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Cross-linguistic influence in the use of objects in Japanese/English simultaneous bilingual acquisition

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Abstract

Aims: This study investigates whether, to what extent, and in which direction interface structure induces cross-linguistic influence (CLI) in the use of objects in Japanese/English simultaneous bilinguals.

Design: Year-long observations of parent-child interactions in two two-year-olds were conducted to observe the changes taking place at the earliest stages of development.

Data Analysis: A total of 48 recording sessions were transcribed and coded using CHAT conventions and were compared with MLU-matched monolingual data drawn from the CHILDES database.

Findings: We report a temporary influence from Japanese to English and a mild influence from English to Japanese.

Originality: This study offers evidence of CLI in object use in less-studied language pairs.

Implications: The data support the interface hypothesis and further suggest that the language combination affects the intensity of influence due to the degree of the overlap. Our data also add evidence to the proposal that without language dominance, CLI occurs from the overt language to the language with null options.

1. Introduction

Cross-linguistic influence in the development of the two languages in BFLA

One of the robust findings in the field of bilingual first language acquisition is that the two languages develop as independent linguistic systems (e.g., De Houwer, 1990; Paradis & Genesee, 1996). However, more recent studies reveal that the two grammars do interact with each other when certain conditions are met (e.g., Hulk & Muller, 2000; Muller & Hulk, 2001; Paradis & Navarro, 2003; Serratrice et al, 2004; Hacohen & Shaeffer, 2007; Haznedar, 2010; Yip & Matthews, 2007). Such interaction between the two grammatical systems has been referred to as cross-linguistic influence (referred to as CLI hereafter), and investigation of the conditions of CLI has been a major issue in the field of simultaneous bilingual development.

Hulk and Muller (2000) and Muller and Hulk (2001) first proposed two conditions that are likely to induce interaction between the languages in bilinguals: CLI is often observed 1) at the syntax–pragmatics interface, the structure where both syntax and pragmatics are involved, and 2) when there is a superficially overlapping structure between the two languages causing multiple analyses in one of the two languages, which in turn results in ambiguity in the input for the children. To exemplify the first condition, argument choice would, for example, qualify as syntax–pragmatic interface since the selection of a null vs. overt (vs. pronominal) argument requires both syntactic and pragmatic considerations. It has been generally understood that null or pronominal forms are typically used for expressing given information in discourse, whereas new information is most likely to be in lexical forms (Du Bois, 1987; Givon, 1983), which means that the selection of argument form requires both syntactic and discourse–pragmatic knowledge.

The second condition, superficial overlap, refers to a parallel structure in two languages when the two languages have distinct underlying systems. In the case of acquiring a null subject language, in which the choice of SVO or Ø VO is determined by discourse-pragmatics, and an overt subject language, in which in principle SVO is the only grammatical option, SVO (overt subject) is the shared structure between the two languages. In such cases, the null argument language provides the learners with both null and overt arguments, and such ambiguous input makes the structure vulnerable to influence from the overt argument language which provides the learners with a straightforward input.

Hulk and Muller (2000) first proposed the conditions of CLI based on their observation of the use of null objects in two- to three-year-old bilingual children acquiring a Romance language (French, Italian), which seldom allows null objects, but in which an empty object position frequently appears in the input as object clitics are moved to a preverbal position, leaving the canonical object position empty, and a Germanic language (German, Dutch), in which object drop occurs frequently because of the dropping of topicalized objects. They hypothesized that the overlapping structure between the two languages (null objects) would be used more often in Romance languages because of the influence of Germanic languages. Their analyses show a non-target-like use of null objects in the Romance languages, which they argue is clear evidence of influence from the Germanic languages. Through their analyses of five Cantonese/English simultaneous bilinguals, Yip and Matthews (2007) reported similar findings. In Cantonese, object drop is a grammatical option and is controlled solely by discourse-pragmatics, whereas in English, null objects are, in principle, ungrammatical, but there are some optionally transitive verbs, meaning that some

verbs allow null objects and others do not, which would create ambiguity in the English input for children. Yip and Matthews (2007) show that the children's use of null objects in English was far more frequent than that of their monolingual peers, indicating influence from Cantonese.

Paradis and Navarro (2003) supported Muller and Hulk's (2001) hypothesis by providing evidence of overuse of overt subjects in a Spanish/English bilingual child's Spanish, a null-subject language, which appeared to be caused by applying the English structure. Paradis and Navarro classified overt subjects as those that have discourse-pragmatic informativeness, such as contrast or emphasis, and those that have low informativeness. They reported that the bilingual child produced far more overt subjects with low informative value, which was interpreted as an evidence of influence from English, where subjects must be realized regardless of the informative value. Similarly, Serratrice, Sorace and Paoli (2004) investigated the use of subject and object pronouns in a child acquiring Italian and English and reported an overproduction of subject pronouns and frequent use of postverbal strong object pronouns instead of preverbal clitics after the instantiation of C-system, both of which can be interpreted as an indication of influence of English

The hypothesis, however, is not without counterevidence. Some studies, typically those that dealt with children acquiring typologically distant language pairs, report weaker or no cross-language effects on the structure in question (e.g., Zwanaiger, Allen, & Genesee, 2005; Mishina-Mori, 2007; Guerriero, Oshiima-Takane, Genesee & Hirakawa, 2008). Zwanaiger et al (2005) investigated the use of subjects in simultaneous bilinguals acquiring languages with distinct morphosyntactic features, namely, English and Inuktitut (null-argument language), and observed no evidence of

cross-language interaction. Mishina-Mori (2007) and Guerriero et al (2008) also examined the argument realization patterns in relation to the discourse-pragmatic context in bilingual children acquiring Japanese, a null-argument language, and English, and detected no clear indication of interaction between the two languages. Mishina-Mori, Matsuoka and Sugioka (2015) did find some influence from English to Japanese in a more detailed analysis of the discourse-pragmatic functions of children's overt subjects, but overall, the influence seems to have been minimal, compared with that found in the analysis of Paradis and Navarro (2003) or Haznedar (2010), in which the ratio of subject realization in the bilinguals was almost double that of the monolingual peers. Thus, Muller and Hulk's (2001) hypothesis has gained only mixed support.

Inconsistency also exists in the prediction of directionality of influence based on ambiguity in the input. Some studies, the majority of which analyze subjects (e.g., Paradis & Navarro, 2003; Serratrice et al., 2004; Haznedar, 2010; Hacoen & Shaeffer, 2007, Mishina-Mori et al 2015), all predict and report influence from the overt argument language to the null argument language. The prediction was based on the assumption that the superficially overlapping structure is the overt subject structure, with ambiguity existing in the optionality of subjects in the null argument languages based on discourse-pragmatics, and thus the directionality of input is from overt to null. All the studies mentioned above report that children produced significantly more overt subjects than their monolingual counterparts. However, many of the studies that deal with objects (e.g., Muller & Hulk, 2001; Yip & Matthews, 2007; Mykhaylyk & Ytterstad, 2017) report the opposite: they argue that the shared structure between the two languages is the null object structure and report that children

exhibited persistent use of null object structure in an overt argument language. Most of these studies further argue that this can be interpreted as a prolonged use of universal discourse licensing strategy due to the influence of a language that does allow empty objects licensed by discourse and that the use of null objects is difficult to unlearn, as it is the default strategy used in the earliest stages of language development. However, if the use of null forms is persistent for that particular reason, the same should apply to the use of subjects. Such a tendency has not been reported so far, except for in Kang (2013), but the subjects exhibit strong dominance in the null argument language studied. Thus, more investigation is necessary to confirm the validity of the prediction of directionality.

