1. Introduction

(1) Ellipsis represents a situation where the usual mappings between form and meaning break down: In ellipsis, certain meanings are assigned to the parts of the sentence which appear to be missing.

(2) Given that elided parts of the sentence are not “visible” in the primary linguistic data available to children, the mechanisms and constraints that underlie the relevant form-meaning correspondence should be directly rooted in our innate language faculty (UG).

(3) Sluicing:
   a. John can play something, but I don’t know what.
   b. John can play something, but I don’t know what John can play.

(4) VP-ellipsis:
   a. John can play the guitar and Mary can, too.
   b. John can play the guitar and Mary can play the guitar, too.

(5) NP-ellipsis / N’-deletion:
   a. John can play five instruments, and Mary can play six.
   b. John can play five instruments, and Mary can play six instruments.

   a. John-wa [CP zibun-no teian-ga saiyosareru to ]
     
     John-TOP self-GEN proposal-NOM be.adopted C
     
     omotteiru.
     
     think
     
     ‘John1 thinks that his1 proposal will be adopted.’

* I would like to thank Narumi Otaki and Ayaka Kato for their help in conducting the experiment reported in this study.
b. Mary-mo [CP SAYOSARERU to ] omotteiru.  
*Mary-*also be.adopted C *think*  
‘Mary2 also thinks that his1 proposal / her2 proposal will be adopted.’  
(Vstrict-identity reading, vsloppy-identity reading)

(7) In the acquisition literature:  
a.  Acquisition of VP-ellipsis: e.g. Matsuo & Duffield 2001, Thornton & Wexler 1999  
b.  Acquisition of Argument Ellipsis: e.g. Sugisaki 2007, 2013; Otaki & Yusa 2012

(8) Extremely few studies have investigated the acquisition of sluicing, despite the fact that the sluicing construction appears to be far more widespread cross-linguistically.

(9) This study builds on a previous study by Wood (2009) on the acquisition of sluicing in English, and addresses the question of whether Japanese-speaking preschool children are sensitive to a certain identity condition on the sluicing construction: more specifically, the constraint that requires the elided material and the antecedent phrase to match in voice (Merchant 2013; see also Chung 2013).

2. Sluicing and Its Identity Conditions

(10) Sluicing is the name given by Ross (1969) to the transformational rule by which he accounted for the phenomenon illustrated in (11) and (12).

(11)  
a. Jack bought *something*, but I don’t know what.  
b. Someone called, but I can’t tell you who.

(12)  
a. Jack called, but I don’t know {when/how/why/from where}.  
b. Sally’s out hunting – guess what! (based on Merchant 2001:3)

(13)  
a. Jack bought something, but I don’t know what Jack bought.  
b. Someone called, but I can’t tell you who called.

(14)  
a. Jack called, but I don’t know {when/how/why/from where} Jack called.  
b. Sally’s out hunting – guess what Sally’s out hunting!

(15) Merchant (2001) argues that the isomorphism constraint is basically semantic in nature, based in part on examples like (16).
(16) Decorating for the holidays is easy if you know how!
   a. ≠ ... how [decorating for the holidays]
   b. = ... how [to decorate for the holidays].
      (Merchant 2001:22)

(17) Building on Schwarzschild’s (1999) theory of focus, Merchant (2001) defines the identity condition in terms of eGivenness, essentially requiring a bidirectional entailment to hold between the elided and antecedent material.

(18) Merchant (2013) argues that the ungrammaticality of examples like (19a) poses a serious challenge to theories that posit only semantic identity based on entailment relations.

(19) **Voice Mismatch: Impossible in Sluicing**
   a. * Someone murdered Joe, but we don’t know by whom.
   b. Someone murdered Joe, but we don’t know by whom Joe was murdered.

(20) **Voice Mismatch: Possible in VP-ellipsis**
   a. I have implemented it with a manager but it doesn’t have to be.
   b. This problem was to have been looked into, but obviously nobody did.

(21) **Syntactic Identity Condition on Ellipsis** (Merchant 2013):
    Any elided Voice head must bear the same feature (either Active or Passive) as the one in its antecedent.¹ ²

(22) Sluicing:
   a. [TP someone₁ T [VoiceP Voice[Active] [vP t₁ vtrans murder Joe ]]]
   b. [CP by whom [TP Joe₂ was [VoiceP Voice[Passive] [vP t₁ vtrans murder t₂ ]]]]

(23) VP-ellipsis:
   a. [TP I₁ have [VoiceP Voice[Active] [vP t₁ vtrans implement it ]]]
   b. [TP it₁ doesn’t have to be [VoiceP Voice[Passive] [vP Arg vtrans implement t₂ ]]]³

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¹ Under the assumption that an active predicate and its passive counterpart have different argument structures, Chung (2013) attempts to explain the ungrammaticality of (10a) by postulating a constraint that predicate in the ellipsis site must have an argument structure identical to that of the corresponding predicate in the antecedent (*Argument Structure Condition*). See Chung (2013) for details, and also Takita (2013) for its problems and reformulations.
² See Nakamura (2013) for an interesting observation that Merchant’s (2008, 2013) analysis makes a false prediction in certain cases.
³ *Arg* in (23b) refers to an indefinite subject which is phonologically null.

