A CONSTRAINT ON ARGUMENT ELLIPSIS IN CHILD JAPANESE*

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1. Introduction

It has been claimed in the theoretical literature that one of the distinguished characteristics of East Asian languages is the availability of *argument ellipsis* (e.g. Kim 1999, Oku 1998, Saito 2003, 2007, Saito & An 2010, Takahashi 2007, 2008): In languages like Japanese and Korean, null objects permit not only a strict-identity interpretation but also a sloppy-identity interpretation, and the latter reading is argued to derive from ellipsis of argument DPs.

(1)   Japanese:
    a.   John-ga   zibun-no   konpyuutaa-o   kowasita.
         John-NOM   self-GEN   computer-ACC   destroyed

         'John$_1$ destroyed his$_1$ computer.'

    b.   Mary-mo   _____   kowasita.
         Mary-also   destroyed

         'Mary$_2$ also destroyed his$_1$ computer / her$_2$ computer.'

(2)   Korean:
    a.   John-i   caki-uy   khemphyute-lul   pwuswuessta.
         John-NOM   self-GEN   computer-ACC   destroyed

         'John$_1$ destroyed his$_1$ computer.'

    b.   Mary-to   _____   pwuswuessta.
         Mary-also   destroyed

         'Mary$_2$ also destroyed his$_1$ computer / her$_2$ computer.'   (Saito & An 2010)

Not every type of argument can be elided, however. For example, the Japanese sentence in (3b) can only be interpreted as a yes/no question, and does not permit an interpretation as a

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wh-question. The absence of the latter reading suggests that *wh*-phrases cannot undergo argument ellipsis.

(3) a. Speaker A: John-wa   nani-o   tabeta no?   Speaker B: Ringo.
            John-TOP   what-ACC ate   Q   apple

         'What did John eat?'   'An apple.'

    b. Speaker A: Dewa, Mary-wa   _____   tabeta no?
            then   Mary-TOP   ate   Q

         'Then, did Mary eat something/that?' / *'Then, what did Mary eat?'

This study attempts to demonstrate experimentally that Japanese-speaking preschool children already have the knowledge about the constraint that argument ellipsis cannot be applied to *wh*-phrases. The results are consistent with the view that the relevant constraint directly follows from the properties of biologically-determined Universal Grammar (UG).

2. Argument Ellipsis in Japanese

The availability of sloppy reading in examples like (1) is unexpected if the object position is occupied by a null pronoun *pro*, since pronouns do not permit sloppy-identity interpretation, as exemplified in (4b).

(4) a. John-ga   zibun-no   konpyuutaa-o   kowasita.
            John-NOM   self-GEN   computer-ACC   destroyed

         'John$_1$ destroyed his$_1$ computer.'

    b. Mary-mo   sore-o   kowasita.
            Mary-also   it-ACC   destroyed

         'Mary$_2$ also destroyed his$_1$ computer. / *'Mary$_2$ also destroyed her$_2$ computer.'

In order to account for the availability of sloppy interpretation for null objects in Japanese, Otani and Whitman (1991) built on Huang's (1991) study on Chinese null objects, and put forth the analysis in which the relevant interpretation of (1b) stems from VP-ellipsis. One of the fundamental assumptions of their analysis is that Japanese has overt V-to-T raising, and hence the sentences in (1) are represented as in (5) in overt syntax. In the LF component, the antecedent VP is copied onto the empty VP, yielding (6), which contains an anaphor in its object position as well. The LF representation in (6) accounts for the sloppy interpretation of the sentence involving a null object in (1b).

(5) *In Overt Syntax:*

a. [TP John-ga   [T' [VP zibun-no konpyuutaa-o t_V]   [T kowasi$_V$-ta$_T$]]]
    John-NOM   self-GEN computer-ACC   destroyed

b. [TP Mary-mo   [T' [VP   *e*   ]   [T kowasi$_V$-ta$_T$]]]
    Mary-also   destroyed

(6) *In the LF Component:*

a. [TP John-ga   [T' [VP zibun-no   konpyuutaa-o t_V]   [T kowasi$_V$-ta$_T$]]]
    John-NOM   self-GEN   computer-ACC   destroyed

b. [TP Mary-mo   [T' **[VP zibun-no   konpyuutaa-o t_V]**   [T kowasi$_V$-ta$_T$]]]
    Mary-also   self-GEN   computer-ACC   destroyed