A related issue to be considered is language dominance. In some of the studies listed above, children were clearly dominant in one language, and it is difficult to determine whether the influence would have been in the same direction without the dominance. Yip and Matthews (2000) have argued that the participant's dominance in Cantonese may be the major reason for the influence, with ambiguity in the input being a combined trigger for the interaction.

Kang (2013) proposes a revised model of CLI to explain the directionality of influence and language dominance. Kang studied subject drop in the English of a Korean-English bilingual teenager, arguing for an influence from Korean, a null subject language, to English when the subject became extremely dominant in Korean. Based on the observation that both null and overt argument languages allow both null and overt options in some restricted contexts, Kang proposes a revised model to explain the directionality of influence: CLI is, in principle, from the overt form of the overt argument language to the overt form of the null argument language (resulting in

overuse of overt subjects in the null argument language), as the latter has fewer constraints (i.e., only pragmatic constraints) and thus is more vulnerable to influence, whereas null forms in overt argument languages are subjected to both pragmatic and syntactic constraints and thus tend to be unaffected, except when a strong language external factor such as dominance *overrides* the conditions. These studies suggest that dominance needs to be teased apart as a factor to test whether null objects are indeed vulnerable to influence from the presence of another null argument language.

Therefore, the purpose of the current paper is to examine whether CLI occurs in the use of objects by young children simultaneously acquiring Japanese and English, a null- and overt-argument language pair, in a roughly balanced manner at the early stages of linguistic development. Below is a brief description of the syntactic and discourse-pragmatic features of null objects in Japanese and English.

Object realization and omission in Japanese and English

Japanese is a null argument language, in which both subjects and objects can be dropped if the referent has been introduced to the discourse context. Refer to the following examples in (1):

- (1) a. Yuki wa chiketto wo katta.

Yuki TOP ticket ACC buy-PAST¹

¹ The glosses used in this article include the following: TOP topic marker (wa); ACC accusative marker (wo); SFP sentence final particle (ne, yo); PAST past tense marker (V-ta); NONPAST non-past marker (V-u); CONT continuous form (V-teiru); IMP

‘Yuki bought a ticket.’

b. Yuki wa Ø katta.

‘Yuki bought (a ticket).’

c. Ø chiketto wo katta.

‘(Yuki) bought a ticket.’

d. Ø Ø katta.

‘(Yuki) bought (a ticket).’

Like many other null argument languages, overt-null alternation is governed by discourse-pragmatic principles; that is, subjects and objects are expressed only when the referent has a high informative value (e.g., new information in the discourse or has the function of contrasting or emphasizing the referent), but if they do not, they tend to be in null form (Allen, 2000; Clancy, 1997; Chafe, 1994; Du Bois, 1997; Guerriero et al. 2006).

Realized arguments can be expressed either in lexical or pronominal forms. However, unlike English, pronouns are used less frequently in Japanese, mainly because overt arguments are not required by syntax, and thus, anaphoric pronouns are in principle unnecessary (Maynard, 2009). Japanese personal pronouns are not simple grammatical replacements of a person in the given context: there are a variety of

imperative form; RES resultative form (V-teiru); NEG negation (V-nai) ; VOL volitional form (V-ou)

different forms for each person, selected based on speech level, gender of the speaker or the addressee and other factors (e.g., Sugioka & Kageyama, 2011; Shibatani, 1990).

Based on a longitudinal case study of a two-year-old monolingual Japanese child's use of null arguments, Hirakawa (1993) reports that approximately 40% of all occurrences of objects in the corpus were in null form, and this was consistent throughout the observation period. It should be noted that the ratio of null subjects in transitive constructions in the same data was 88% on average, which was more than double the number of null objects. This is consistent with the observation that object drop is not as frequent as subject drop, presumably because the referent in object position mainly functions to introduce new or pragmatically prominent information in the discourse (Clancy, 1993).

In stark contrast to Japanese, English, in most cases, does not allow null arguments, requiring both subjects and objects to be expressed in overt form. In relation to the discourse-pragmatics, referents with high informative value are expressed in overt forms (lexical forms), and those with less informative value appear in pronominal forms such as deictic pronouns (that, this), personal pronouns (him, her, them) and indefinite pronouns (one, any) (Guerriero, et al. 2006).

(2) a. Yuki bought a ticket.

b. *Ø bought a ticket.

c. *Yuki bought Ø.

(3) Has Yuki already bought a ticket?

a. Yes, she has already bought one.

- b. *Yes, Ø has already bought one.
- c. *Yes, she has already bought Ø.

However, the realization of arguments in the object position is somewhat more complicated, since some transitive verbs are in fact “optionally” transitive, meaning that it is grammatical to drop objects in some particular contexts (that is, allowing intransitive reading) (Rispoli, 1992; Ingham, 1993; Theakston et al, 2001; Sugioka & Kageyama, 2011). In other words, realization of objects depends on the lexical semantics of the preceding verb, the meaning of the object itself as well as the context of the discourse. According to Sugioka & Kageyama (2011), there are roughly three situations in which null objects are grammatical: when i) the referent is accessible within the actual context (as in example (4)), ii) the object refers to a particular referent (as in example (5)), and iii) the object refers to a generic noun (as in example (6)).

- (4) Shake Ø well before using Ø.
- (5) a. McCain ran in the 2008 presidential election, but he lost Ø.
b. *McCain put his cell phone in his bag, but he lost Ø.
- (6) a. He drove Ø for ten hours.
b. *He drove his father’s car yesterday, and he broke Ø.

(Sugioka & Kageyama 2011)

As is clear from the descriptions above, the use of objects in Japanese and English would satisfy the two conditions for CLI as proposed by Muller and Hulk (2001):

Null/overt alternation of objects in the two languages involves both syntax and discourse-pragmatics, and there are superficially overlapping structures between the two languages. However, there are two logical possibilities of what the shared structure may be since both overt and null forms are possible in both languages. Following Kang's (2013) proposal, we will assume that when the two languages are roughly balanced, the shared structure is the overt form, and therefore the influence will be from English to Japanese.

Research question

The research question to be addressed in the current study is as follows: Is there a CLI in the use of objects in Japanese/English simultaneous bilinguals at early stages of linguistic development? More specifically: 1) Do bilingual children use more null objects than their monolingual peers in English? 2) Do bilingual children use more overt objects than their monolingual peers in Japanese? We predict that there will be an influence from English to Japanese and not vice versa, unless the children are dominant in Japanese. That is, the children's use of English null objects will be comparable to those of their monolingual peers, and the children will use Japanese overt objects more frequently than their monolingual peers.

2. Method

Participants

The participants of the current study were two- to three-year-old bilingual children, Rie (girl) and Ken (boy), who resided in the U.S. at the time of data collection and were acquiring Japanese and English as their first languages from birth. Both children

lived in an area where English is the majority language and Japanese is a minority language with no prominent communities of Japanese-speaking population. The mothers were both native speakers of Japanese and fluent in English, and the fathers were English speakers with some or little knowledge of Japanese. The couples thus communicated with one another in English. Both families adopted the one parent-one language policy in the home, and both parents made various efforts to keep the amount of input of the two languages as equal as possible. However, as Ken spent a few days a week at an English-speaking daycare, he had more English input than Japanese, whereas, because Rie mostly stayed home with her mother during the data collection period (until the very last stages of data collection when she also started English daycare), the input of the two languages was somewhat more balanced for her.

The monolingual controls are two MLU-matched children for each language from the CHILDES database (MacWhinney, 2000). The English monolingual children are Sarah and Eve from Brown (1973) and the Japanese children are Aki (Miyata, 1995) and Ryo (Miyata, 1992).

