her third year, she merely repeated or changed an initial sound, especially when her listener showed no reaction to her initial utterance, in addition to associating other words with the sounds produced by her. Her sensitivity to grammatical form became clear, monitoring others' talking about the trouble source in her speech, employing mutual gaze upon self-repair, and then coordinating self-repair with her actions. By her fourth year, her self-repairs grew future-oriented in showing and telling an object that she wanted to use. Similarly, in Salonen and Laakso (2009), a Finnish young child's self-initiated self-repairs occurred more commonly than other-initiated self-repairs, as the ability of self-repair depended on skills of sound/utterance alteration, repetition, conversation monitoring, orientation to self-positioning in discourse, and sensitivity of the other partner who does not respond. Furthermore, Finnish children in Laakso (2010) made self-initiated self-repairs in the same turn more frequently than other-initiated self-repairs as they neared 2;6. Before that age, their parents frequently repaired children's speech, "which may have enhanced the emergence of the first self-initiated self-repairs by the children" (p.95).

However, some studies have provided mixed results. For instance, Forrester and Cherington (2009) found that an English-acquiring child from 1;0 to 3;10 made other-initiated self-repairs more often than repairing others, as she developed the skills to appropriately respond to the listeners. Ziglari and Ozfidan (2016) examined Persian-acquiring three-year-old twins when adults repeated a problematic word with rising intonation, asked for clarification, and reformulated the problematic word to offer a model. While adult-initiated adult-repairs declined with increasing age, adult-initiated child-repairs and child-initiated child-repairs became more frequent.

Despite mixed results, these findings show that without receiving explicit error detection or correction by others, young children should gradually become capable of analyzing their own linguistic performance from an objective and metalinguistic viewpoint to satisfy their needs, clarify their meaning to their partners. Thus, children's growing metalinguistic awareness seems to reflect their linguistic reanalysis and developing meta-communicative awareness with social and interpersonal motivation to exchange messages effectively and meaningfully. To achieve mutual belief and understanding, children gradually become capable of reflecting on their language use with growing knowledge of language, reviewing what to say, and finding an appropriate method of clarifying it for others. On interpersonal grounds, as posited in the theory of mind (Doherty 1999), at around three years of age, children begin to learn that their viewpoints can differ from others' and to think about why they differ. This self-to-other perspective shift (Tomasello 1999) and metalinguistic awareness work in conjunction and gradually enable children to initiate and repair themselves.

4. Questions and hypothesis

Chouinard and Clark (2003), as was mentioned in Chapter 2 above, found that two-thirds of errors of English- and French-acquiring children were notified and corrected by adults, concluding that adult reformulations worked for negative evidence and effective learning of grammar. However, although Chouinard and Clark asserted that more than half of the children's errors were reformulated by adults, two of the three English-acquiring children and both French-acquiring children most frequently continued conversations with no response to the repairs. In Kubota (2020), similar results were found among Japanese dyads. Kubota found that all Japanese mothers repaired less than 50 percent of child errors, thereby arguing that maternal repairs hardly ever worked as negative evidence for the children to notice and correct errors and reanalyze their grammar. Contrary to previous research, such as the contrastive theory by Saxton (1997, 2000) given in Chapter 2, Kubota's finding of the sparseness of

adult-initiated adult-repairs suggests that if adults rarely give negative evidence or feedback, children may not consider their language use as incorrect. Thus, it is assumed that the Japanese children in Kubota performed self-initiated self-repairs far less often than the children in the studies reviewed in Chapter 3. Most of the reviewed studies focused on children's grammatical development through repairs rather than on their communicative development. However, the ability to relate language use to grammatical correction and successful communication reflects a growing metalinguistic awareness. Possibly, children repair themselves not for the correctness to say something, but for the willingness to add to the topic and observe the listener's reaction.

For these reasons, as a follow-up study of the same data used in Kubota (2020), in this study, I explore the following:

1. How often did the children initiate and repair themselves while receiving scant repairs from their mothers?
2. How do children detect their errors or the seemingly uninformative parts and repair these errors by themselves?
3. Are there any similarities and differences in repair patterns among the children and across different ages?

5. Data

This study used the same data as Kubota (2020) and the MiiPro Corpus (Miyata & Nishisawa 2009, 2010; Nishisawa & Miyata 2009, 2010). It is a Japanese longitudinal conversation corpus compiled into the Child Language Data Exchange System (CHILDES) database (MacWhinney 2000) and the Japanese version of the CHILDES (Oshima-Takane, MacWhinney, Shirai, Miyata, & Naka 1998). The MiiPro corpus consists of mother-child spontaneous speech data, most of which were audio recorded while the dyads were playing at home. Recording was performed weekly from 1;2 to 3;0 and monthly or bi-monthly from 3;0 to 5;0. Each recording lasted approximately 70 min. The following are the four children's data files used in this study:

1. Arika (female): 26 files were randomly chosen from each month out of the 55 total files for quantitative adjustment to the other datasets;
2. Nanami (female): 30 files (as with Arika) were randomly chosen from each month from 2;0 to 4;11 out of the total of 55 files for quantitative adjustment to the other datasets;
3. Asato (male): 38 files in total; and
4. Tomito (male): 31 files in total: 12 files were updated by Miyata and Nishisawa after I examined the original 19 files for Kubota (2020).

The age span of each dataset was chosen according to Kubota (2020). Children's conversations with others, rather than their mothers, were excluded from the data for a child-mother comparative analysis. I examined Arika's transcripts from ages 3;0 to 4;11 (Arika's data before 3;0 are not used in the analysis, as they are not transcribed or open to public), in addition to Asato, Nanami, and Tomito's transcripts from ages 2;0 to 4;11.

Table 1 presents the participants' average MLU (Mean Length of Utterances): the average number of morphemes per utterance (cf. Miyata 2012) at each stage.⁵ The children's MLUs differed widely from the mean at two years of age, except for Arika with no data ($N = 4$; $SD = 0.53$ at 2;0 – 2;5, and $SD = 0.80$ at 2;6 – 2;11), while their MLUs are close to the mean at three and four years of age ($N = 4$; $SD = 0.34$ at 3;0–3;5, $SD = 0.33$ at 3;6–3;11, and $SD = 0.32$ at 4;0–4;5, and $SD = 0.31$ at 4;6–4;11). However,

at two years of age, Nanami shows more precocity than Asato ($N = 2$; $SD = 0.79$). Their mothers were also close to each other in their MLUs ($N = 4$; $SD = 0.25$ for Asato's and Nanami's mothers from two to four years of child age; $SD = 0.44$ with Arika's and Tomito's mothers from three to four years of child age). Tomito's mother uttered a larger number of words, surpassing Asato and Nanami's in their MLUs from 2;0 to 2;11 ($N = 4$; $SD = 0.86$ at 2;0–2;5, $SD = 1.08$ at 2;6–2;11). However, at three and four years of age all the mothers' MLUs are found close to each other ($N = 4$; $SD = 0.48$ at 3;0–3;5, $SD = 0.25$ at 3;6–3;11, and $SD = 0.31$ at 4;0–4;5, and $SD = 0.14$ at 4;6–4;11), with individual differences becoming smaller. In sum, from two or three to four years of age, there were no significant individual differences in all participants' MLUs.