Even though the VP-ellipsis analysis successfully explains why null objects in Japanese permit sloppy interpretations, it faces a variety of problems (see Hoji 1998, Oku 1998, Saito 2007, and Takahashi 2008). Most notable is the observation by Oku (1998) that even null subjects allow the sloppy-identity reading, as illustrated in (7): The sentence in (7b) can mean either that Mary also thinks that John's proposal will be accepted (the sloppy reading), or that Mary also thinks that Mary's proposal will be accepted (the strict reading). Given that subjects arguably stay outside of VP in overt syntax and in LF, the VP-ellipsis analysis by Otani and Whitman (1991) would predict that the former interpretation should not be possible with null subjects, contrary to facts.

(7) a.   John-wa   [zibun-no   teian-ga   saiyousareru   to   ]   omotteiru.
      John-TOP   self-GEN   proposal-NOM   accepted-be   that   think

      'John$_1$ thinks that his$_1$ proposal will be accepted.'

b.   Mary-mo   [_____   saiyousareru   to   ]   omotteiru.
      Mary-also   accepted-be   that   think

      'Mary$_2$ also thinks that his$_1$ proposal / her$_2$ proposal will be adopted.'

In order to accommodate both the null-object examples as in (1) and the null-subject examples as in (7), Oku (1998), Saito (2003, 2007) and Takahashi (2008) (among others) put forth an alternative analysis in which only the relevant argument DP (not the VP) is elided.[1] Under their argument-ellipsis analysis, the sentences in (7) have the representations in (8) in overt syntax. After the derivation enters into LF, the antecedent DP, namely the anaphoric subject in (8a), is copied onto the empty subject position in (8b), resulting in the LF representation in (9b), which successfully yields the sloppy interpretation of the null subject.

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[1] Kim (1999) provides compelling evidence that argument ellipsis is available in Korean.

(8)　*In Overt Syntax:*

    a.　John-wa　[CP [DP zibun-no teian-ga　]　[T' saiyousareru] to　] omotteiru.
         John-TOP　　　self-GEN proposal-NOM　　accepted-be　that　think

    b.　Mary-mo　[CP [DP　　　*e*　　　]　[T' saiyousareru] to　] omotteiru.
         Mary-also　　　　　　　　　　　　accepted-be　that　think

(9)　*In the LF Component:*

    a.　John-wa　[CP | [DP zibun-no teian-ga　] | [T' saiyousareru] to] omotteiru.
         John-TOP　　| self-GEN　proposal-NOM | accepted-be　that　think

    b.　Mary-mo　[CP | **[DP zibun-no　teian-ga]** | [T' saiyousareru] to] omotteiru.
         Mary-also　　| self-GEN　proposal-NOM | accepted-be　that　think

3.　Parametric Variation in Argument Ellipsis and the Anti-agreement Approach

    Oku (1998) observes that the availability of argument ellipsis is subject to cross-linguistic variation: Argument ellipsis is permitted in Japanese but is not allowed in languages like Spanish or English.[2] As illustrated in (10b), Spanish permits null subjects, but these null subjects cannot have sloppy interpretation: (10b) only means that Juan believes that Maria's proposal will be accepted, and it never means that Juan believes that Juan's proposal will be accepted. In the English example (11), which contains a verb that optionally allows a missing object, the second clause simply means that John did some eating activity, and never permits sloppy reading.

(10)　Spanish (Oku 1998: 305):

    a.　Maria　cree　　[que　su　propuesta　será　　aceptada] y
         Maria　believes　that　her　proposal　will-be　accepted　and

         Maria₁ believes that her₁ proposal will be accepted and …'

    b.　Juan　también　cree　　[que _____　será　　aceptada].
         Juan　too　　believes　that　　　　　will-be　accepted

         'Juan₂ also believes that her₁ proposal will be accepted.'
        *'Juan₂ also believes that his₂ proposal will be accepted.'
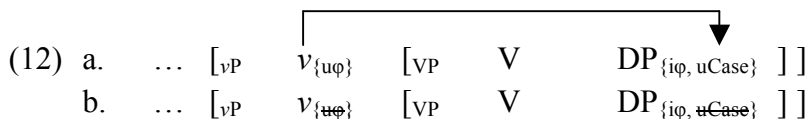
(11)　English (Oku 1998: 311):
    Bill₁ ate his₁ shoe, and John ate, too.