Data collection

Naturalistic mother-child and father-child interactions at the children's homes were video- and audio-taped every month for approximately a year: Rie from 2;4 to 3;3, and Ken from 2;0 to 3;2, totaling 22 and 26 recording sessions, respectively. Each recording was approximately one to two hours long. The data were then transcribed using CHAT conventions for the English data (MacWhinney, 2000) and JCHAT for the Japanese data (Oshima-Takane & MacWhinney, 1998).

Morpheme MLUs (MLUm) in each language were calculated for each observation

session following Brown (1973) to grasp the overall linguistic level of each child in each language as well as to compare with the monolingual peers. In the current study, we adopt MLUm and not MLU in word (MLUw) since MLUm is more sensitive to the developmental changes in Japanese before children turn 3;0 (Miyata 1996). Language dominance was determined based on the number of word types per session, as it has been considered to be a reliable measure for dominance (e.g., Genesee et al, 1995). Figures 1.1 and 1.2 display the age and MLUs per recording session of each child in both English and Japanese, and Figures 2.1 and 2.2 show the ratio of number of word types per session in each language.

INSERT FIGURES 1.1, 1.2, 2.1, 2.2 ABOUT HERE

From the criteria above, we consider the two bilinguals as roughly balanced bilinguals: for Rie, the proficiency levels of the two languages were roughly balanced throughout the period of data collection, with Japanese slightly leading in the first half, and for Ken, the two languages were roughly balanced during the first half of the data collection period (2;0 to 2;7), after which he became more dominant in English.

The information for the monolingual counterparts is presented below. Table 1 shows the selected file names, age and MLUs of the English-speaking children from the Brown corpus (1973), and Table 2 present the same information for the Japanese-speaking children from the Miyata corpus (1992, 1995) used for this study. The data were carefully chosen so that the children's ages and MLUs would match those of the bilingual children in the current study.

INSERT TABLES 1 and 2 ABOUT HERE

Coding

The children's utterances with transitive verbs were coded based on 1) argument form of the object: null, pronominal or lexical, and 2) the information status of the argument: new vs. given information. Below are examples of utterances coded as having null, pronominal, and lexical objects.

(7) Utterances with null objects

- a. Japanese Ø Ø kaitenai. (Rie 3;3)

draw-RES-NEG

'(I) didn't draw (the parrot).'

- b. English I help Ø. ("I help (you).") (Ken 3;1)

I wanna do Ø again. (I wanna do it again.") (Ken 3;2)

(8) Utterances with pronominal objects

- a. Japanese Ø zenbu nonde. (Rie 3;1)

all drink-IMP

'Drink all (the coffee).'

- b. English I can find it. (Ken 3;2)

Daddy squished me. (Ken 3;1)

(9) Utterances with lexical objects

- a. Japanese Ø oomu kaiteru no. (Rie 3;3)

parrot draw-CONT SFP

'(I) am drawing a parrot

b. English I put water on you. (Ken 3;2)

The argument was coded as new information when it was introduced into the discourse for the first time or after 20 or more turns after the last appearance within the same discourse, and the given information refers to the arguments that had already appeared in the discourse within 20 turns preceding the utterance (Oshima et al, 2004). The excerpt below exemplifies the utterances that were coded as new and given information.

(10) Given/new

The father is reading a book about a young bird and an old man to Rie. (Rie 3;2)

- 1 Father: well this is the restaurant -,
2 Father: and now, it says.
3 Father: some day, and they're in the park, waiting and watching all the
 children.
4 Father: see the big tree up there?
5 RIE: #long mommy -,
6 RIE: I [/] I cannot see the mommy. (New information)
7 RIE: # I see it ! (Given information)

While her father tells the story, Rie starts looking for the mother of the little bird in line 6 (“I cannot see the mommy”), which has not been mentioned yet, thus coded as new information. On the next turn Rie refers to the mother again (“I see it”), and therefore, this is coded as given information.

Among the Japanese utterances coded as given information, those that involved referents with competing entities in the particular context, thus requiring overt forms to avoid ambiguity (Williams, 1998), were excluded from the given category. Thus, the given category included only those that had little informative features to realize the object. This analysis was conducted only for the Japanese data because the overuse of overt forms would otherwise be considered an indication of influence from English. Refer to the examples below, in which ambiguity of the referent is resolved by an overt mention of the object.

(11)

a. Ø kore yonda no. (among other books) (Rie 2;11)

this read-PAST SFP

‘(I) read this book (not the other books).’

b. Ø mango tabetai. (not peach) (Rie 3;1)

mango want-to-eat

‘(I) want to eat mango (not peach).’

Deictic pronouns (you, me, us) were always coded as pronominal-given, which is also in accordance with Oshima et al (2004). Japanese-English mixed utterances, wh-questions and short response to questions are excluded from the analysis. For the English data, we exclude verbs that allow intransitive reading from the analysis so that only the ungrammatical null objects are counted as null. The quantitative analyses were conducted using CLAN (MacWhinney, 2000)

Analyses

Two analyses are conducted. First, overall ratios of null and overt objects are calculated for each language and are compared between bilingual and monolingual children to detect any cross-language effects. We further divide the data into three developmental stages by MLU_m: stage 1 from 1.0 to 1.5, stage 2 from 1.6 to 1.9, and stage 3 from 2.0 to 2.5 or 2.6 to capture whether there are any differences observed at different stages. It is reasonable to divide the data into different stages because from approximately the second to the third year of life, the use of arguments is reported to show substantial development in monolingual studies (Valian, 1991; Guerriero et al, 2006).

Second, we look at how children choose different argument forms (null, pronominal and lexical) according to discourse-pragmatics context. More specifically, we calculate the ratio of null, pronominal and lexical forms that refer to given information among all utterances with transitive verbs in each language. As was discussed in the previous section, Japanese and English differ in the argument realization patterns in a given context: accessible information typically appears in null forms in Japanese, whereas it tends to appear mostly in pronominal forms in English (Guerriero et al, 2006). Distribution patterns in bilingual children are therefore compared with those of monolingual peers to examine whether there is any influence from one language to the other in a more specific discourse context, i.e., given context, where the contrast between English and Japanese is prominent.

3. Results

Ratio of null/overt objects

Figure 3 below presents the ratio of null and overt objects in bilingual and monolingual children in English. As is clear from the figure, the ratios of null objects are very much alike among all four children, and we see no prominent overuse of null objects in the bilingual children: Rie 14% (17/125), Ken 18% (53/292) (16% on average in bilinguals), Sarah 12% (36/305), and Eve 17% (89/535) (15.5% on average). Thus, contrary to our prediction, we detect no clear influence from Japanese to English.

INSERT FIGURE 3 & TABLE 3 ABOUT HERE

We now turn to the developmental analysis. Refer to Figure 4 for the ratio of English null objects at different stages. We find that only at stage 1 are the null object ratios higher for the bilingual children (Rie 25% (4/16), Ken 40% (21/53), averaging 32.5%) compared to the monolingual children (Sarah 0% (0/6), Eve 19.4% (7/36)). At stages 2 and 3, both bilingual and monolingual children exhibit a similar tendency. At stage 2, the ratio of bilingual children's null objects averages 11.0% (Rie 11.9% (5/42), Ken 10% (2/20)) and that of monolingual children averages 13.8% (Sarah 15.0% (17/113), Eve 12.6%(12/95)), and at stage 3, the ratio for bilingual children averages 8.5% (Rie 7.8% (5/64), Ken 9.1% (17/188)) and 10.7% for the monolingual children (Sarah 7.7% (14/181), Eve 13.6% (54/396)). Thus, there seems to be no overuse of null objects among the bilingual children at the later stages.