Table 1. Children's and Mothers' Average MLUs per Stage Through all MiiPro Sessions (Kubota 2020).

Age (year; month)	2;0-2;5	2;6-2;11	3;0-3;5	3;6-3;11	4;0-4;5	4;6-4;11
Asato	1.84	2.03	2.17	2.33	2.8	2.42
Nanami	2.77	3.58	2.54	2.72	2.84	3.07
Arika	N/A	N/A	2.91	3.04	3.34	2.82
Tomito	2.73	3.16	2.84	2.38	2.57	2.45
Asato's Mother	3.18	3.28	3.32	3.35	3.61	3.65
Nanami's Mother	2.96	3.00	3.14	3.07	3.19	3.72
Arika's Mother	N/A	N/A	2.87	3.06	3.02	3.97
Tomito's Mother	4.54	5.00	4.00	3.57	3.64	3.70

6. Data coding and repair categorization

The search engine KWAL (Key Word and Line) (MacWhinney 2019) helped collect children's self-repaired speech tagged with the following codes defined in the CHILDES transcription rules. The code [//] is mainly used for retracing, which occurs "when a speaker starts to say something, stops, repeats the basic phrase, changes the syntax but maintains the same idea" (MacWhinney 2020: 75-76) (e.g., *Kyoo* [//] *ashita iku?* "Are you going today [//] tomorrow?").⁶ The other is an ampersand: "Half-uttered words and phonological fragments are represented as an ampersand (e.g., "&okaa" as part of the word *okaasan* 'mother')" (ibid.: 47). "Disfluencies such as fillers, phonological fragments, and repeated segments are all coded by a preceding '&' " (MacWhinney 2016: 96; 2020: 47). However, these codes can have other meanings than retracting in spontaneous speech (e.g., playful and intensifying repetition, wholly onomatopoeic speech, singing, chanting, and reading). Such non-retracting coded parts, unintelligible parts, and codes [?], xxx, and yyy, in addition to the parts that are transcribed but acoustically incomprehensible and thus unanalyzable, were excluded from the analysis.

Child-initiated child-repairs were categorized into the following types:

1. Replace: Rarticulating or substituting for a word or a phrase with another;
2. Repeat: Repeating words or phrases. If it is repeated with prosodic prominence to intensify a part or an entire message, it is tagged as phonological replacing⁷; and
3. Reformat: Modifying by adding or deleting grammatical and semantic elements, but retaining what was originally meant.

Operations other than those mentioned above (e.g., switching to a different topic, giving up the turn, and stopping self-repair abruptly) were excluded from the analysis.

Schegloff *et. al.* (1977) distinguish between self-initiated self-repair and same-turn and sequential (comprising more than one turn) occurrences. My analysis is not based on this distinction, as I just focused on children's self-repairs within the same turn. If more than one repair pattern of the previously mentioned categories appears in the same turn, they are coded independently.

7. Results and discussions

7-1. Overall

Table 2 presents the number of child-initiated child-repairs in the total number of children's speaking turns at each age. The ratios show no outstanding individual differences, as they all lie below six percent at each age, with the highest of 5.74% observed in Arika from 4;0 to 4;5. No significant correlations were found between number and age (Arika, $r = 0.51$; Asato, $r = 0.61$; Nanami, $r = 0.41$; and Tomito, $r = -0.52$; $p < 0.05$). This suggests that, on average, out of 100 speaking turns, the children had merely a couple of times to initiate and repair their speech. Thus, children seem to have rarely repaired spontaneously at any age while talking to their mothers.

Table 3 depicts the total number of child-initiated child-repairs and mother-initiated mother-repairs. Mothers were far less likely to initiate and repair the children at any age because in most cases, they moved on without checking the children's errors and unintelligible parts, guessing what they meant depending on the context (Kubota 2020). There were no significant correlations between child and mother except for Tomito and Mother (Arika-Mother, $r = -0.29$; Asato-Mother, $r = 0.30$; Nanami-Mother, $r = -0.19$; and Tomito-Mother, $r = 0.98$)

Table 2. Number of Children's Self-Initiated Self-Repairs

Child Age (year; month)	Number of child self-initiated self-repairs / total of child speaking turns (ratio)					
	2;0-2;5	2;6-2;11	3;0-3;5	3;6-3;11	4;0-4;5	4;6-4;11
Arika	N/A	N/A	62/4683 (1.32%)	174/4952 (3.51%)	274/4768 (5.74%)	89/2942 (3.02%)
Asato	29/6032 (0.48%)	58/6605 (0.87%)	86/4247 (2.02%)	71/2838 (2.50%)	39/1776 (2.20%)	26/1840 (1.41%)
Nanami	46/2514 (1.82%)	108/3908 (2.76%)	83/3010 (2.76%)	80/2256 (3.54%)	67/2951 (2.27%)	75/2643 (2.84%)
Tomito	126/4585 (2.74%)	107/3893 (2.75%)	155/4561 (3.40%)	47/2200 (2.13%)	48/1573 (3.05%)	26/1600 (1.63%)

Table 3. Number of Child-Initiated Child-Repairs and Mother-Initiated Mother-Repairs

Age (year; month)	2;0-2;5	2;6-2;11	3;0-3;5	3;6-3;11	4;0-4;5	4;6-4;11
Arika	N/A	N/A	62	174	274	89
Mother	N/A	N/A	43	29	18	7
Asato	29	58	86	71	39	26
Mother	14	16	7	16	8	1
Nanami	46	108	83	80	67	75
Mother	28	19	3	3	0	0
Tomito	126	107	155	47	48	26
Mother	N/A	N/A	9	2	2	2

Notes: The data on mother-initiated mother-repairs is the sum of phonological, lexical, and morpho-syntactic repairs at each age in Kubota (2020). Tomoto's mother's data from 2;0 to 2;11 have not yet been investigated.

Table 4. Number of Children's Self-Initiated Self-Repairs

Age (year; month)	Type	2;0-2;5	2;6-2;11	3;0-3;5	3;6-3;11	4;0-4;5	4;6-4;11
Arika	Replace	N/A	N/A	45	115	177	60
	Repeat			3	33	54	9
	Reformat			14	26	43	20
	Total			62	174	274	89
Asato	Replace	21	43	62	49	25	21
	Repeat	5	11	7	10	5	3
	Reformat	3	4	17	12	9	2
	Total	29	58	86	71	39	26
Nanami	Replace	29	79	60	63	44	52
	Repeat	2	7	7	5	4	6
	Reformat	15	22	16	12	19	17
	Total	46	108	83	80	67	75
Tomito	Replace	75	57	88	34	36	18
	Repeat	31	34	39	5	6	5
	Reformat	20	16	28	8	6	3
	Total	126	107	155	47	48	26

Table 5. Types of Children's Own Replacements

Age (year; month)	Type	2;0-2;5	2;6-2;11	3;0-3;5	3;6-3;11	4;0-4;5	4;6-4;11
Arika	Pho	N/A	N/A	39	89	117	45
	Lex			3	21	50	11
	M&S			3	5	10	4
Asato	Pho	17	35	45	36	15	12
	Lex	2	7	15	11	8	8
	M&S	2	1	2	2	2	1
Nanami	Pho	22	49	41	47	31	34
	Lex	5	26	14	14	9	17
	M&S	2	4	5	2	4	1
Tomito	Pho	49	47	57	17	23	10
	Lex	22	9	24	15	12	6
	M&S	4	1	7	2	1	2

Notes: All the replacement operations were tallied and classified into three types: Pho = phonological, Lex = lexical-semantic, and M&S = morphosyntactic.