    To account for the cross-linguistic difference between Japanese on one hand and English
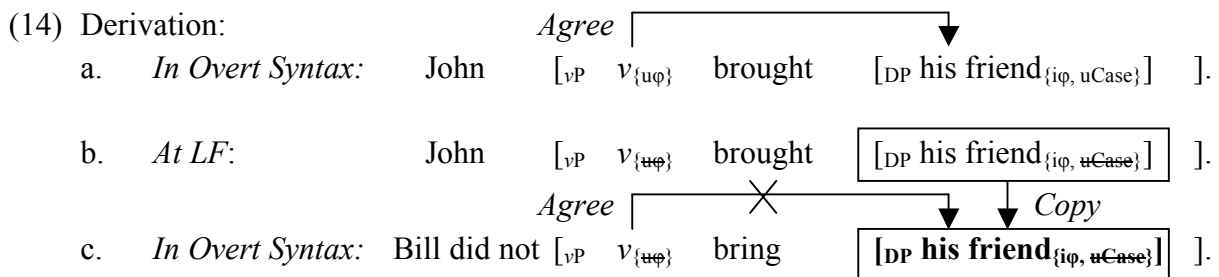
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[2] See also Takahashi (2007) for a detailed cross-linguistic survey concerning the availability of argument ellipsis.

and Spanish on the other, Saito (2007) built on Kuroda's (1998) proposal that the main source of the various differences between English and Japanese is the presence vs. absence of obligatory agreement, and proposed that argument ellipsis in Japanese stems from the absence of overt agreement in this language. According to Chomsky (2000), agreement is a probe-goal relation induced by a set of uninterpretable φ-features on the functional heads of T and *v*. In the case of object agreement illustrated in (12), the uninterpretable φ-features of *v* agree with the matching, interpretable φ-set of the object DP. The object satisfies the condition that the goal must have an uninterpretable Case feature (the Activation Condition), and hence qualifies as a goal. The agreement relation results in the deletion of the uninterpretable φ-features on *v* and the uninterpretable Case feature of the DP.

(12) a.   … [$_{vP}$ $v_{\{u\varphi\}}$ [$_{VP}$ V   DP$_{\{i\varphi, uCase\}}$]]

   b.   … [$_{vP}$ $v_{\{u\varphi\}}$ [$_{VP}$ V   DP$_{\{i\varphi, uCase\}}$]]

Saito (2007) argues that the agreement relation illustrated above is obligatory in languages like English and Spanish, and that this obligatory nature of agreement excludes argument ellipsis from these languages. For example, the derivation of the English examples in (13) proceeds as shown in (14). The object DP *his friend* in (13a) must be copied into the object position of (13b) for the latter sentence to be properly interpreted. If we assume that only LF objects can be employed in LF-copying, the DP *his friend* must be copied into (13b) from the LF representation of (13a).[3] However, this DP has already agreed with its *v* in (13a), and hence the uninterpretable Case feature that rendered this DP active has already been deleted. Then, given the Activation Condition, it does not qualify as a goal in the required agree relation in (13b), and consequently, the derivation crashes due to the remaining uninterpretable φ-features of *v*.

(13) a.   John brought [$_{DP}$ his friend].
   b.   *But Bill did not bring _____.

(14) Derivation: *Agree*
   a.   *In Overt Syntax:*   John   [$_{vP}$ $v_{\{u\varphi\}}$ brought   [$_{DP}$ his friend$_{\{i\varphi, uCase\}}$]   ].

   b.   *At LF*:   John   [$_{vP}$ $v_{\{u\varphi\}}$ brought   [$_{DP}$ his friend$_{\{i\varphi, uCase\}}$]   ].
                            Agree   ✕   ↓ *Copy*
   c.   *In Overt Syntax:*   Bill did not   [$_{vP}$ $v_{\{u\varphi\}}$ bring   [$_{DP}$ **his friend**$_{\{i\varphi, uCase\}}$]   ].