INSERT FIGURE 4 & TABLE 4 ABOUT HERE

Now, refer to Figure 5, which shows the null/overt object ratio in Japanese. The percentages of the null objects of the two monolingual Japanese children, Aki and Ryo, are almost identical, 63% (45/71) and 65% (54/83), respectively. In the bilingual children's data, Ken shows a similar tendency (68%, 23/34), whereas Rie exhibits a slightly lower percentage (56%, 148/263). The slightly lower ratio of null objects in Rie's Japanese, or higher ratio of overt object, could be interpreted as an influence from English, which is consistent with our prediction.

INSERT FIGURE 5 & TABLE 5 ABOUT HERE

A developmental analysis was also performed for the Japanese data. Figure 6 displays the ratio of Japanese null objects at stages 1 to 3. Stage 1 has little or no data, so we will limit our analysis to stages 2 and 3. At both stages, but particularly at stage 2, we observed less use of null objects among the bilingual children compared to the monolingual peers. At stage 2, bilingual data averaged 61% (Rie 60.1% (92/153), Ken 62.5% (15/24)), whereas monolinguals showed a much higher ratio: approximately 80% on average (Aki 73.7% (14/19), Ryo 88.2% (15/17)). At stage 3, the difference was smaller, but still, the bilingual data were smaller: Rie 48.1% (50/104), (no data available for Ken), in contrast with Aki 56.3% (27/48) and Ryo 59.1% (39/66), 57% on average. Thus, the developmental analysis adds evidence to the claim that there is an influence from English to Japanese.

INSERT FIGURE 6 & TABLE 6 ABOUT HERE

From the above data, we find that the overall ratio of English null objects in the bilingual children was roughly comparable to that of the monolingual peers, but further developmental analysis confirms that bilingual children temporarily used null objects more often than their monolingual peers, suggesting an influence from Japanese to English at the earliest stage of development. However, the overall ratio of Japanese null objects in one of the bilingual children, Rie, was slightly lower than the monolingual control, perhaps indicating some influence from English to Japanese. Further developmental analysis confirms that bilingual children used null objects less often than their monolingual peers after their MLUs go beyond 1.6, suggesting an influence from English to Japanese. In summary, the current data suggest that there may have been an influence in both directions, with a very small influence from Japanese to English and a clear influence from English to Japanese.

Distribution of argument forms according to discourse-pragmatics

Now we turn to the analysis of the use of argument forms in different discourse-pragmatic contexts to observe whether the children are able to use language-specific forms to express objects according to the discourse conditions. Figure 7 summarizes the ratio of null, pronominal and lexical objects among all utterances with transitive verbs in a given context in English. According to the language-specific discourse-pragmatic principle (Guerriero et al 2006), given information is typically expressed in pronominal forms in English, whereas in Japanese, it tends to be expressed in null forms. If there were an influence from Japanese to English, then the bilingual children would typically use null objects instead of pronouns to express accessible information. The results show that was not the case. The ratios of null objects in bilingual

children's data were almost identical to those of the monolingual children: Rie 16% and Ken 18%, averaging 17% among bilingual children, and Sarah 10% and Eve 18%, averaging 14% among monolingual children.

It should be noted here that there were some individual differences in the use of pronominal forms regardless of whether the child is bilingual or monolingual. Rie and Sarah used pronominal forms (54% and 58%, respectively) more than lexical forms to express given information, which is in accordance with the proposed discourse-pragmatic principle (Guerriero et al 2006). However, Ken and Eve used more lexical forms than pronominal forms (43% and 59%, respectively) in the same context. This could be explained by the fact that pronominal forms develop during the second year of children's lives (Valian, 1991), and Ken and Eve had not yet fully developed that grammar at the time of data collection. Guerriero et al (2008) also report that pronominal forms appear as children approach the age of three in both bilingual and monolingual children. This can be interpreted as strong evidence that the bilingual children were not affected by the Japanese grammar (null object), because although pronominal forms were underdeveloped in Ken's grammar at the time of data collection, their use was not vulnerable to the influence of the Japanese grammar or to the universal discourse-licensing strategy that has been argued to be the trigger for the prolonged use of null forms in young bilingual children; Ken mainly used overt forms. Thus, from the current data, we detect no influence from Japanese to English.

INSERT FIGURE 7 & TABLE 7 ABOUT HERE

We now turn to the analysis of Japanese. Figure 8 shows the distribution of

different argument forms in given information in Japanese. Utterances that involve competing referents were excluded from the analysis. As is clear from the figure, the distribution is in principle very much alike among all four children: a majority of the objects in the given context were expressed in null forms, some in lexical forms and very few in pronominal forms. If there were any influence from English, it should manifest itself in the excessive use of pronominal forms to express given information in the bilingual children's Japanese. The results show that the ratios of pronominal forms were very similar among all children: 3% or less. Therefore, there seems to be no influence from English to Japanese.

However, there seems to be a slight difference between the bilinguals and the monolinguals in the use of lexical forms. The ratios among bilingual children (31% and 28%) were somewhat higher than those in monolingual children (20% and 23%), meaning that bilingual children tended to use more lexical forms than their monolingual peers. *That is, bilingual children seem to show a stronger tendency to use lexical forms instead of null forms to express a referent already introduced to the discourse. Below are some excerpts from our corpus.*

(12) The use of overt objects in given context with no competing referents

a. Researcher and Rie are talking about what Rie has eaten. (Rie 2;7)

1 Researcher: mame tabeta no-?

beans eat-PAST SFP

'Did you eat some beans?'

2 RIE: mame ne

beans SFP

‘beans,’

3 Researcher: un.

‘uh-huh’

4 RIE: mame ne: tabeta.

beans SFP eat-PAST

‘(I) ate some beans.’

b. Rie and mother talks about washing Rie’s hair. (Rie 2;10)

1 Mother: atama araoo ka ?

head (hair) wash-VOL Q

‘Let’s wash your hair.’

2 Mother: kyoo ohuro hairoo ka ?

today take a bath Q

‘Let’s take a bath today.’

3 Mother dooshite -?

why

‘why not?’

4 RIE: atama arawanai.

head (hair) wash-NEG

‘(I) won’t wash my hair.’

In example a., Rie is asked whether or not she has eaten some beans, and she responds by overtly mentioning the object “mame”(‘beans’) in lexical form, where responding by just the verb “tabeta” (‘ate’) is possible and natural in Japanese. In example b.,

Rie's mother asks if Rie would wash her hair, and she responds by overtly expressing the object ("atama"), which is again not necessary in this context.

Thus, the current data thus suggest that there seems to be some influence from English to Japanese.

INSERT FIGURE 8 & TABLE 8 ABOUT HERE

To summarize the results, we observed a very small amount of influence from Japanese to English in the bilingual children's use of objects: there was no excessive use of null objects in the bilingual children's English utterances except at the earliest stage of development, and such use disappeared in accordance with the development of pronouns. However, there seems to be a mild influence from English to Japanese: the bilingual children used slightly more lexical forms in the given context in Japanese compared with their monolingual peers, but there was no difference in the use of pronouns; we found no excessive use of pronominal forms in Japanese triggered by the existence of English pronouns.

4. Discussion

The interface hypothesis and the intensity of influence

The analyses reveal a bidirectional influence between English and Japanese: a temporary influence from Japanese to English at the initial stage of development resulting in syntactic violation in English and, at later stages, from English to Japanese, causing some discourse-pragmatic violation. The current results thus basically support Muller and Hulk's (2001) hypothesis, which states that syntax-

pragmatics interface structure is likely to induce interaction between the two language systems. The findings are also consistent with the observation in some of the previous studies that the interlingual influences are less intense in children acquiring typologically unrelated languages. That is, the difference between the bilingual children's object drop and that of their monolingual peers was not as drastic as has been reported in cases of children acquiring closely related language pairs.