In Table 4, replacement was the most frequent repair by all children. In relation to age, this was statistically significant by one-way ANOVA (one-tailed, $p < 0.05$; Arika, $F(3,12)=6.45$; Asato $F(3,20)=16.94$; Nanami $F(3,20)=43.27$; Tomito $F(3,20)=9.51$). This suggests that with increasing age, children's replacement of sounds, words, or phrases became more frequent. While the second most frequent is reformatting in Nanami at all ages, it is repetitions in the other children, and the second and third most frequent types change depending on the children and ages.

7-2. Replacement: Phonological

Table 5 shows that at all the ages, children's replaced elements of their speech were mostly phonological. This tendency in each child was found statistically significant by one-way ANOVA (one-tailed, $p < 0.05$; Arika, $F(2,9)=8.14$; Asato $F(2,15)=14.56$; Nanami $F(2,15)=34.50$; Tomito $F(2,15)=10.05$). Overall, the children repaired pronunciation per se more often than prosody. However, other studies reveal contrary results. For example, Laakso (2010) argues that children tend to intensify prosodic

features (e.g., sonority, vowel length, and pitch) in their self-repairs to draw adults' attention and signal their misunderstanding. Keenan and Schieffelin (1983) elucidate that the listener's silence tends to trigger the child's self-repair: "absence of verbal response from the adults may count as a negative response for the child. ... silence on the part of a conversational partner may initiate a repair from the child. When the child does not get an immediate verbal confirmation, the child attempts to clarify the utterance (repair) through repetition." (Keenan & Schieffelin 1983: 89, parentheses the original). By contrast, the Japanese children almost always got immediate verbal responses from mothers, who paid attention to their behaviors by simultaneously playing with and manipulating toys. It thus seems that the mothers' attentiveness did not force the children to intensify prosodic effects triggered by emotional surges such as anger, irritation, and excitement.

Because the articulatory system of young children is still underdeveloped, these children seemed to have found it difficult to immediately adjust the positions and manners of articulation, although they could identify most sounds by hearing them. According to Ogura (2002), from three to four years of age, children are too young to control air flow through the palate in various ways, but ways of articulation develop substantially from three and a half to four and a half years of age, and it is not until four or five years of age that consonants such as /s/, /ts/, /dz/, and /r/ are correctly pronounced. Ogura adds that the ease of articulation depends on its visibility, articulatory movement, distinctiveness, and input frequency. Ito (1990) submits that child phonological errors are mainly due to neurophysiological underdevelopment rather than cognitive underdevelopment related to the form and meaning.

As shown below, children often had difficulty articulating consonants at the onset, although they successfully repaired and exchanged topic-relevant information with their mothers⁸:

Mother: Futa shinai hoo ga: 'You'd better not put a cover.'
 Asato: Uun 'No.'
 Asato: Koo yatte da, datchitai(dashitai) no.
 'I wanna take (partly uttered), take something out.'
 Mother: Sore:. 'Oh, that?'
 Mother: Tsukau bun dake daseba ii n da yo:. 'Just take out as much as you wanna use.'
 (Asato, File 30001.cha: line 1225)

Asato: Ko, kore ga warui yatsu na n da yo. 'This (partly uttered), this is a villain.'
 Mother: Kowai. 'That's scary.'
 (Asato, File 30918.cha: line 4473)

Mother: Kotchi kite kunnai to kakanai, Okaasan, moo.
 'I won't draw a picture if you're not coming here, Mom (myself), you see.'
 Nanami: Datte: (i)ya da:. 'Because I don't want to.'
 Mother: Nani kaku no? 'What are you gonna draw?'
 Nanami: Ko, kotchi kuru. 'Here (partly uttered), here I'm coming.'
 Mother: Nani kaku no? 'What are you gonna draw?'
 Nanami: Un. 'Hmm.'
 Nanami: Origi (onigiri) no kao kaite ! 'Draw the face of a riceball!'
 (Nanami, File 20807.cha: line 2257)

As seen in Asato and Namani, stop consonants (e.g. /k/, /g/, /p/, /b/, /t/, and /d/) can be difficult to pronounce at the beginning of the first word in the utterance. Kubozono (2003) argues that consonants articulated in the back of the mouth (e.g., hard and soft palates, larynx, and pharynx) tend to be

acquired later than those articulated in the front (e.g., lips and gums), and that the latter tends to be substituted for the former to pronounce obstruents. An example below shows that Tomito substitutes a dental alveolar /t/ for a velar /k/ in the verb *kaite*. Both /t/ and /k/ are voiceless plosives, but the latter should be articulated at the back of the oral cavity. At first, Tomito incorrectly copies /t/ and pronounces /tu/ but repairs to the correct articulation:

Tomito: Okaasan nani tatute, nani kaite ... (the rest is unintelligible)
 ‘Mom, what (are you going to?) draw...’

Mother: Ampamman kaite! ‘Draw Ampamman!’

(Tomito, File 20824.cha: line 2628)

It seems that young children sometimes have difficulty controlling airflow in articulation. Nanami substitutes the affricate /tʃ/ for the fricative /ʃ/ and repairs it to the latter. Both /tʃ/ in *oichii* ‘‘yummy’’ and /ʃ/ in *oishii* are voiceless alveolo-palatal consonants to be articulated at the back of the gum. Nanami does not seem to stop, but rather releases air through between the upper gum and tongue and misarticulate /tʃ/ for /ʃ/:

Nanami: Oichii, oishii desu ka? ‘Is it yummy, yummy?’

Mother: Oishii tte yo, minna. ‘It is yummy, everyone says.’

(Nanami, File 20418.cha: line 973)

As seen in Nanami, Ogura (2002) posits that although young children follow voiced-voiceless distinction, they are not adept at following manners of articulation (i.e., how to stop air flow) and thus adjust places of articulation in the mouth, such as the alveolar ridge for alveolar consonants /n/ /t/ /d/ /s/ /z/.

The children also failed to pronounce consonants between the other consonants. After the initial syllable /se/, Arika incorrectly puts /sa/ before /n/, probably to articulate /ta/ in the word *sentaku* ‘‘laundry’’ and repairs it, while the mother watches her do the laundry:

Arika: Kore mo sesantaku, sentaku. ‘This is also laundry.’

Arika: Kore osentaku. ‘This is laundry.’

Arika: Kore mo dekinai jan. ‘This is not ready(?)’

Arika: Yoisho kore osentaku. ‘Well, this is laundry.’

Mother: Un. ‘Yeah.’

Mother: Ja buun to yatte! ‘Then, turn on (the machine).’

Mother: Futa shimete! ‘Put the cover (of the washing machine)!’

(Arika, File 30002.cha: line 3747)

The next example shows that Nanami also tries out a word in multiple moras, but confuses the similar syllables /do/, /ko/, and /ro/, incorrectly inserts /to/ between /do/ and /ko/, and finally repairs the pronunciation, nearly overlapping the Mother’s repair:

Mother: Daidokoro deshita. ‘It was a kitchen.’