- 3 -
(24) Alternation between Transitives and Unaccusatives: Impossible in VP-ellipsis
a. This can freeze. Please freeze this.  
   (Johnson 2004:7)
b. This can freeze. *Please do.  

(25) Alternation between Transitives and Unaccusatives: Impossible in Sluicing
a. The ball is bouncing but I can’t imagine who is bouncing it.
   (Wood 2009:140)
b. *The ball is bouncing but I can’t imagine who.

(26) Synaptic Identity Condition on Ellipsis (Merchant 2013):
Voice and v heads internal to the ellipsis site must bear the same features as those in its antecedent.

3. Sluicing in Japanese

(28) It has been observed at least since Inoue (1978) that Japanese permits a construction which is analogous to sluicing in English, even though it is a wh-in-situ language.

(29) Mary-ga nanika-o katta rasii ga,  
    Mary-NOM something-ACC bought likely but
boku-wa [ nani-o ] wakaranai.  
   I-TOP what-ACC know.not
   ‘It is likely Mary bought something, but I don’t know what.’ (Takahashi 1994: 266)

(30) Boku-wa [ kanojo-ga nani-o katta ka ] wakaranai.  
   I-TOP she-NOM what-ACC bought know.not
   ‘I don’t know what she bought.’

(31) John-wa dareka-ni atta rasii ga, boku-wa dare(-ni) ka  
   John-TOP someone-DAT met seem but I-TOP who-DAT know.not
   ‘It seems that John met someone, but I don’t know who.’ (Fukaya & Hoji 1999: 145)

(32) Hankamer: Someone’s just been shot.
    Sag: Yeah, I wonder who.
(33) [Context: Hankamer produces a gun, points it off stage and fires, whereupon a scream is heard.]
Sag: # Jesus, I wonder who. (Hankamer & Sag: 1976)

(34) [Context: The angry voice of a teacher whom John and Bill both know is coming out of a room. The teacher is obviously scolding someone.]
John (to Bill): (Boku-wa) [dare(*‐o) ka] sitteru yo.
I‐TOP who‐ACC Q know
‘I know who.’
(intended as ‘I know who the teacher is scolding’.)

(35) Our discussion of Japanese sluicing below is limited to those examples in which the remnant wh-phrase is followed by a case-marker.

(36) John‐wa [zibun‐ga naze sikarareta ka] wakatteinai ga,
John‐TOP self‐NOM why scolded.was Q know.not but
Mary‐wa [naze ka] wakatteiru.
Mary‐TOP why Q know
‘John doesn’t know why he was scolded, but Mary knows why.’ (Takahashi 1994: 268)
(Vstrict-identity reading, Vsloppy-identity reading)

(37) In Japanese sluicing, a copula element can appear (e.g. Takahashi 1994, Saito 2004):
John‐wa [zibun‐ga naze sikarareta ka] wakatteinai ga,
John‐TOP self‐NOM why scolded.was Q know.not but
Mary‐wa [naze da ka] wakatteiru.
Mary‐TOP why is Q know
‘John doesn’t know why he was scolded, but Mary knows why.’ (Takahashi 1994: 294)

(38) Cleft Construction in Japanese:
[CP [TP Doroboo‐ga okane‐o nusunda] no]‐wa
thief‐NOM money‐ACC stole that‐TOP
sono ginkoo‐kara da.
that bank‐from is
‘It is from that bank that a thief stole money.’

(39) Saito (2004) develops the “concealed cleft” analysis of Japanese sluicing proposed in Nishiyama et al. (1996), Kuwabara (1997), and Kizu (1997), and argues that the sluicing construction in Japanese is derived by applying argument ellipsis (e.g. Oku 1998, Kim 1999) to the CP subject of the cleft sentence.
(40) (=37) Mary-wa [ [ [ [ [zibun] ga sikarareta] no] -ga Mary-TOP self-NOM scolded.was that-NOM naze1 ( da ) ka ] wakatteiru. why is Q know

(41) The ungrammaticality of the example in (42) shows that voice mismatch cannot occur with Japanese sluicing.