The less intense influence from English to Japanese could be partially explained by the fact that there are fewer parallels between English and Japanese pronominal systems. In the Japanese data, the bilingual children's use of lexical forms exceeded that of the monolinguals, but their use of pronominal forms did not. We speculate that the lack of overuse of pronominal forms in the Japanese data occurs because there is little correspondence between English and Japanese pronouns. Personal pronouns in Japanese are less likely to be used in Japanese in general, as the roughly corresponding structure to English pronouns in Japanese are zero forms (Sugioka & Kageyama, 2011; Kuroda, 1965). Japanese does have overt pronouns; however, they are not a systematic syntactic replacement of given information but rather consist of a variety of different forms and require sociolinguistic consideration such as gender, formality and dialectal differences to choose an appropriate form in the context (e.g., Shibatani, 1990). Therefore, the knowledge of pronouns in English is less likely to be transferred to Japanese. This implies that, even if there is a seemingly overlapping structure, when the underlying systems are drastically different, the superficial overlap may not trigger influence.

Ambiguity hypothesis and the directionality of influence

The direction of influence was, in principle, consistent with Kang's (2013) proposal. We found influence at stages 2 and 3, that is, from the overt form of the overt argument language to the overt form of the null argument language, causing discourse-pragmatic violations. The influence in the other direction, from the null form of the null argument language to the null form of the overt argument language, was observed but was transient. Such influence, which involves syntactic violation, is not expected to occur unless language dominance in the null argument language overrides the proposed principle. Our data, thus, are overall consistent with Kang's proposal that null forms of the null argument language do not affect the null forms of the overt argument language to cause syntactic violations. It should be noted that the initial interaction between the two languages cannot be explained by language dominance, however, as the children were not dominant in Japanese. A possible explanation would be that the children's English objects were not fully developed at that stage, which is within a typical developmental schedule and therefore was easily affected by the null forms of Japanese.

The inconsistency observed in our results and those of Yip and Matthews (2000), whose data also involve children acquiring English and a null-argument language, would therefore be partly due to the difference in the language dominance of the children. In their data, the prolonged vulnerability in the English objects may have been caused by less-developed English syntax, which allowed Cantonese influence to violate its syntactic constraint. It can be argued, then, that linguistic dominance may affect the perceived ambiguity of grammatical structures in bilingual children. Concretely speaking, the slower development of English in Yip and Matthews' data could have made the lexical learning of English verbs less advanced, thus causing

vulnerability in the use of objects in English by the child. This may not have been the case if the two languages were developing in a more balanced manner.

The current study has contributed to the understanding of the complex mechanism of CLI by studying the initial stages of development in roughly balanced bilingual children acquiring structurally divergent language pairs. Further investigations are needed to clarify the universal and language-specific patterns of CLI in bilingual individuals.

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Tables and Figures

Figure 1.1 Age and MLUs of the two languages at each recording session (Rie)

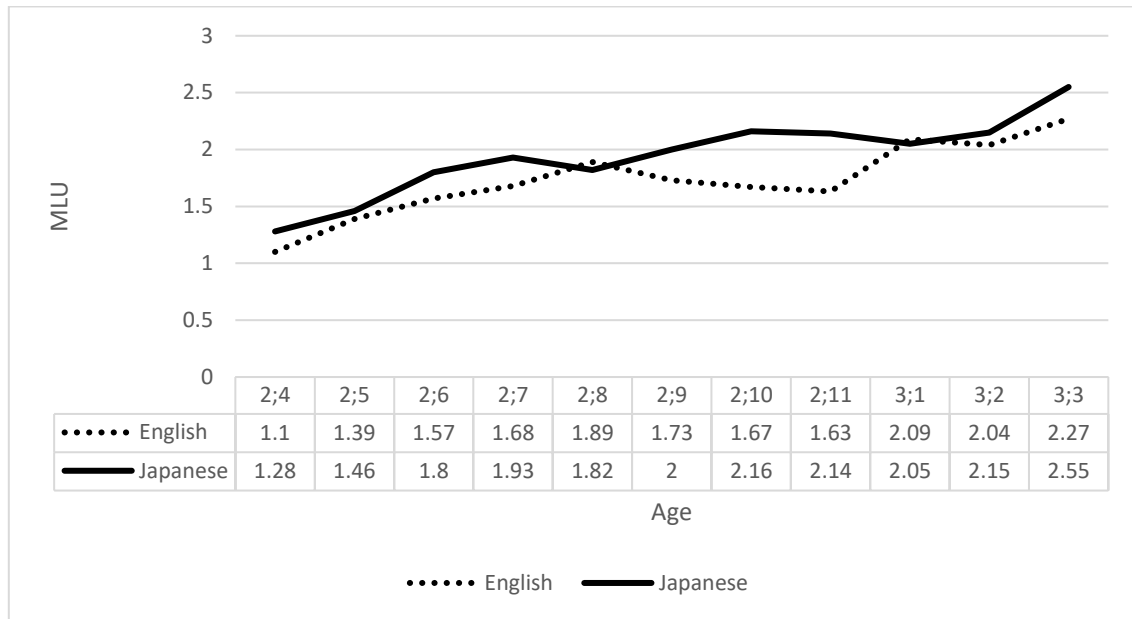


Figure 1.2 Age and MLUs of the two languages at each recording session (Ken)

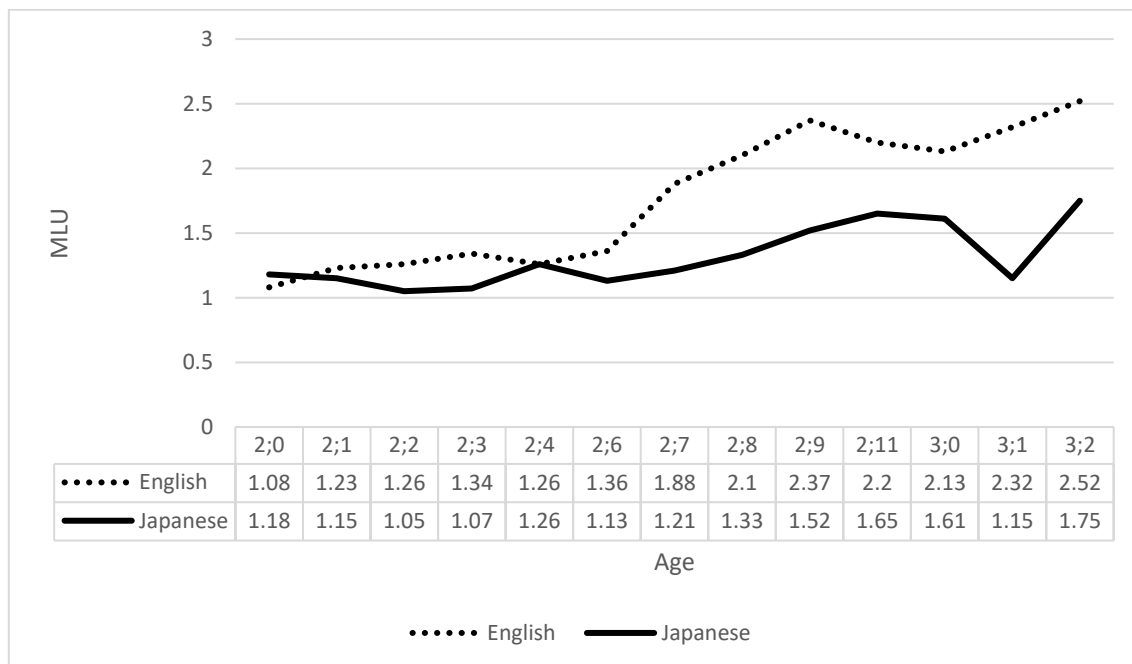


Figure 2.1 Ratio of number of word types in each language per session (Rie)

