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The Saliency Factor in Studies on the Acquisition of Principle B*

Elaine Grolla

Universidade de São Paulo, Brazil

1. Introduction

Children's acquisition of Principle B of the Binding Theory (Chomsky (1981)) has been widely investigated in the last 20 years (cf., Avrutin (1999); Avrutin and Wexler (1992); Baauw, Escobar and Philip (1997); Boster (1994); Chien and Wexler (1990); Deutsch, Koster and Koster (1986); Grimshaw and Rosen (1990); Grodzinsky and Reinhart (1993); Hamann (2002); Hamann, Kowalsky and Philip (1997); Jakubowicz (1984); Jakubowicz et al. (1996); Kaufman (1988); Lombardi and Sarma (1989); Lust, Loveland and Kornet (1980); McDaniel, Cairns and Hsu (1990); McDaniel and Maxfield (1992); McKee (1992); McKee, Nicol and McDaniel (1993); Philip and Coopmans (1996); Sigurjónsdóttir and Coopmans (1996); Sigurjónsdóttir and Hyams (1992); Silva (1989); Solan (1983); Thornton and Wexler (1999); Varela (1988), among others).

Considering this vast literature on the topic, many studies have consistently found that children acquiring languages such as Dutch, English, Icelandic and Russian sometimes accept sentences in which a pronoun has a local antecedent. One of the main studies on the acquisition of Principle B is Chien and Wexler (1990) (C&W). These authors interviewed 177 children acquiring English in the age range of 2 years; 6 months to 7 years. The experiment consisted of showing the children pictures of cartoon characters and then asking them yes/no questions about those pictures (their experiment 4). In one of the trials, the picture depicted Mama Bear touching herself, and Goldilocks watching the scene. The experimenter showed children the picture and then asked:

(1) This is Mama Bear, this is Goldilocks. Is Mama Bear touching her?

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Children responded 'yes' around 50% of the time, in contrast to adults, who answered 'no' close to 100% of the time. When children answered 'yes,' they were presumably taking 'Mama Bear' as the antecedent for the pronoun. This type of response indicates that in half of the trials children allowed the pronoun to have a local antecedent, in violation of Principle B of the Binding Theory. This 50% rate of acceptance is due to the fact that individual children sometimes answered the question affirmatively and sometimes negatively. Given that children appeared to be guessing randomly with a 50% probability of responding 'yes,' children were said to be behaving at chance level.

Since C&W's experiment, other researchers have replicated these results generally using the same methodology. Although researchers have found that children allow local coreference when the antecedent for the pronoun is a referential DP like 'Mama Bear,' the same over-acceptance problem does not emerge when the pronoun's antecedent is a quantified expression, as in "Every bear is touching her." C&W tested this kind of sentence using the same methodology described above and reported that children displayed adult behavior in these cases. That is, children rejected this kind of sentence at a high rate (84% of correct responses for 5 year-olds).

The fact that children correctly reject cases of pronouns locally bound by QPs has been taken as an indication that children are constrained by Principle B. The over-acceptance detected in cases of referential DPs was analyzed in C&W's paper as being due to children's lack of a pragmatic principle, which would be responsible for regulating cases of coreference. These data were considered then strong evidence in support of theories like the one proposed in Reinhart (1983), which separates on the one hand cases of bound variable anaphora (which would be regulated by Principle B) and on the other hand cases of coreference (which would be regulated by a rule of intrasentential coreference, which she calls "Rule I").

In this paper I discuss C&W's experimental methodology in detail and claim that it has some confounding factors that render their results doubtful. In line with Elbourne's (2005) critique on the saliency of some characters present in the pictures used in their experiment, I will argue that children's responses might have been due to this factor and not to their adherence to Principle B. In order to test this hypothesis, I conducted two experiments and the results will be shown to support this view. The paper is organized as follows. Section 2 discusses C&W's experiment and presents the hypothesis of the present study. Section 3 presents the first experiment designed to test my hypothesis. Section 4 presents the second experiment. Section 5 discusses Thornton & Wexler's (1999) methodology for testing children's knowledge of Principle B. Section 6 is the conclusion.

2. Chien and Wexler (1990)

In investigating children's knowledge of Principle B, C&W tested both sentences with possible DP antecedents for the pronouns as well possible QP antecedents. One of the test sentences with DP antecedent is shown in (1) above. In pictures testing pronouns with possible QP antecedents, the pictures depicted three identical characters performing a

reflexive action and a fourth character next to them, not performing the action. In the picture presented in C&W's paper for these trials, there are three bears touching themselves and Goldilocks is next to them. Children did not interact with a puppet, only with the experimenter, who presented the picture and then asked children:

(2) These are the bears, this is Goldilocks. Is every bear touching her?

The rationale is that there are two potential antecedents for the pronoun, the QP 'every bear' and the DP 'Goldilocks.' It is possible to check which antecedent the child assigned to the pronoun depending on her answer. Given that the picture shows every bear touching herself, if the child answers 'yes,' she is most probably picking the QP as antecedent; if she answers 'no,' she is presumably picking Goldilocks as the antecedent.