The corresponding derivation converges in Japanese, however, given that Japanese lacks overt agreement, which, according to Saito (2007), indicates that the uninterpretable φ-features on T and *v* are optional in this language. The derivation of the Japanese examples in (15) proceeds as shown in (16). In (15), the object DP *zibun-no tomodati* 'self's friend' is
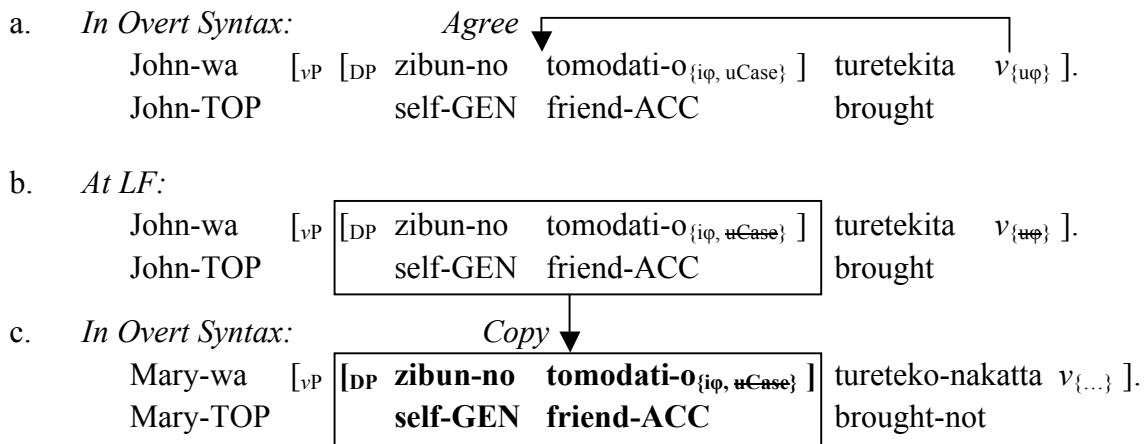
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[3] See Saito (2007) for evidence that only LF objects can be employed in the LF-copying operation involved in argument ellipsis.

copied from the LF representation of (15a) into the object position of (15b), as in (16c). Since φ-features on a functional head are optional, the *v* in (15b) need not have uninterpretable φ-features. Thus, the object DP in (15a) can be successfully copied into (15b) even though its uninterpretable Case feature has already been deleted, and the derivation converges.

(15) a.　　John-wa　　[$_{DP}$ zibun-no　tomodati-o]　turetekita.
　　　　　　John-TOP　　　self-GEN　friend-ACC　　brought

　　　　'John₁ brought his₁ friend.'

　　b.　　Demo　Mary-wa　　_____　　tureteko-nakatta.
　　　　　　but　　Mary-TOP　　　　　　　　brought-not

　　　　'But Mary₂ did not bring her₂ friend.'

(16) Derivation:
　　a.　*In Overt Syntax:*　　　　*Agree*
　　　　John-wa　　[$_{vP}$ [$_{DP}$ zibun-no　tomodati-o$_{\{i\varphi, uCase\}}$]　turetekita　$v_{\{u\varphi\}}$].
　　　　John-TOP　　　　　self-GEN　friend-ACC　　　　　brought

　　b.　*At LF:*
　　　　John-wa　　[$_{vP}$ [$_{DP}$ zibun-no　tomodati-o$_{\{i\varphi, \text{uCase}\}}$]　turetekita　$v_{\{\text{u}\varphi\}}$].
　　　　John-TOP　　　　　self-GEN　friend-ACC　　　　　brought

　　c.　*In Overt Syntax:*　　　　*Copy*
　　　　Mary-wa　　[$_{vP}$ **[$_{DP}$ zibun-no　tomodati-o$_{\{i\varphi, \text{uCase}\}}$]**　tureteko-nakatta　$v_{\{...\}}$].
　　　　Mary-TOP　　　　　**self-GEN　friend-ACC**　　　　brought-not

　　　To summarize this section, Saito's (2007) "anti-agreement" approach attributes the cross-linguistic variation in the availability of argument ellipsis to a more prominent property that is also subject to variation, namely the presence vs. absence of obligatory agreement.[4]


4. A Consequence of the Anti-agreement Approach to Argument Ellipsis

　　　An immediate consequence of the anti-agreement approach proposed by Saito (2007) would be that if a certain type of phrase must undergo obligatory agreement, then that type of phrases cannot be elliptic even in Japanese. I argue that this expectation is indeed borne out by *wh*-phrases.
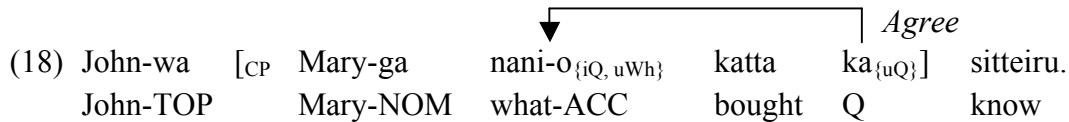
　　　Chomsky (2000) analyzes *wh*-movement in English as follows. A *wh*-phrase has an uninterpretable feature {u*Wh*} and an interpretable feature {iQ}. The former activates the *wh*-phrase for agreement and movement, and the latter matches and agrees with the