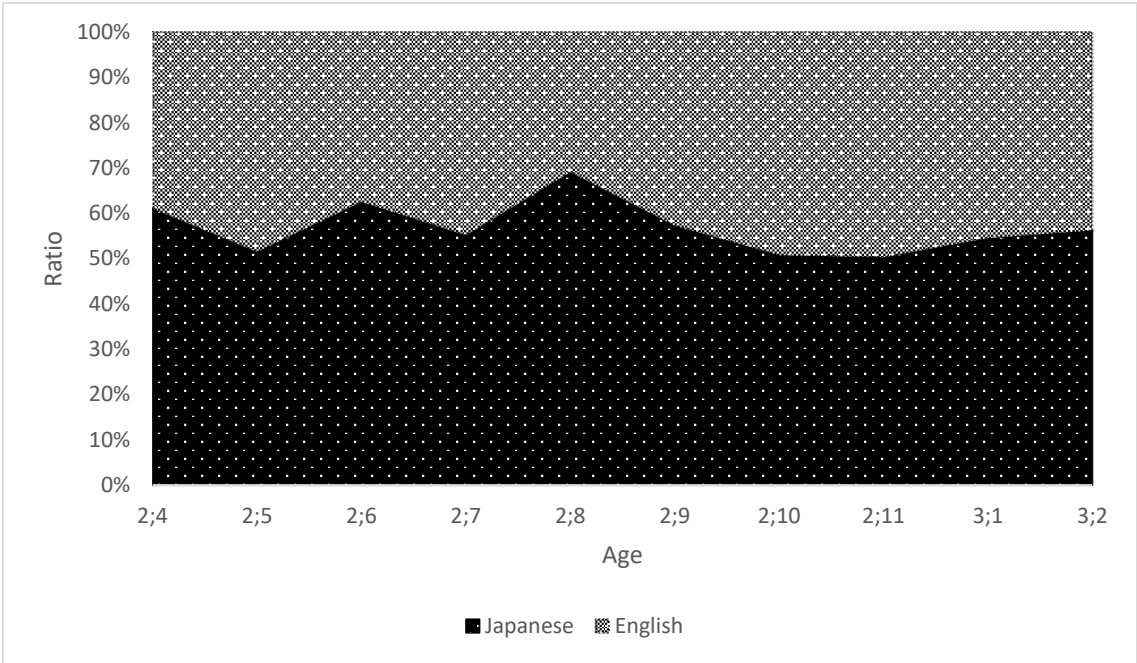


Figure 2.2 Ratio of number of word types in each language per session (Ken)

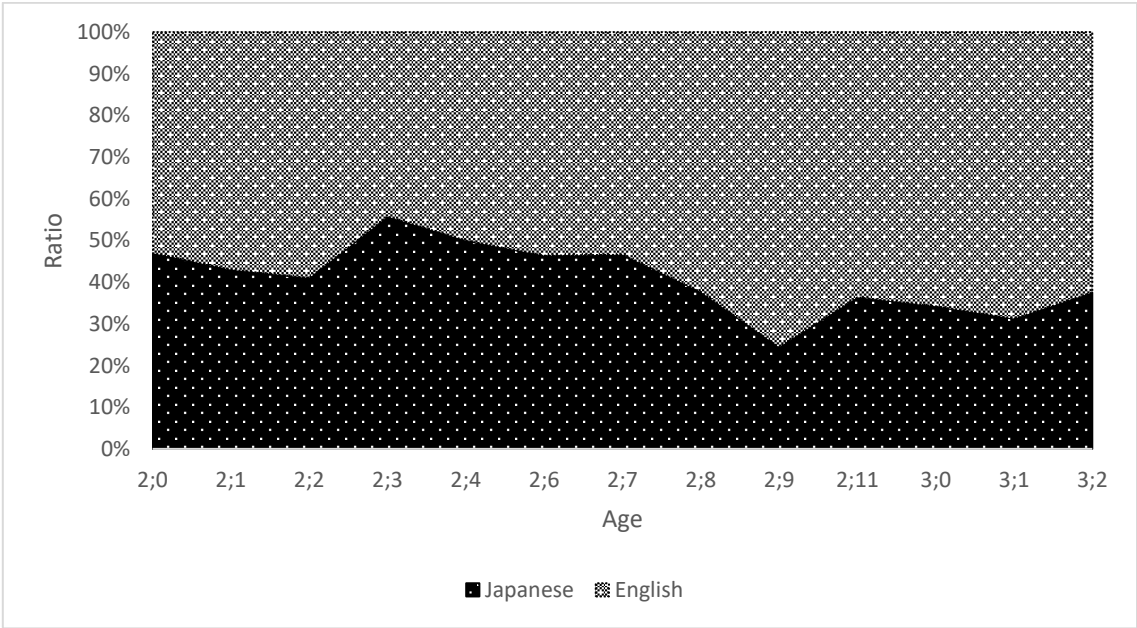


Table 1 Age and MLUs of the English monolingual children (Sarah, Even) at each session (Brown, 1973)

Sarah	Age	MLU	Eve	Age	MLU
Sarah001	2;3	1.53	Eve01	1;6	1.56
Sarah003	2;3	1.54	Eve02	1;6	1.68
Sarah005	2;3	1.51	Eve03	1;7	1.95
Sarah029	2;9	1.76	Eve04	1;7	1.73
Sarah030	2;9	1.91	Eve05	1;8	2.04
Sarah031	2;9	1.89	Eve06	1;9	2.37
Sarah040	3;0	2.34	Eve07	1;9	2.40
Sarah043	3;1	2.25	Eve08	1;9	2.62
Sarah049	3;2	2.47			

Table 2 Age and MLUs of the Japanese monolingual children (Aki, Ryo) at each session (Miyata, 1992, 1995)

Aki	Age	MLU	Ryo	Age	MLU
Aki14	2;01	1.31	R11012	1;10	1.17
Aki08	2;00	1.34	R11119	1;11	1.39
Aki21	2;03	1.63	R11118	1;11	1.36
Aki23	2;03	1.89	R20209	2;02	2.13
Aki29	2;05	2.33	R20216	2;02	1.89
Aki33	2;06	2.23	R20223	2;02	2.04
Aki35	2;07	2.57	R20501	2;05	2.58
			R20508	2;05	2.34
			R20522	2;05	2.53