Mother: Reezooko koko kowareteru ne. ‘The fridge is broken, here.’

Nanami: Daidotokoro, daidoko? ‘(Mispronouncing) Kitchen, kitchen?’

Mother: Daidokoro. ‘Kitchen.’

(Nanami, File 20319.cha: line 847)

Both consonants and vowels in the middle of a word were not clearly articulated because of the ambiguity in phonological and lexical similarities, as given below:

(The child and mother connect cars to a train)

- Tomito: Toosenai no ? 'Not let go?'
Mother: Un. 'Yeah.'
Tomito: Toosenai, taoasanai (taosanai)? 'Not let go, not knock down?'
Mother: Taosenai, taorenai ka tte?
'Did you say you can't knock down or it doesn't fall down?'
Tomito: Too, toorenai, toarenai (taorenai)?
'Fall down (partly uttered?), not fall down(?), not fall down?'
Mother: Ki o tsukenai to taoreru yo. 'Watch it or it will fall down.'

(Tomito, File 20217.cha: line 3198)

As shown above, Tomito's pronunciation is ambiguous, possibly because he cannot distinguish the negative forms of verbs *toosu* "let go," *taosu* "knock down," *tooru* "go through," and *taoreru* "fall down." He tries out these negative verb forms when his Mother guesses what he means and asks if he wants to say that the train will fall. He picks up her repair "taorenai," although he repeats improper pronunciation "Too, toorenai" and repairs it to follow what she says, leaving the vowels /a/ and /o/ in the verb *taorenai* reversed.

7-3. Replacement: Lexical-semantic

As with mother-initiated mother-repairs in Kubota (2020), lexical-semantic replacements were the second-most frequent, followed by morpho-syntactic replacements. Most of the children's lexical repairs were word-referent mismatches and switches. For example, Tomito switches color words from *midori* "green" to *wooguriin no iro* "the color of a green character(?)" for the same color:

- Mother: Ja: naniiro ni shimasu ka? 'Then, what color would you like?'
Tomito: Etto mi(dori), wooguriin(guriin?) no iro.
'You see, green (half uttered), the color of a green character(?)'
Mother: Hai ja yatte (unintelligible, kochira?)! 'Here, then do it.' (Drawing lines)
Mother: Kimidori ne. 'Yellowgreen, you see.'

(Tomito, File 30501.cha: line 1060)

Lexically different but phonetically similar words appear to be easily confused, as observed in Arika, who switches *toko* "place" to *toki* "time":

- Arika: Atashi yappa: yuugohan no toko, toki:, yuugohan ga nai wa.
'As I thought, in dinner place, time, I have no dinner.'
Arika: Chotto matte (i)te, katte kuru kara! 'Wait a minute, I'll go get it.'
Mother: Un. 'Yeah.'

(Arika, File 40307.cha: line 1338)

The following examples show Nanami and Asato changing referents to imply the same person to assign the role and clarify what s/he is called in the play:

- Nanami: Hayaku shinai to mama ga, okaasan ga tabechau yo.
'Hurry up, or Mom, Mother will eat it.'

Mother: Ah, chotto matte ne! 'Hey, wait a minute!'
 Mother: Okaasan matte ne! 'Wait a minute, Mom!'

(Nanami, 20921.cha: line 953)

Asato: Santa, Kakkasantakuroosu da yo.
 '(To Mother) Santa, you're Mommy Santa Claus.'
 Mother: Ii yo:. 'Okay.'

(Asato, 30520.cha: line 570)

In addition, children replaced words to specify what they initially meant by deictic pronouns such as *kore* "this." In the example given below, by *kore*, Nanami and Arika imply referents in their vicinity. Next, for asking a question to the mother (Nanami) and emphasizing what to buy (Arika), they repair *kore* to a noun phrase consisting of a deictic pronoun *kono* "this" and a noun *hito* "person" or *gohon* "book (polite form)," respectively, while Arika re-replaces the deictic noun *kore* with *kono* after trying to say a noun following *kono* and rechooses *kore*. This lexical repair for specification also helps listeners focus easily on the referent:

Nanami: Kore, kono chito(hito) da:re, waratteru no?
 'Who is this, this person, laughing?'
 Mother: Obaasan. 'An old lady.'

(Nanami, 20608.cha: line 345)

Arika: Yoshi, kore, kono gohon kau wa yo.
 'OK, I'll buy this, this book.'
 Arika: A: ato, ... 'And then, ...'
 Arika: Kore mo, kono, kore mo kau wa yo. 'I'll buy this too, this (+ noun), this.'
 Mother: Hai. 'Okay.'

(Arika, 40203.cha: line 2206)

7-4. Replacement: Morpho-syntactic

Morpho-syntactic replacement involves the manipulation of verb and adjective inflection and case particles. This ongoing grammatical reanalysis depends on how the planning of the last part of an utterance is changed. For instance, it seems that Arika first wants to end her speech with the imperative or gerund form *tsumetaku shite* of the verb *tsumetaku suru* "to cool something" but repairs it to emphasize obligation with the obligation form *nakya ikenai* "must." Similarly, Asato seems to initially plan to continue his speech with *inaku*, the gerund form of the verb *inai* "not to exist" and then repairs it to the attributive form *inai* for the noun *hoo* "one side" (in comparison) to end the speech with the phrase *ga ii* "it is better":

Arika: Datte ocha wa ne: tsumetaku shite, tsumetaku shinakya ikenai no.
 'Because as for tea, you cool it, you must cool it.'
 Arika: Reezooko ni ireta n da yo. 'I put it in the fridge.'
 Arika: Tsumetai, shikaka, shikan (shika) dame da yo. 'Tea just, just has to be cold.'
 Mother: Okkee. 'Okay.'

(Arika 40203.cha: line 4672)

Mother: Inakutatte ii janai? 'Isn't it better (for Father) to be gone?'
 Mother: Ita hoo ga ii? 'Is it better (for Father) to stay?'

Asato: Demo inaku, inai hoo ga ii na:
'But it's better (for Father) not to exist (and then...), not to exist.'
(Mother laughs)

(Asato, 30918.cha: line 343)

As seen in mother-initiated mother-repairs of children's errors (Kubota 2020), children continued to demonstrate a poor command of case particles (e.g., *no*, *ga*, *ni*, *o*, *e*, *de*). In particular, the genitive case particle *no* is among the most difficult particles to acquire. Children aged two year old tend to confuse the phrase noun + *no* with *adjective + *no* (Clancy 1985; Ito 1990; Murasugi 1991) and misuse *no* as a subject case particle in the matrix predicate (Sawada et Murasugi, & Fujii 2010). The four children in this study made many particle errors but repaired only a few, possibly because they were too young to spot particle errors by themselves. As seen below, Tomito changes the subjective case particle *ga* to genitive case particle *no* to refer to the second referent *Taimujetto* "timejet" belonging to the first referent *Kuuga* "Kuuga (superhero)," although his mother does not pay attention to his utterance. Asato changes the subjective case particle for topicalization *wa* to the case particle *mo* "in addition" to suggest that both his mother and he took Go-Green (superhero) in the play:

Tomito: Kuuga: ga, Kuuga no Taimujetto hora.
'(Emphasized topic/Subject) Kuuga, here's Kuuga's timejet.'
(Mother is talking to someone behind Tomito).