(42) * Dareka-ga John-o yatotta rassi ga, someone-NOM John-ACC hired seem but boku-wa [ dare-ni ka ] siranai. I-TOP who-by Q know.not ‘Someone hired John, but I don’t know by whom.’

(43) Dareka-ga John-o yatotta rassi ga, someone-NOM John-ACC hired seem but boku-wa [ John-ga dare-ni yatowareta ka ] siranai. I-TOP John-NOM who-by was.hired Q know.not ‘Someone hired John, but I don’t know by whom John was hired.’


(46) a. Structural antecedent: Somebody is feeding the dog, but I don’t know who.

b. Semantic antecedent: The mouse is playing tennis, but it doesn’t know how.

c. Antecedent with no overt correlate: The boy is hiding, and I know where.

d. No antecedent (ungrammatical): *The ball is bouncing, but I don’t know who.

e. Full structure not sluiced (control): Somebody is painting a picture, but I don’t know who is painting a picture.
If it can be shown that children are sensitive to the ill-formed status of (45d), this would indicate that these children are constrained by Merchant’s (2013) Structural Identity Condition on Ellipsis given in (27), which presumably would reflect principles of UG.

Participants: 39 monolingual English-speaking children, divided into two groups
a. 21 children ranging in age from 4;05 to 5;05
b. 18 children ranging in age from 6;08 to 7;08

Grammaticality Judgment Task:
(a. Children were introduced to a puppet which came from the moon and hence speaks ‘moontalk’.
(b. In each trial, a picture was presented to the puppet, but kept hidden from the child. The puppet, controlled by the first experimenter, described what he could see to a second experimenter, who was holding the picture.
(c. The task for the child was to judge whether the puppet’s utterance was acceptable or not, by tickling his ‘hand’ to indicate when he says something in ‘good’ English, and his nose to indicate when he says something silly.
(d. Each sentence type in (46) had two tokens.

Summary of the Results as Percentages of Target Responses

<table>
<thead>
<tr>
<th>Antecedent Type</th>
<th>Children 4;05 - 5;05 (n=16)</th>
<th>Children 6;08 - 7;08 (n=18)</th>
<th>Adult controls (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural as in (45a)</td>
<td>50</td>
<td>94</td>
<td>96</td>
</tr>
<tr>
<td>Semantic as in (45b)</td>
<td>60</td>
<td>88</td>
<td>68</td>
</tr>
<tr>
<td>No Overt Correlate as in (45c)</td>
<td>48</td>
<td>94</td>
<td>79</td>
</tr>
<tr>
<td>No Antecedent as in (45d)</td>
<td>70</td>
<td>94</td>
<td>100</td>
</tr>
<tr>
<td>Full Structure (Control) as in (45e)</td>
<td>65</td>
<td>96</td>
<td>98</td>
</tr>
</tbody>
</table>

Discussion:
(a. Young children’s difficulty might have stemmed not from the licensing conditions itself, but rather from the underlying embedded question construction.
(b. Children in the older group performed quite well, which demonstrates that children in this age range have already acquired full knowledge of sluicing and its identity constraint.

4. Of the 21 children in the youngest group, five were excluded because they either failed to pass the pre-test or they chose to leave the study before completing it.
c. Wood (2009) speculates that the knowledge concerning sluicing would emerge at the same time as embedded questions.

(52) The crucial test sentence in the experiment by Wood (2009) involved the alternation between transitive and unaccusative verbs.

(53) Sluicing:
   a. The ball is bouncing but I can’t imagine who is bouncing it.
   b. * The ball is bouncing but I can’t imagine who. (Wood 2009:140)

(54) VP-ellipsis:
   a. This can freeze. Please freeze this.
   b. This can freeze. *Please do. (Johnson 2004:7)

(55) What Wood (2009) investigated in her experimental study was not the restriction on sluicing per se, but the restriction that holds for ellipsis more generally. Thus, if we are to know more about the acquisition of the sluicing construction and its constraints, it would be better to investigate children’s knowledge of the phenomenon that happens selectively with sluicing.

(56) Voice Mismatch: Impossible in Sluicing
* Dareka-ga John-o yatotta rasii ga,  
  someone-NOM John-ACC seem but
boku-wa [ dare-ni ka ] siranai.  
I-TOP who-by Q know.not
‘Someone hired John, but I don’t know by whom.’

5. Sluicing and Its Identity Conditions in Child Japanese: New Experiment

(57) Participants:
   a. 11 Japanese-speaking children, ranging in age from 4;07 to 5;05 (mean age, 5;01)
   b. These children were divided into two groups:
      (i) Mismatch Group: Those who were presented sentences with voice mismatch  
          (antecedent clause: active, ellipsis clause: passive)
      (ii) Match Group: Those who were presented sentences without voice mismatch  
          (antecedent clause: passive, ellipsis clause: passive)
(58) **Task:** Question-after-Story

a. Each child was told a story, which was accompanied by a series of pictures presented on a laptop computer.

b. At the end of each story, a puppet asked a question about what had happened in the story.

c. The task for the child was to answer these questions.