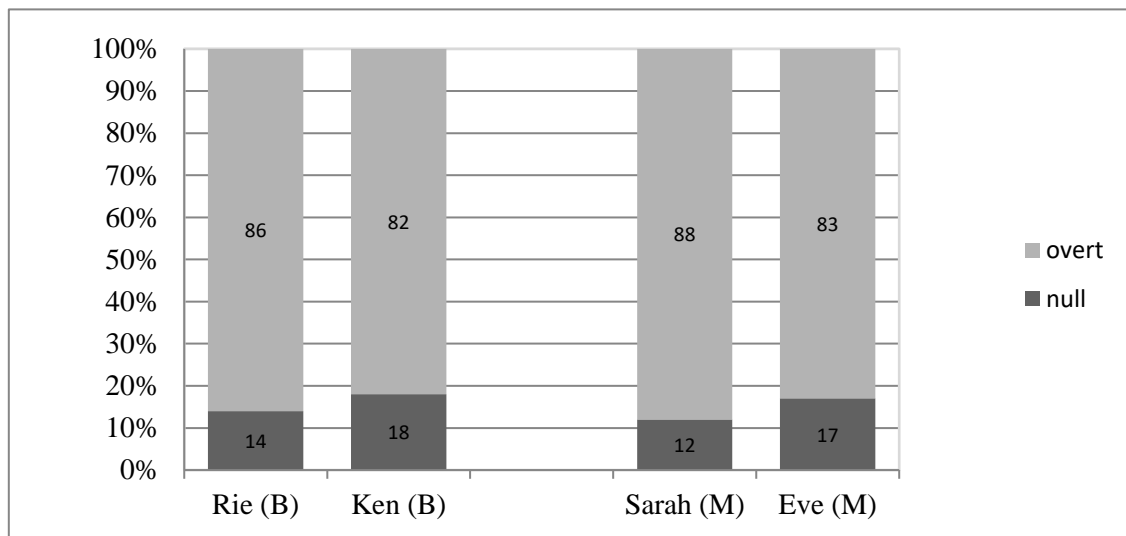


Figure 3 English null/overt ratio across all stages

Table 3 English null/overt ratio and number of occurrences across all stages

	Rie (B)	Ken (B)	Sarah (M)	Eve (M)
Overt	86% (108/125)	82% (239/292)	88% (269/305)	83% (446/535)
Null	14% (17/125)	18% (53/292)	12% (36/305)	17% (89/535)

Figure 4 The ratio of English null objects at stages 1 - 3

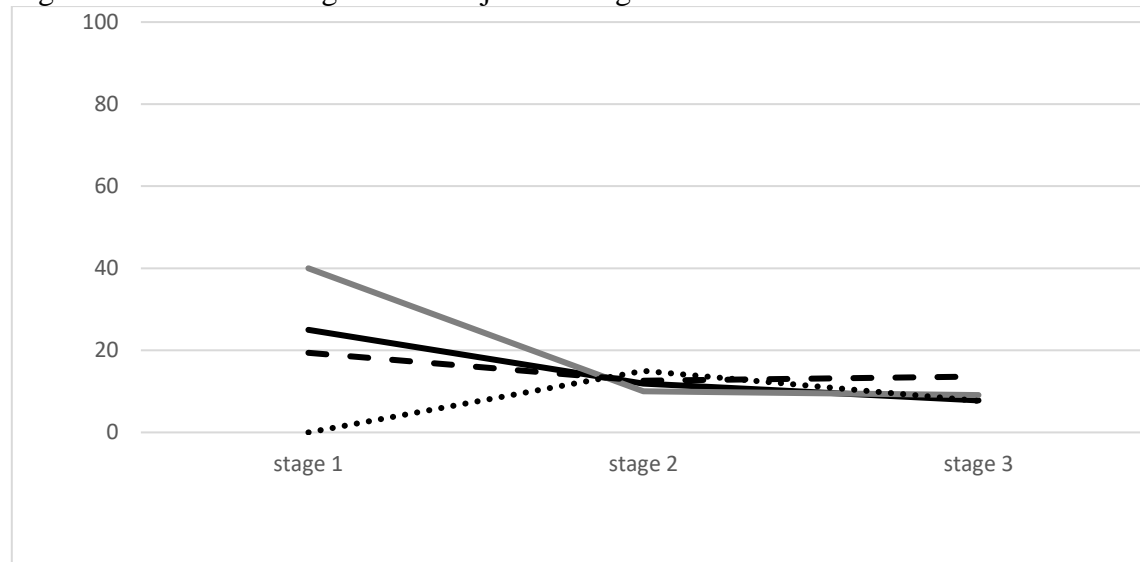


Table 4. The ratio and number of occurrences of English null objects at stages 1 - 3

	Stage 1	Stage 2	Stage 3
Rie (B)	25% (4/16)	11.9% (5/42)	7.8% (5/64)
Ken (B)	40% (21/53)	10% (2/20)	9.1% (17/188)
Sarah (M)	0% (0/6)	15.0% (17/113)	7.7% (14/181)
Eve (M)	19.4% (7/36)	12.6% (12/95)	13.6% (54/396)

Figure 5 Japanese null/overt ratio across all stages

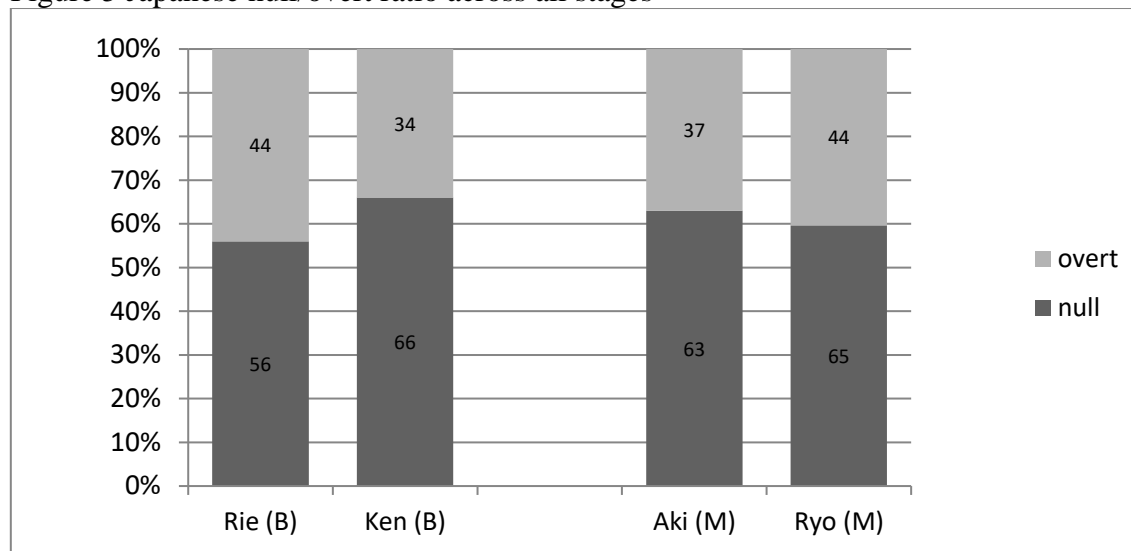


Table 5 Japanese null/overt ratio and number of occurrences across all stages

	Rie (B)	Ken (B)	Aki (M)	Ryo (M)
Overt	44% (115/263)	32% (11/34)	37% (26/71)	35% (29/83)
Null	56% (148/263)	68% (23/34)	63% (45/71)	65% (54/83)