(Tomito 40614. cha: line 327)

Asato: Ja: Kakka wa:, Kakka mo: (pause) Googuriin ni shit(e) okeba?
'Then, Mom (topic/subject), Mom too, why don't you take Go-Green (superhero's name)?'

Mother: Un. 'Yeah.'

(Asato 30619. cha: line 3022)

7-5. Repetition

Repetition of words and phrases often occurred at the beginning or in the middle of utterances, especially when children continued to say more about the ongoing topics:

Tomito: Dooshite, dooshite konna, kore yatteru no?
'Why, why like this, are you doing this?'

Mother: N:? 'Huh?'

Tomito: Kuru, kichau kara? 'Is it because it (he?) is coming?'

Mother: Chigau no yo: 'Nope.'

(Tomito, 30501.cha: line 5707)

Nanami: Eeto dotchi ni kiiroi, kiiroi nendo ga aru ka?
'Hmm, in which (hand) is yellow, yellow clay?'

Mother: Kotchi. 'Here.'

(Nanami, File 30923.cha: line 1674)

Children also repeated words, especially deictic words such as *kore* "this" and *koko* "here" to ensure that they had the right thing in the right place, as they (and their mothers) originally intended:

Arika: Anoo ne ko, <kotchi wa>:, kotchi wa, uketori.
'Y'know, this (partly uttered), this is, this is a catcher.'

Mother: Un. (Overlapping with < >) 'Yep.'
Mother: Uketori? (laughs) 'A catcher?'

(Arika, File 30705.cha: line 1315)

Arika first stops pronouncing *kotchi* "this" and says *kotchi wa* "this is" to continue referring to it, possibly looking for a proper word for *kotchi*, and then repeats it with the word *uketori* "catcher" to assign the Mother with the role in contrast to Arika's role as a pitcher.

Repetition of phrases indicates children's speech run-up strategy (Shibata, 1990). That is, they say a little to run up and gain momentum before they say more and finish an utterance, since they are inept at putting ideas into many words in order and utter these words in one breath. While they are planning to say something, especially in many words, they repeat the first part to gain momentum and add words to convey the entire message. As given below, Asato's repetition seems to work as a run-up:

Asato: Goodon to fumikiri, fumikiri o, Goodon to fumikiri o matteru n da yo.
'With Gordon I'm waiting for the railway crossing, for railway crossing,
with Gordon I'm waiting for the railway crossing.'
Mother: Un. 'Yes.'

(Asato, File 20715.cha: line 150)

This could be regarded as a run-up in speech planning in the middle of speaking. Asato repeats the words containing *Gordon to* "with Gordon (train's name)," *fumikiri* "railway crossing." The dative case particle *o* indicates it will be followed by a verb, so the repetition is possibly a way to gain time to come up with a verb *matteiru* "be waiting" to end the speaking turn.

Repetition was also observed when children wanted to ensure not only what they said but also the correctness of their activities, as expected by mothers:

(Mother shows Tomito how to use the restroom).
Mother: Suwaru n da yo. 'Sit down.'
Tomito: <Suwaru no suwaru no> suwaru no? '(Can I) sit down, sit down, sit down?)
Mother: Un. (Overlapping with < >) 'Yep.'
Mother: Chanto shita ni okanai to suwarenai jan hora.
'If you don't put a sheet down properly, you can't sit down, see.'

(Tomito, File 20217.cha: line 5451)

Tomito utters the last phrase *suwaru no* more slowly upon the mother's backchannel *un*, checking her instruction. By repeating words and doing something cautiously, he seems to be timing both activities by telling himself what to do.

7-6. Reformatting

Reformatting most likely reflects a meta-grammatical precocity. Children rephrased what they were saying through syntactic restructuring, such as inserting and deleting words, to specify what they meant or supplement information:

Arika: Koko ni hi (partly uttered), nakusannai (nakusanai) yoo ni, koko ni hikkaket (e)
oku kara ne.
'Here, I'll hang (partly uttered), in order not to lose it, I'll hang it here, you see.'
Mother: Nnyamumumu. (Onomatopoeia of eating busily, pretending a cat)

(Arika, File 40106.cha: line 2201)

Asato: Koko no, hane ga aru kara ji, jibun koko no tokoro ni notte itte!
'Here, as there are wings (in the train or plane?) You (partly uttered), you go.
ride here!'

Asato: Shu. (Flying a toy?)

Asato: Shu. (Flying a toy?)

Mother: Okkee. 'Okay.'

(Asato File 30318. cha: line 3694)

Nanami: Kore wa nani, kono guchaguchabudoo wa nan deshoo ka:?
'What is this, what could be these messed-up grapes?'

Mother: Hai omachi:. 'Here you go.'

Mother: Karee da yo. 'This is curry.'

(Nanami, File 40810. cha: line 1231)

Tomito: Hanachan, Totchi Hanachan suki na no.

'Hanachan (girl's name), Totchi (Tomito himself) likes Hanachan, I tell you.'

Mother: De dondake suki na no? 'Then, how much do you like her?'

(Tomito, File 20217. cha: line 2479)

In the examples above, Arika stops uttering her initial intention of hanging something in her vicinity. She then inserts the purpose (i.e., not to lose it) and finishes the original part of her speech. Asato first tries saying *koko no tokoro ni notte itte* "(imperative) ride here (in the train)" as in the last part of his speech, but he inserts the phrases *hane ga arukara* "because there are wings (in the train or plane)" and *jibun* "you" to specify what he means by *koko* "here." Nanami specifies what he is asking in the question by changing *kore* "this" to the phrase *kono guchaguchabudoo* "this messed-up grapes" and changes the question word *nani* "what" to the polite form *nan deshoo ka* "what could it be." As seen earlier in lexical replacement, deictic pronouns *kore* and *koko* are specified in other words in reformatting, whereas in the latter, many more words are used for morpho-syntactic operations, such as inserting subject, inflected verb, object, case particles, and conjunctions (e.g., *kara* "because" and *yoo ni* "in order to"). In contrast, Tomito first mentions the topic that he mostly wants to assert, a girl *Hanachan* and repairs the first part by inserting words in the canonical word order of subject *Tochi* "Tomito," object *Hanachan*, and verb *suki* "like," clarifying the semantic roles of *Hanachan* and Tomito and their relation in the verb.