(59) The experiment consisted of:

a. 4 sentences to check children’s understanding of the active and passive sentences (2 active transitive sentences and 2 passive sentences)

b. 4 sentences to check children’s knowledge about the impossibility of voice mismatches in sluicing.

(60) **Sample Test Sentences for Mismatch Group:**

Dareka-ga kaminoke-o hippatta tte raionsan-ga itteta kedo, someone-NOM hair-ACC pulled that lion-NOM said but

[ dare-ni ka ] wakaru ?

who-DAT Q know

‘The lion said that someone pulled his hair, but do you know to whom?’

(61) **Sample Test Sentences for Match Group:**

Dareka-ni kaminoke-o hippar-are-ta tte raionsan-ga itteta kedo, someone-by hair-ACC pull-PASS-PAST that lion-NOM said but

[ dare-ni ka ] wakaru ?

who-by/DAT Q know

‘The lion said that his hair was pulled by someone, but do you know to whom / by whom?’

(62) a. -ni in Japanese has a variety of uses (see e.g. Sadakane & Koizumi 1995)

Crucial uses of –ni in this experiment are:

(i) to (as in: John said to Mary that …) (ii) by (as in: John was pushed by Mary.)

b. When presented sentences like (60) which include mismatch in voice, those children who have the knowledge about the ban on voice mismatches in sluicing should interpret the –ni phrase not as a by-phrase but as the Goal argument of the matrix verb say.

c. When presented sentences like (61) in which the antecedent clause and the ellipsis clause match in voice, children should allow the interpretation of –ni as a by-phrase, as well as the interpretation of –ni as the Goal argument of the matrix verb say.
(63) **Sample Story for Mismatch Group.**
Lion and Panda are playing with their favorite toy trains at the Yokai Kindergarten. Then, a naughty boy suddenly appeared, and pulled Lion’s hair. Lion was very surprised, and looked back quickly, but he could not find anyone. Lion’s favorite teacher came in and asked him what happened, so Lion told the teacher that *someone pulled his hair.*

(64) **Sample Story for Match Group.**
Lion and Panda are playing with their favorite toy trains at the Yokai Kindergarten. Then, a naughty boy suddenly appeared, and pulled Lion’s hair. Lion was very surprised, and looked back quickly, but he could not find anyone. Lion’s favorite teacher came in and asked him what happened, so Lion told the teacher that *his hair was pulled by someone.*

(65) a. It is independently known that young children have trouble interpreting full direct passive sentences (e.g. Borer & Wexler 1987, Sugisaki 1999).
b. Thus, we included in our analysis only those children who answered correctly to all of the four active / passive trials and hence was confirmed to have a full understanding of the active and passive sentences.
c. 3 children failed to meet this criterion.

(66) **Summary of the Results:**

<table>
<thead>
<tr>
<th></th>
<th>Number of Children</th>
<th>Interpretation of <em>wh-ni</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>As <em>to</em>-phrase associated with <em>say</em></td>
</tr>
<tr>
<td>Mismatch Group</td>
<td>4</td>
<td>87.5% (14/16)</td>
</tr>
<tr>
<td>Match Group</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

(67) **Discussion:**
a. Children in the Match Group consistently interpreted the *wh-ni* phrase as *by*-phrase associated with the embedded passive verb.
b. Children in the Mismatch Group showed a strong tendency to interpret the *wh-ni* phrase as *to*-phrase associated with the matrix verb *say*.
c. The sharp contrast between the two groups suggest that Merchant’s (2013) Structural Identity Condition on Ellipsis given in (27) is already in the grammar of Japanese-speaking preschool children.
6. Conclusion

(68) Building on a previous study by Wood (2009) on the acquisition of sluicing in English, this study addressed the question of whether Japanese-speaking preschool children are sensitive to the Structural Identity Condition on Ellipsis proposed by Merchant (2013), which requires the elided material and the antecedent phrase to match in voice.

(69) The results of my experiment, even though preliminary, suggest that Japanese-speaking preschool children already have knowledge of the relevant identity condition, which is consistent with the view that this condition reflects properties of UG.

(70) Many questions remain. For example, are English-speaking children sensitive to the contrast between sluicing and VP-ellipsis with respect to the possibility of voice mismatch?

(71) I hope that this study constitutes a small but significant step toward understanding when and how children acquire sluicing and its constraints.

References