Figure 6 The ratio of Japanese null objects stages 1-3

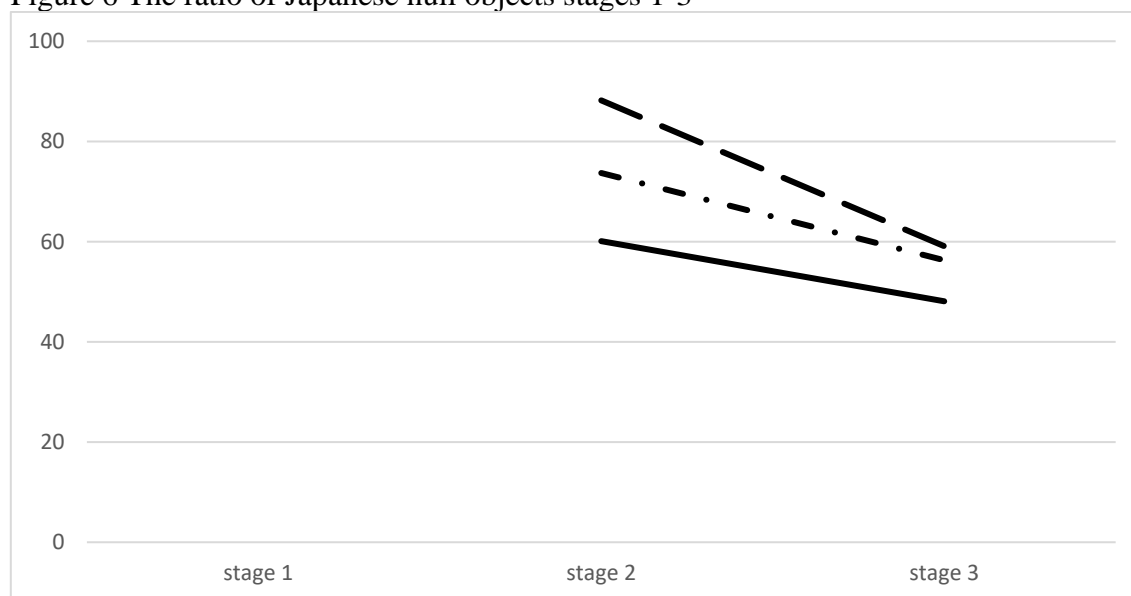


Table 6. The ratio and number of occurrences of Japanese null objects at stages 1 - 3

	Stage 1	Stage 2	Stage 3
Rie (B)	-	60.1% (92/153)	48.1% (50/104)
Ken (B)	-	62.5% (15/24)	-
Aki (M)	-	73.7% (14/19)	56.3% (27/48)

Ryo (M)	-	88.2% (15/17))	59.1% (39/66)
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Figure 7 The ratio of each argument type (null, pronominal, lexical) in English with reference to given information

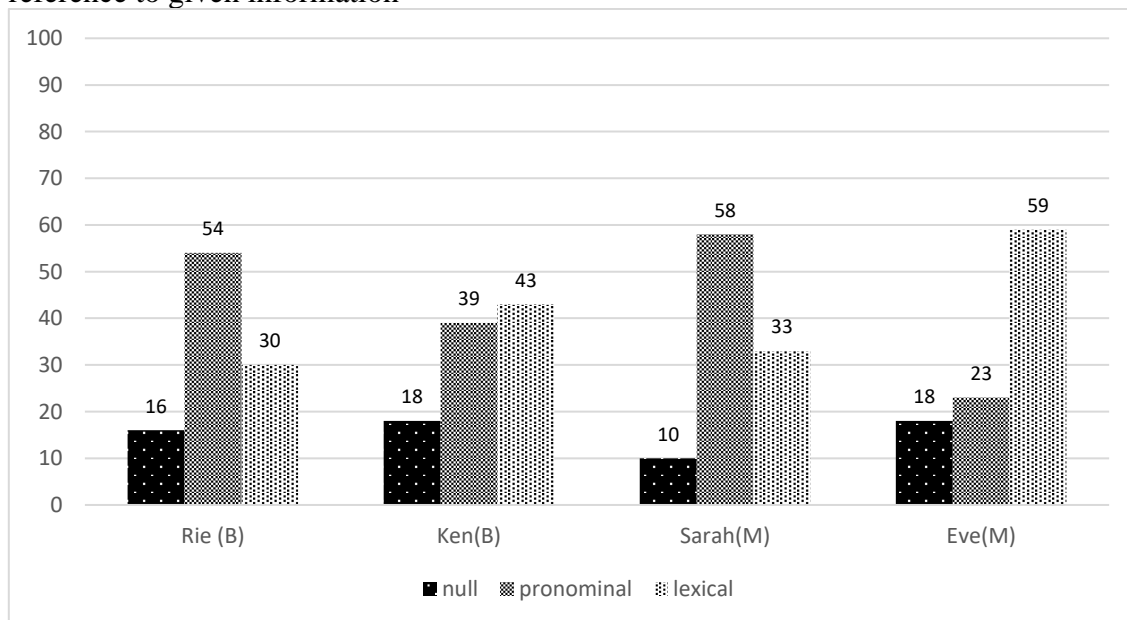


Table 7 The ratio and number of occurrences of each argument type (null, pronominal, lexical) in English with reference to given information

	Rie (B)	Ken (B)	Sarah (M)	Eve (M)
Null	16% (14/89)	18% (40/221)	10% (21//212)	18% (69/386)
Pronominal	54% (48/89)	39% (86/221)	58% (122/212)	23% (90/386)
Lexical	30% (27/89)	43% (95/221)	33% (69/212)	59% (227//386)

Figure 8 The ratio of each argument type (null, pronominal, lexical) in Japanese with reference to given information

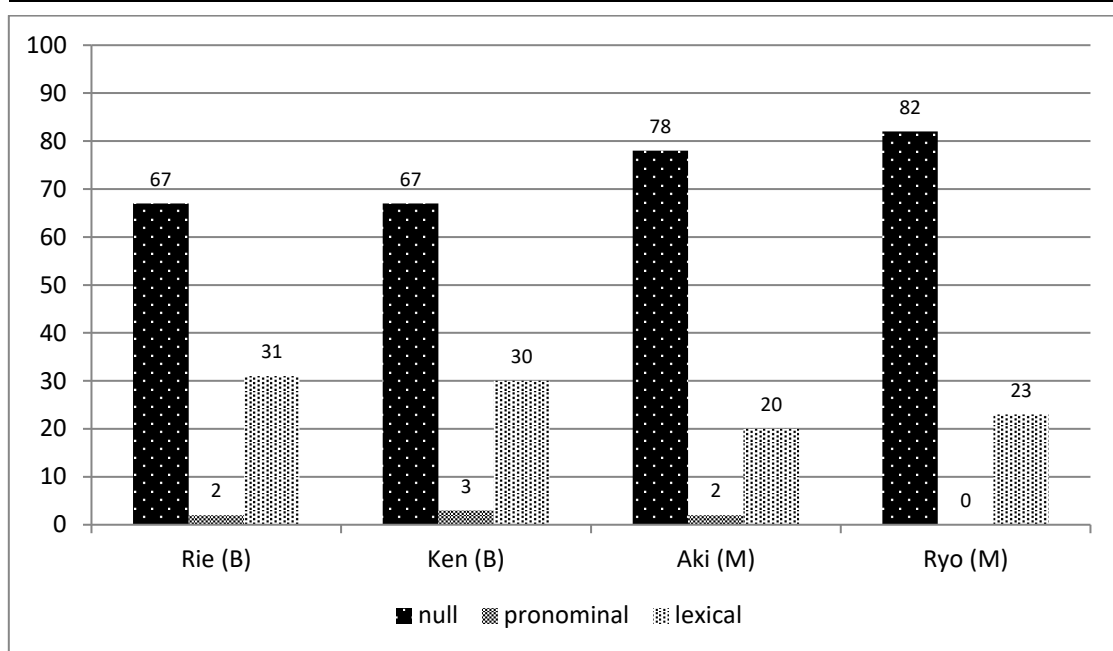


Table 8 The ratio and number of occurrences of each argument type (null, pronominal, lexical) in Japanese with reference to given information

	Rie (B)	Ken (B)	Aki (M)	Ryo (M)
Null	67% (128/190)	69% (22/32)	78% (32/41)	82% (40/49)
Pronominal	2% (3/190)	3% (1/32)	2% (1/41)	0
Lexical	31% (59/190)	28% (9/32)	20% (8/41)	18% (9/49)