7-7. Others: Fillers for repair

Regarding their repair strategies, children typically use fillers to repair in the speaking turn. In the Japanese adult-adult conversations examined by Mizukami and Yamashita (2007), utterance-internal fillers accounted for about 70 percent of all the fillers, and about 90 percent of the utterance-internal fillers were made by the speaker without interruption. The most frequent utterance-internal fillers in Japanese were *eetoh*, *anoo*, and *eeh* "let me see," "you know," and "er," respectively. These fillers seem to reflect the cognitive and social operations underway in the speaking process (Sadanobu 2010). In fact, there are only a few studies on the child command of fillers. Casillas (2014) found that five English-acquiring children by two years of age started to adeptly use fillers *uh* and *um* in their speech, adding that *uh* was more often prolonged and followed by fluent speech than *um* to reduce delay and disfluency.⁹

In conjunction with self-repairs, these children as early as two years of age uttered fillers and held the floor to keep talking with more relevant information. As given below, fillers in the middle of the

utterances such as *ja(a)*, *ano(o)*, *anone*, *ano sa(a)* signal the initiation of speech repair and replanning to draw the listener's attention and make their messages more informative and perspicuous:

Arika: *Ne anoo, anoo saa karuta, karutayasan yaroo.*
'Y'know, y'know, cards (half uttered), let's play card shop.'
Mother: *Karutayasan tte na:ni? 'What is the "card shop"?'*
(Arika, File 40106.cha: line 4842)

Asato: *Ja, ja: ne: Asatokun mo, ja: ne: Yamanotesen mo* kaeroo tto.*
'Then, then, Asatokun (himself), too, then, return on the Yamanote Line.'
(Mother is silently watching Asato, moving a toy train on the railway)
(Asato, File 30318.cha: line 3449)

(Mother backchannels with *un* 'Uh-huh' at the end of the phrase with <>)
Nanami: *Ima ne: haino(ano) anone:<> anoo: (pause) N, Nanami ga ne <> (pause)*
ashoko(asoko) ni (pause) ima ne <> (pause) gohan chukutteru(tsukutteru) kara
mattete kudasai!
'Now, y'know, y'know, y'know (pause) Nanami (herself) is there, now, making a
meal, so please wait!'
Mother: *Hai. 'Yes.'*
(Nanami, File 30014.cha: line 4474)

Tomito: *Okaashan(Okaasan), am(anoo) mijuro(mizuiro) nanka ano, anoo*
mijuro(mizuiro) no furesshuhitachi kaite!
'Mom, y'know, lightblue, y'know, y'know, y'know, paint lightblue Fresh Hitachi
(train name)!'
Mother: *Mizuiro no de? 'In lightblue?'*
Mother: *Ao desho. 'Blue, right?'*
Mother: *Ao no furesshuhitachi desho? 'Fresh Hitachi is blue, right?'*
(Tomito, File 21127.cha: line 527)

Arika uses fillers and repairs the next part of her speech through lexical replacement from *karuta* "cards" to *karutayasan* "to play cards." Asato uses fillers and switches *Asatokun* "Asato" to *Yamanotesen* "Yamanote Line" with the same particle *mo*, although the second *mo* is wrong and should be replaced with an instrumental case particle *de* "by means of." Nanami first says *ima ne* "for now," pausing several times between short phrases, and finishes an utterance by reformatting the phrases with the repeated initial phrase *ima ne*. Tomito also reformats what he initially means by *mijuro(mizuiro)* "lightblue" by using fillers and searching for specific words. Similar to repetition, these fillers seem to work as run-ups to gain time and momentum to speak long lines of words in one utterance. The children seem to have been taking time to organize ideas of what they should say and search for and arrange appropriate words in grammatical structures, especially when they repeated fillers and held the floor, checking the listener's backchannelling or attention sign.

8. Concluding remarks

As I had mentioned previously in Chapter 4, it was likely that the Japanese children in this study wanted to repair not for achieving the correctness of saying something, but for showing the willingness

to talk more on the topic. Following each question in Chapter 4 and subsequent discussions in Chapter 7, I draw the following conclusions:

1. How often did the children initiate and repair themselves while they scantily received repairs initiated by their mothers?
2. How do children detect their errors, or the seemingly uninformative parts, and repair those by themselves?

As demonstrated in Table 2 above, overall, child-initiated child-repairs accounted for less than six percent of their speaking turns, although they were more frequent than mother-initiated mother-repairs. Thus, the children hardly initiated or made repairs. This may be mainly because of the mothers' tendency to move on (Kubota 2020), through which they guessed their children's intentions and continued talking without correcting errors and asking about unintelligible parts. Grammatical errors seem to have been ignored or missed by the mothers, who had rarely taught what was correct or not to their children, by placing one in contrast to the other. Therefore, it is assumed that the children did not know whether they made errors that needed to be repaired or how to spot errors by themselves and just continued to speak as they would.

3. Are there any similarities and differences in repair patterns among the children and across different ages?

There were no striking individual differences among the children. As shown in Table 4, all the children learned to replace sounds, words, and phrases more often as they grew old.¹⁰ This result seems to conform to their language development per se. However, because phonological replacements were the most frequent in all children at all ages, it seems that their difficulty performing correct articulation continued from two or even after four years of age due to immature oral palates and articulation skills. It may not be until five or six years of age that Japanese children, in general, become adept at repairing their own speech with more sophisticated linguistic knowledge, such as lexicon, syntax, and morphology, and with more social command of language through fillers.

For future analyses, this study leaves much to be explored. First, an important question is whether these children really made phonological repairs for interpersonal purposes. It is possible that they simply wanted to check the accuracy of their articulation, irrespective of the listener's presence or the children's intention to make themselves understood. In other words, depending on the situation, children's repairs (irrespective of the type) may have been self-centered or other-centered.

To see whether self-initiated self-repairs are other-centered or other-conscious, the following repair-related elements should be elucidated for future analysis:

1. Accent intensity of the repaired words or phrases (e.g., "Yes (in a lower pitch); Yes (in a higher pitch)!");
2. Pre-repair fillers or hesitation noises to make up for silence and disfluency, retain a turn, and keep the other waiting, e.g., *a(h)* / *ano(oh)* / *anone* / *ee(ttoh)* "er / uh / um / you know": *ano(oh)* is often used to ask or warn hesitantly or modestly, while *ee(ttoh)* is often used to recall or give correct information;
3. Negation markers *iya*, *chigau*, *janai*, canceled signs of wrong information (e.g., *Asu wa doyoo, chigau, nichiyoo*. "Tomorrow is Saturday, no, Sunday.");
4. Uses of sentence-ending particles such as *da* to confirm and intensify the repaired (e.g., *Mama, Papa da!* "Mom, (no,) Dad!"); and
5. Addressing someone upon self-repair (e.g., *Ari, nee, nee, Arichan no?* "Ari, hey, hey, Is that

As I showed elsewhere (Kubota 2020), in this study, the main limitation is that the same data do not cover visual information. Thus, on nonverbal grounds, it remains to be investigated that how children and mothers exercise paralinguistic elements, such as gesture, facial expressions (Laakson 2010), and "mutual gaze" (Forrester 2015), which appears to play a crucial role "in pursuit of a response" (p.127) to convey messages to each other and check on mutual speech and understanding. These factors should be investigated to clarify children's self-initiated self-repair strategies and the listeners' reactions in interactions for successful communication.

For both children and adults, self-initiated self-repair for problem-solving and goal-conscious purposes tends to occur in peer and group work, such as games and discussions. Tykkyläinen (2010) stated that children with specific language impairment initiate repairs to adults to deal with a problem in hearing, attention-focusing, and understanding. In contrast, typically developing children tend to initiate repairs to solve tasks and achieve goals by showing several solutions. This study does not explore detailed goal-oriented aspects of child-initiated child-repairs, mainly because they were too young to make such highly strategic use of language. However, these purely social commands and effects of self-initiated self-repairs should be studied with older children at preschools and elementary schools. For example, Manfra, Tyler, and Winsler (2016) reported that English-acquiring preschool children's self-initiated self-repairs in social speech had more post-production monitoring for others, while those in private speech had more pre-production monitoring or immediate repairs for the self.