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[4] See Şener and Takahashi (2009) for evidence from Turkish for the anti-agreement approach. See Oku (1998), Saito (2003), and Takahashi (2008) for a different approach, which relates the availability of argument ellipsis in Japanese to the existence of scrambling.

uninterpretable feature {uQ} of an interrogative complementizer.

(17) John knows [$_{CP}$ C$_{\{uQ\}}$ [$_{TP}$ Mary bought what$_{\{iQ, uWh\}}$]]
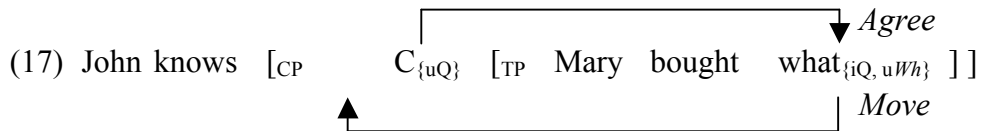
Agree

Move

Developing the proposals by Watanabe (1992) and Hagstrom (1998), Chomsky suggests the possibility that *wh*-in-situ constructions also involve an agreement relation as illustrated in (18): The difference between *wh*-movement and *wh*-in-situ languages lies in whether the entire *wh*-phrase is moved (as in English), or only the head undergoes movement overtly or covertly (as in Japanese).[5]
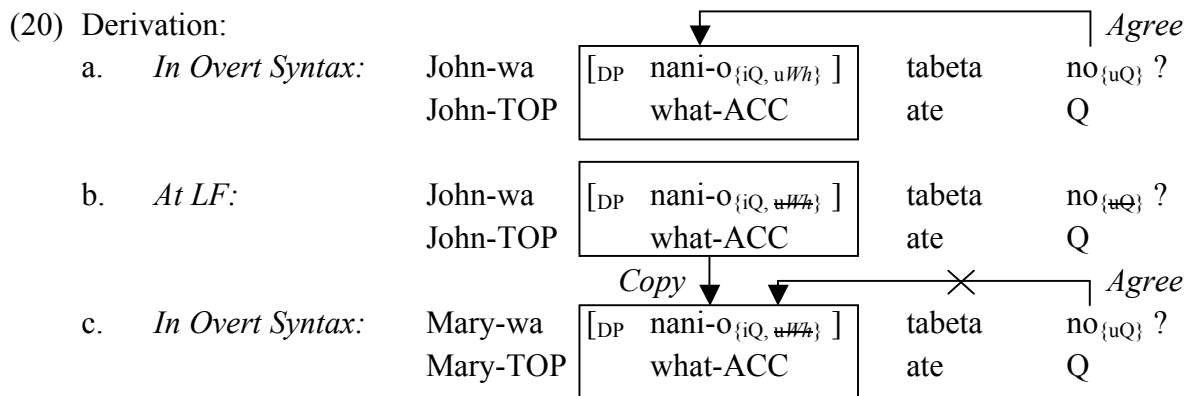
Agree

(18)	John-wa	[$_{CP}$ Mary-ga	nani-o$_{\{iQ, uWh\}}$	katta	ka$_{\{uQ\}}$]	sitteiru.
	John-TOP	Mary-NOM	what-ACC	bought	Q	know

'John knows what Mary bought.'

The obligatory agreement relation between a *wh*-phrase and an interrogative complementizer provides a very simple account for the observation that argument ellipsis of *wh*-phrases is not permitted, as illustrated in (3) (which is repeated here as (19)).

(19) a. Speaker A: John-wa nani-o tabeta no? Speaker B: Ringo.
John-TOP what-ACC ate Q apple

'What did John eat?' 'An apple.'

b. Speaker A: Dewa, Mary-wa _____ tabeta no?
then Mary-TOP ate Q

'Then, did Mary eat something/that?' / *'Then, what did Mary eat?'