Finally, in the future, it needs to be examined whether the children initiated and made repairs successfully on the adults' side. Nevertheless, successful repair depends on the other's reactions. If mothers understand the children's repaired speech, they will show verbal responses, such as saying yes or no, backchanneling, and giving or asking about relevant information. If the children fail to clarify repairs, the mothers will provide repairs, or simply say, "I don't understand," or ask them for clarification to end a side sequence and return to the suspended topic. Alternatively, as seen in the maternal repairs in Kubota (2020), on hearing the children's self-initiated self-repairs, the mothers may have just moved on by giving no specific feedback and roughly guessing what the children meant. Such a post-repair flow of conversation should be examined through the mothers' reactions. Further analysis is also required regarding how and to what extent the successful repairs should be done by the children with age considering their individual differences.

Notes

- 1 As supplemented in my previous study of parental repairs (Kubota 2020), in child language research, there seems to be no clear-cut distinction between the terms *correction* and *repair*, and they are often used synonymously. However, Schegloff and Sacks (1977) provide a perspicuous definition: "The term 'correction' is commonly used to refer to the replacement of an 'error' or 'mistake' by what is 'correct'. The phenomena we are addressing, however, are neither contingent upon error, nor limited to replacement" (Schegloff & Sacks 1977: 363). In the latter case, they refer to word search, repair, or correction following no error, and errors yielding no repair or correction. Thus, they prefer *repair* rather than *correction* to analyze more general types of occurrences, such as those given above. From a similar viewpoint, I have used the term *repair* in my previous studies (e.g., Kubota 2006) and will use it throughout this paper unless *correction* in the definition above needs to be mentioned for specific purposes.
- 2 The trouble source is termed as "repairable" by Schegloff, Jefferson, and Sachs (1977), who hold that "In view of the point about repair being initiated with no apparent error, it appears that, nothing is, in principle, excludable from the class 'repairable'" (p. 363).
- 3 However, self-initiated self-repair can also occur after a speaking turn is shifted from one to the other and returns to one, especially when one thinks that the other misunderstands one's intention. This inter-turn practice of self-initiated self-repair is beyond the scope of this study.
- 4 The notation of child age is as follows: year, month, and day, according to the CHILDES transcription rules (MacWhinney 2000, 2020).
- 5 The MLUs in the corpus are referred to as the *MLUm, or MLU specialized for morphemes, by Miyata and Nishisawa (2020), who provided the MLUms with the following command: `mlu +d1 +t%mor +b- +b# +b+ -t* +t*filename -sonoma* -sco:* -sn:let* @` (for details, see Miyata 2012).
- 6 The CHILDES transcription format (MacWhinney 2000, 2020) states that repetition means retracing without correction, and revision means retracing with correction: revision occurs when the speaker changes something, such as the syntax of an utterance, but maintains the same

idea. In format, retracing is termed as reformulation when it involves not just a specific correction but a full and complete change of the message.

- 7 Keenan and Schieffelin (1983) and Forrester (2015) define repetition as a repaired response. If children repeated a word or phrase by intensifying and raising intonation or changing the volume, this means prosodical repair for clarification in search of the other's response. Some transcripts of words do not match the transcription of the sounds. For instance, repeated words and the original words are transcribed differently.

Asato: koko wa noyumono, koko wa norimono no yuuenchi.

"This is runabouts, this is an amusement park of runabouts.)

(Asato, File 21116.cha: line 3134)

The word that is incorrectly transcribed as *noyumono* sounds the same as its correct form *norimono* in the sound data. Therefore, I regard this example as a repetition of the phrase.

- 8 For the sake of readability, transcription given in this study is simplified by removing CHILD-specific codes and notes from the original.
- 9 This difference in use becomes clear, especially when fillers come at the beginning of an utterance as the starter of the speaking turn. This starting function per se was not within the scope of this study. For details, see Mizukami and Yamashita (2007) and Sadanobu (2010).
- 10 Neither Schegloff, Jefferson, and Sacks (1977) nor Schegloff (2013) discuss children's phonological repairs at large. However, they focus on lexical, syntactic, semantic, and pragmatic elements to be manipulated in self-repairs. In the EFL contexts, Emrani and Hooshmand (2019) found that replacing was the most frequent self-initiated self-repair pattern among Iranian learners of English, such as replacing, inserting, deleting, and aborting, as posited by Schegloff (2013). It was also found that both the Iranian learners and native speakers of English used replacements most frequently. However, the learners' pronunciation repairs are not mentioned in their analysis, although it is highly likely that the lower their English proficiency level, the more the pronunciation errors made by EFL learners in English, and greater their desire to repair these errors immediately.

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References

- Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press.
- Casillas, M. (2014). Taking the floor on time. In I. Arnon, M. Casillas, C. Kurumada, & B. Estigarribia (Eds.), *Language in interaction: Studies in honor of Eve V. Clark* (pp.101-114). Amsterdam/Philadelphia: John Benjamins.
- Chomsky, N. (1981). *Lectures on government and binding*. Dordrecht: Foris.
- Chouinard, M. & Clark, E. V. (2003). Adult reformation of child errors as negative evidence. *Journal of Child Language*, 20, 637-669.
- Clancy, P. (1985). The acquisition of Japanese. In D. Slobin (Ed.), *The crosslinguistic study of language acquisition, Vol. 1: the data*. (pp.372-524). Hillsdale, NJ: Lawrence Erlbaum.
- Clark, H. H. (2014). How to talk with children. In I. Arnon, M. Casillas, C. Kurumada, & B. Estigarribia (Eds.), *Language in interaction: Studies in honor of Eve V. Clark* (pp.333-352). Amsterdam/Philadelphia: John Benjamins.
- Correction, Repair. (2005-2018). New Oxford American Dictionary & Oxford Dictionary of English. Version 2.3.0 (203.16.12). Copyright © 2005–2018, Apple Inc. All rights reserved.
- Doherty, M. J. (2009). *Theory of mind: How children understand others' thoughts and Feelings*. Hove: Psychology Press.
- Emrani, F. & Hooshmand, M. (2019). A conversation analysis of self-initiated self-repair structures in advanced Iranian EFL learners. *International Journal of Language Studies*, 13, 57-76. Retrieved on August 10, 2021, from <https://drive.google.com/file/d/1tKRe6F8vF08Sv8hKbml7fpMUqaHr0D4/view>
- Forrester, M. A. (2008). The emergence of self-repair: A case study of one child during the early pre-school years. *Research on Language and Social Interaction*, 41, 99-128. Retrieved on May 28, 2021, from <https://www.tandfonline.com/doi/full/10.1080/08351810701691206>
- Forrester, M. A. (2015). *Early social interaction: A case comparison of developmental pragmatics and psychoanalytic theory*. Cambridge: Cambridge University Press.
- Forrester, M. A., & Cherington, S. M. (2009). The development of other-related conversational skills: a case study of conversational repair during the early years. *First Language*, 29, 166–191. DOI: <https://doi.org/10.1177/0142723708094452>
- Hayashi, M., Raymond, G., and Sidnell, J. (Eds.). (2013). *Conversational repair and human understanding* (41-70). Cambridge: Cambridge University Press.
- Ito, K. (1990). *Kodomo no kotoba: Shuutoku to kouzou* [Child language: Acquisition and structure]. Tokyo: Keiso Shobo.
- Jefferson, G. (1972). Side sequences. In D.N. Sudnow (Ed.) *Studies in social interaction* (pp.294-33). New York: Free Press.
- Keenan, E. Ochs & Schieffelin, B. B. (1983). Topic as a discourse notion: a study of topic in the conversations of children and adults. In E. Ochs & B. B. Schieffelin (Eds.), *Acquiring conversational competence* (pp.66-113). London: Routledge.
- Kubota, M. (2010). An English-Japanese comparative study of clarification responses of parent-child dyads. *Studies in Language Sciences*, 9, 77-92.
- Kubota, M. (2020). Roles and Effects of Parent-Initiated Repair in Language Development: A Case Study of Four Japanese Children. *Journal of Tokyo Zokei University*, 21, 17-32.
- Kubozono, H. (2003). Onin no kakutoku to gengo no fuhensei [Acquisition of phonology and language universals]. *Journal of the Phonetic Society of Japan*, 7, 5-17.

- Kulinich, E., Royle, P., & Valois, D. (2014). Does negative feedback affect language acquisition? *Proceedings of the 39th Annual Boston University Conference on Language Development*, 301-310.
- Kulinich, E. Royle, P., & Valois, D. (2019). On the inefficiency of negative feedback in Russian morphology L1 acquisition. *First Language*, 39, 547-570. <https://doi.org/10.1177/0142723719850955>
- Laakso, M. (2010). Children's emerging and developing self-repair practices. In H. Gardner & M. Forrester (Eds.), *Analysing interactions in childhood* (pp.74-99). Chichester: Wiley-Blackwell.
- Laakso, M., & Soininen, M. (2010). Mother-initiated repair sequences in interactions of 3-year-old children. *First Language*, 30, 329-353.
- MacWhinney, B. (2000). *The CHILDES Project: Tools for Analyzing Talk*. 3rd Edition. Mahwah, NJ: Lawrence Erlbaum Associates.
- MacWhinney, B. (2020). *The CHILDES Project: Tools for Analyzing Talk Part 1: The CHAT Transcription Format*. Electronic Edition. Retrieved on February 3, 2020 from <https://doi.org/10.21415/3mhn-0z89>
- Manfra, L., Tyler, S. L., & Winsler, A. (2016). Speech monitoring and repairs in preschool children's social and private speech. *Early Childhood Research Quarterly*, 37, 94-105.
- Miyata, S. (2012). Nihongo MLU (heikin hatsuwachō) no gaidorain: Jiritsugo MLU oyobi keitaiso MLU no keisanhō [Guideline for Japanese MLU: How to compute MLUw and MLUm]. *Kenhō Iryō Kagaku*, 2, 1-15. <http://aska-r.aasa.ac.jp/dspace/bitstream/10638/5113/1/0039-002-201203-1-17.pdf> (accessed 5 November 2012).
- Miyata, S., & Nisisawa, H. (2009). *Japanese-MiiPro-Asato Corpus*. Pittsburgh, PA: TalkBank. Retrieved on August 20, 2018, from <https://childes.talkbank.org/browser/index.php?url=Japanese/MiiPro/Asato/>
- Miyata, S., & Nisisawa, H. (2010). *Japanese-MiiPro-Tomito Corpus*. Pittsburgh, PA: TalkBank. Retrieved on August 20, 2018, from <https://childes.talkbank.org/browser/index.php?url=Japanese/MiiPro/Asato/>
- Miyata, S., & Nishisawa, H. (2020, March 21). *MiiPro Corpus*. DOI:10.21415/T55C72
- Mizukami, E., & Yamashita, K. (2007). An examination of a function of fillers as maintaining the speaker's right to speak. *Cognitive Studies*, 14, 588-603. <https://doi.org/10.11225/jcss.14.588>
- Murasugi, K. (1991). *Noun phrases in Japanese and English: A study in syntax, learnability and acquisition*. Ph. D. thesis, University of Connecticut.
- Nisisawa, H., & Miyata, S. (2009). *Japanese-MiiPro-Nanami Corpus*. Pittsburgh, PA: TalkBank. Retrieved on August 20, 2018, from <https://childes.talkbank.org/browser/index.php?url=Japanese/MiiPro/Asato/>
- Nisisawa, H., & Miyata, S. (2010). *Japanese-MiiPro-ArikaM Corpus*. Pittsburgh, PA: TalkBank. Retrieved on August 20, 2018, from <https://childes.talkbank.org/browser/index.php?url=Japanese/MiiPro/Asato/>
- Ogura, T. (2002). Dai-go shoo: Gengo hattatsu no gaikan; 3. Ko-on no hattatsu. [Chapter Five: Outlook of language development; 3. Development of articulation] (pp.88-90). In S. Iwatate & T. Ogura (Eds.), *Gengo hattatsu to sono shien* [Language development and support]. Tokyo: Minerva Press.
- Oshima-Takane, Y. MacWhinney, B., Sirai, H., Miyata, S., & Naka, N. (Eds.) (1998). *CHILDES for Japanese: Second edition*. The JCHAT Project Nagoya: Chukyo University.
- Pinker, S. (1984). *Language learnability and language development*. Cambridge, MA: Harvard University Press.
- Sadanobu, T. (2010). Uttering fillers in conversation. *Journal of the Phonetic Society of Japan*, 14, 27-39.
- Salonen, T. & Laakso, M. (2009). Self-repair of speech by four-year-old Finnish children. *Journal of Child Language*, 36, 855-82. Retrieved on May 27, 2021, from <https://pubmed.ncbi.nlm.nih.gov/19079829/>
- Sawada, N., Murasugi, K., and Fujii, C. (2010). A theoretical account for the 'erroneous' genitive subjects in child language and the specification of tense. *BUILD 34 Supplement*, MA: Cascadilla Press.
- Saxton, M. (1997). The contrastive theory of negative input. *Journal of Child Language*, 24, 139-161.
- Saxton, M. (2000). Negative evidence and negative feedback: immediate effects on the grammaticality of child speech. *First Language*, 20, 221-252. <https://doi.org/10.1177/014272370002006001>
- Schegloff, E. A. (1972). Notes on a conversational practice: Formulating place. In D. Sudnow (Ed.), *Studies in conversational interaction* (75-119). New York: Free Press.
- Schegloff, E. A. (2013). Ten operations in self-initiated, same-turn repair. In M. Hayashi, G. Raymond, and J. Sidnell (Eds.), *Conversational repair and human understanding* (41-70). Cambridge: Cambridge University Press.
- Schegloff, E. A., Jefferson, G., & Sacks, H. (1977). The preference for self-correction in the organization of repair in conversation. *Language*, 53, 361-382. DOI: 10.2307/413107
- Shibata, J. (1990). *Akachan no kotoba: Oboeru, hanasu, kangaeru* [Baby's language: memorize, speak, think]. Tokyo: Tosui Shobo.
- Tomasello, M. (1999). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.
- Tykkyläinen, T. (2010). Child-initiated repair in task interactions. In H. Gardner & M. Forrester (Eds.), *Analysing interactions in childhood* (pp.226-248). Chichester: Wiley-Blackwell.
- Ziglar, L. & Ozfidan, B. (2016). Self- and other-repairs in child-adult Interaction: A case study of a pair of Persian-speaking twins. *International Journal of English Linguistics*, 6, 52-59. DOI:10.5539/ijel.v6n4p52