The relevant derivation proceeds as shown in (20). The object *wh*-phrase *nani-o* 'what' is copied from the LF representation of (19a) into the object position of (19b), as in (20c). However, this *wh*-phrase has already agreed with the complementizer in (19a), and hence the uninterpretable feature {u*Wh*} that rendered this *wh*-phrase active has already been deleted. Then, given the Activation Condition, the copied *wh*-phrase does not qualify as a goal in the required agreement relation, and consequently, the derivation involving LF-copying of a *wh*-phrase does not converge due to the remaining uninterpretable feature {uQ} of the complementizer.

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[5] Watanabe (1992) argues that a null operator undergoes overt movement in Japanese *wh*-in-situ constructions, while in Hagstrom's (1998) analysis, it is the question particle (*ka*) that undergoes syntactic movement from a clause-internal position (by the *wh*-word) to the clause periphery.

(20) Derivation:

    a.   *In Overt Syntax:*   John-wa   [$_{DP}$ nani-o$_{\{iQ, uWh\}}$]   tabeta   no$_{\{uQ\}}$?   *Agree*
                                  John-TOP   what-ACC   ate   Q

    b.   *At LF:*   John-wa   [$_{DP}$ nani-o$_{\{iQ, \text{u}Wh\}}$]   tabeta   no$_{\{uQ\}}$?
                              John-TOP   what-ACC   ate   Q

                                    Copy   ×   *Agree*

    c.   *In Overt Syntax:*   Mary-wa   [$_{DP}$ nani-o$_{\{iQ, \text{u}Wh\}}$]   tabeta   no$_{\{uQ\}}$?
                                Mary-TOP   what-ACC   ate   Q

What the above discussion shows is that the absence of *wh*-phrase ellipsis follows from Saito's (2007) anti-agreement approach *without any additional cost*, if we adopt Chomsky's (2000) assumption that *wh*-phrases must undergo agreement with an interrogative complementizer even in *wh*-in-situ languages like Japanese. I must hasten to add the following: I do *not* claim that the derivation in (20) would be the *only* source for the lack of *wh*-phrase ellipsis. Another possible (and plausible) account for this observation is easily available: A *wh*-phrase is inherently focused, and a focused material cannot be subject to ellipsis. What I argue here is that the anti-agreement approach provides an additional way to exclude ellipsis of *wh*-phrases in Japanese, and that the relevant mechanisms automatically follow from (independently motivated) properties of UG. A virtue of deriving the ban on eliding *wh*-phrases from the anti-agreement approach is that we can obtain a clear prediction for children's knowledge about this constraint: Since the obligatory agreement relation between a *wh*-phrase and an interrogative complementizer directly follows from UG, it is predicted that those Japanese-speaking preschool children who already have the knowledge about argument ellipsis should also have the knowledge that *wh*-phrases cannot undergo this type of ellipsis. In order to evaluate this prediction, the next section summarizes my own previous study that investigated whether argument ellipsis is in the grammar of Japanese-speaking children, and Section 6 reports the results of a new experiment which examined children's knowledge about the ban on eliding *wh*-phrases.

5. Argument Ellipsis in Child Japanese: A Previous Study

Let us recall that Saito's (2007) anti-agreement approach attributes the availability of argument ellipsis in Japanese to a more prominent property of this language, namely the absence of overt agreement. Previous acquisition literature reports that agreement is acquired fairly early, at least by the age of three. A detailed study by Hyams (2002) summarizes the results of various acquisition studies, and observes that children acquiring "rich" agreement languages such as Italian and Catalan obey the subject-verb agreement requirement from the earliest stage (before or around the age of two), even before they produce all the forms in the paradigm. For example, singular verb morphology is typically acquired before plural morphology, and first- and third-person forms appear earlier than second-person forms. Nevertheless, agreement is almost always correct for those forms that are used. As summarized in Table 1, across children and languages, agreement errors are under 4%. Given

the finding that agreement errors are extremely rare in the acquisition of "rich" agreement languages, we can reasonably speculate that children acquiring agreementless languages like Japanese would also be sensitive to the absence of overt agreement from the early stages of acquisition.

Child	Language	Age	n	% error	Source
Simone	German	1;07-2;08	1732	1	Clahsen and Penke 1992
Martina	Italian	1;08-2;07	478	1.6	Guasti 1994
Diana	Italian	1;10-2;06	610	1.5	Guasti 1994
Guglielmo	Italian	2;02-2;07	201	3.3	Guasti 1994
Claudia	Italian	1;04-2;04	1410	3	Pizzuto and Caselli 1992
Francesco	Italian	1;05-2;10	1264	2	Pizzuto and Caselli 1992
Marco	Italian	1;05-3;00	415	4	Pizzuto and Caselli 1992
Marti	Catalan/Spanish	1;09-2;05	178	0.56	Torrens 1992
Josep	Catalan/Spanish	1;09-2;06	136	3	Torrens 1992
Gisela	Catalan	1;10-2;06	81	1.2	Torrens 1992
Guillem	Catalan	1;09-2;06	129	2.3	Torrens 1992

Table 1: Percentage of Subject-Verb Agreement Errors in Early Language (Hyams 2002:231)

Since we have reasons to believe that the property that is allegedly connected to argument ellipsis is acquired early, the parametric proposal by Saito (2007) should make the following prediction:

(21) *Prediction for Child Japanese*:
      Japanese-speaking preschool children have knowledge of argument ellipsis.

Sugisaki (2007) evaluated this prediction by conducting an experiment with ten Japanese-speaking preschool children, ranging in age from 3(years);01(month) to 5;07 (mean age 4;05).[6] The experiment examined children's interpretation of sentences involving null objects, by using a modified version of the Truth-Value Judgment Task (Crain and Thornton 1998).[7] In this task, each child was told a story, which was accompanied by a series of pictures presented on a laptop computer. At the end of each story, a puppet described verbally what he thought had happened in the story. The task for the child was to judge whether the puppet's description was true or false, by feeding him either a nice strawberry or a horrible green pepper. The experiment contained (i) two sentences with null objects, and (ii) two sentences with overt pronouns, in order to determine whether children allow the sloppy interpretation for null objects while disallowing this interpretation for overt pronouns. A sample story and the test sentences that followed it are presented in (22) and (23).

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[6] See also Otaki and Yusa (2009, in press) for evaluation of the prediction in (21).

[7] See also Matsuo (2007) for a related study which investigated Japanese-speaking children's interpretation of null-object sentences.

(22) A Sample Story:

Today, Panda and Pig enjoyed riding on their favorite tricycles. Now they decided to wash them. Panda said, "Oh! My tricycle is very dirty." Pig said, "Shall I help you wash your tricycle?" Panda replied, "No, thanks. I will try to do it by myself, so you can work on your own." They started washing their favorite tricycles.

(23) Sample Test Sentences:

a. Pandasan-ga   zibun-no   sanrinsya-o   aratteru   yo.
    Panda-NOM   self-GEN   tricycle-ACC   washing   EXCL

    'Panda$_1$ is washing his$_1$ tricycle.'

b. Butasan-mo   _____ / sore-o   aratteru   yo.
    Pig-also   it-ACC   washing   EXCL

    'Pig is also washing _____ / it.'

The results are summarized in Table 2. The obtained results clearly indicate that Japanese-speaking preschool children permit the sloppy-identity interpretation for null-object sentences, which in turn suggests that the knowledge of argument ellipsis is already in their grammar. This finding is consistent with the parametric proposal by Saito (2007) that UG is equipped with a parameter that relates the availability of argument ellipsis in Japanese with a more prominent characteristic of this language, namely the absence of agreement.

Sloppy-identity Interpretation of Null Objects	90% acceptance (18/20)
Sloppy-identity Interpretation of Overt Pronouns	85% rejection (17/20)

Table 2: Summary of Sugisaki's (2007) Results

6. A Constraint on Argument Ellipsis in Child Japanese: A New Experiment

In the previous section, we have established that the knowledge of argument ellipsis is already in the grammar of Japanese-speaking preschool children. We have also seen in Section 4 that if we adopt the anti-agreement approach to argument ellipsis, the ban on eliding *wh*-phrases should follow from the properties of UG that underlie the obligatory agreement relation between an interrogative complementizer and a *wh*-phrase. These considerations lead to the prediction for acquisition given in (24).

(24) *Prediction for Child Japanese*:
  Japanese-speaking preschool children have the knowledge about the constraint that *wh*-phrases cannot undergo argument ellipsis

In order to evaluate the prediction in (24), an experiment was conducted with 16 Japanese-speaking preschool children, ranging in age from 3;09 to 4;07 (mean age: 4;01). The task for children was Question-after-Story. In this task, each child was told a short story, which was accompanied by a series of pictures presented on a laptop computer. At the end of each story, a puppet appeared on the screen and asked the child two questions with respect to what had happened in the story. The task for the child was to answer these questions. All the test questions were pre-recorded and came out from the laptop computer.

A sample story is presented in (25).

(25) A Sample Story:
  Duck and Squirrel are playing with their favorite toys. Duck now starts to draw his favorite airplane. Since Squirrel is not good at drawing, he thinks of just taking a look at how well Duck draws the airplane. However, by looking at Duck's drawing, Squirrel now wants to give a try. So Squirrel also starts to draw his favorite train.

Each story was followed by two questions. The first question was always a *wh*-question like (26). The second question, which was posed after a child had answered the first one, was of three types: (i) a *wh*-question as in (27a), (ii) a question involving a null object as in (27b), and (iii) a truncated question as in (27c). In adult Japanese, the questions in (27a) and (27c) are interpreted as a *wh*-question (and hence requires a short answer "A train"), while the question with a null object in (27b) is interpreted as a yes/no question.[8]

(26) The First Question: Ahirusan-wa   nani-o   kaita   kana?
                           Duck-TOP   what-Acc   draw   Q

                    'What did Duck draw?'

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[8] The truncated question in (27c) is interpreted as a *wh*-question since the preceding question (26) is also a *wh*-question: It can be interpreted as a yes/no question when the preceding question is a yes/no question.

(27) The Second Question:

    a.   *Wh*-question: Jaa,   Risusan-wa   nani-o   kaita   kana?

                                          then   Squirrel-TOP what-Acc draw Q

                                          'Then, what did Squirrel draw?'

    b.   Question with a null object: Jaa,   Risusan-wa   _____   kaita   kana?

                                          then   Squirrel-TOP   draw Q

                                          'Then, did Squirrel draw (something)?'

    c.   Truncated question: Jaa,   Risusan-wa?

                                          then   Squirrel-TOP

                                          'Then, Squirrel?'

One might worry that some intonational difference between a null-object question like (27b) and a *wh*-question as in (27a) may play a role for children to conclude that the former is not a *wh*-question but a yes/no question. In order to make sure that there should be no crucial intonational difference between these two types of questions (other than the presence of a *wh*-phrase), the null-object questions were created from the corresponding *wh*-questions by deleting the sound corresponding the *wh*-phrase, using Praat (Boersma and Weenink 2010).

Truncated questions like (27c) were added to exclude the possibility that children always provide a yes/no answer to questions without an overt *wh*-phrase: If it can be shown that children interpret questions with a null object like (27b) as a yes/no question despite the fact that they interpret truncated questions like (27c) as a *wh*-question, then this would allow us to conclude that children do not determine the interpretation of a question based on the presence or the absence of a *wh*-phrase.

The experiment consisted of two trials with a *wh*-question as in (27a), two trials with a null-object question as in (27b), and two trials with a truncated question as in (27c). The order of presentation was pseudo-randomized.

The results are summarized in Table 3.

	Interpreted as a *wh*-question	Interpreted as a yes/no question
Wh-questions as in (27a)	100% (32/32)	0% (0/32)
Questions with a null object as in (27b)	6.25% (2/32)	93.75% (30/32)
Truncated questions as in (27c)	96.88% (31/32)	0% (0/32)

Table 3: Summary of Children's Responses

Except for the responses from a single child (4;04), all the answers to null-object questions were yes/no answers (more specifically, *yes* answers). In contrast, virtually all the

answers to truncated questions were short answers such as "A train", which suggests that children interpreted these sentences as *wh*-questions. This finding suggests that Japanese-speaking children do not have a strategy of interpreting questions without a *wh*-phrase as yes/no questions. The sharp contrast between responses to questions involving a null object and responses to truncated questions suggests that children do not interpret null-object questions as object *wh*-questions. Thus, the obtained results clearly indicate that Japanese-speaking preschool children already have the knowledge that *wh*-phrases are not allowed to undergo argument ellipsis.

7. Conclusion

This study demonstrated experimentally that Japanese-speaking preschool children already have the knowledge that argument ellipsis does not apply to *wh*-phrases. The results of this study, combined with the results of my own previous study (Sugisaki 2007), suggest that not only the knowledge about argument ellipsis but also the knowledge about its constraints are in children's grammar from the earliest observable stages. These findings are consistent with the view that the availability of argument ellipsis and its constraints directly follow from principles and parameters of UG.

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