The authors reasoned that, if children were constrained by Principle B, only the fourth character (Goldilocks, in the picture discussed) could be taken as the antecedent for the pronoun. This is so because, if the QP was taken as antecedent for the pronoun, the sentence would violate Principle B. The only other available antecedent for the pronoun was then the extra sentential character. Conversely, if children were not constrained by Principle B, the QP could be taken as the antecedent for the pronoun. The result of C&W's study is that 5 year-old children rejected these sentences close to 84% of the time. Although these are not perfect rates, they are higher than children's rejection rates for DP antecedents. For the same 5 year-olds, the rejection rate in this case was close to 50% (49.24%).

Thus, children answered 'no' most of the time for QP antecedents, probably taking Goldilocks in the example above as the antecedent for the pronoun. The authors concluded that *because* Principle B blocks an interpretation where 'her' has 'every bear' as antecedent, children picked Goldilocks as the antecedent.

However, C&W did not consider another possibility in interpreting children's answers. As discussed in Elbourne (2005) and in Grolla (2005), children could have taken Goldilocks as the antecedent for the pronoun not because of Principle B, but because she was exceedingly salient in the context. I believe this possibility is highly likely, as the following factors indicate. First, in the picture shown in C&W's paper, Goldilocks was much bigger than each of the three bears, which obviously made her stand out. Second, all three bears were identical and Goldilocks was physically different from them. We know from studies on the acquisition of universal quantifiers like 'every' that the types of pictures presented to children in those experiments have a great influence in their responses. In pictures displaying three characters performing the same action and a fourth character not performing the same action, children tend to concentrate their attention in the different character (see Crain, Thornton, Boster, Conway, Lillo-Martin and Woodams (1996); Drozd and van Loosbroek (1998); Philip (1995); Sugisaki and Isobe (2001), among others). For example, in Philip's (1995) study, children were shown a picture with four elephants and three boys. The picture showed three of the elephants being ridden by a boy and the fourth not being ridden by anyone. When asked the question *Is every boy riding an elephant?*, 97 out of 216 preschoolers responded 'no,' pointing to the elephant

that was not being ridden by a boy. The same phenomenon could have happened in C&W's experiment, as their pictures were similar to the ones in Philip's experiment, in that they also had three identical characters and a fourth individual which was somehow different and more salient.[1]

Besides these problems, Boster (1994) discusses the possibility that children in C&W's study might have had difficulty in recognizing the bears as female, as the experimenter did not identify them as such or name them. The picture of the bears did not make their gender clear also; the only hint about it was the bows in the bears' heads. So, although the bears might or might not be female, Goldilocks was clearly a girl and so doubtlessly an appropriate antecedent for the pronoun.

Boster (1994) conducted an experiment in order to test her concerns about this gender issue. She tested 24 children in the age range of 3;3 to 6;2 years. She used a yes/no question task, modeled after C&W's experiment. Boster's trials were of three types. In the first one, the pictures depicted two animals, with one of them performing a reflexive action, and the test sentences were of the form "*Is Mama Bear washing her?*" In the second test, the pictures depicted three identical animals performing a reflexive action and a fourth character watching the scene. Boster was careful to make the gender of the animals clear to children, differently from what happened in C&W's experiment. Also, the fourth character was roughly of the same size as the other animals. The test sentences were of the form "*Is every bear touching her?*" The third type of pictures depicted three identical animals performing a reflexive action and two other animals of a different type watching the scene. For example, one of the trials had three monkeys patting themselves and two zebras watching them. All animals were of the same size. Because the pictures had 3 animals of one type and 2 of another type, there was no character more prominent than the others. The test sentences in these cases were like the following:

(3) Is every monkey patting them?

Boster reports that there was no real difference between children's rates of acceptance of Principle B violations in sentences such as *Every bear is washing her* and in sentences such as *Mama Bear is washing her*. This contrasts with C&W's results as shown below where a comparison is made pairing off the findings in Boster's study for 5 year-olds and the findings in C&W's study, also for 5 year-olds:[2]

Sentence type	***Boster (1994)***	***Chien and Wexler (1990)***
Is Mama Bear washing her?	30%	50.7%
Is every bear washing her?	30%	16.2%
Is every monkey patting them?	40%	--

Table 1 Acceptance rates (Boster (1994) and C&W)

[1] I would like to thank Diane Lillo-Martin for bringing these studies to my attention.

[2] I compare only the results of the 5 year-olds, as this was the youngest group in C&W's study to exhibit a clear difference in the acceptance rates for DP and QP antecedents.

Note that when the gender of the characters became clear and their sizes were the same, the asymmetry between QP and DP antecedents disappeared. The increase in acceptance rate observed in the case of (3) has different possible explanations. One possibility, entertained by Boster, is that children analyze QPs of the type 'every NP' as binding plural pronouns. If so, children might reject sentences where the QP binds a singular pronoun and accept it more often when the QP binds a plural one. Another possibility, mentioned above, is that the saliency of the fourth character in the pictures in C&W's study drew children's attention, which made them pick that character as the antecedent for the pronoun more often. Given that in the case of (3) there was not a more salient character to be considered, children picked the sentence internal QP as its antecedent more often.

In order to test my hypothesis about the saliency of the fourth character present in C&W's experiment pictures, I conducted an experiment different from the one conducted by Boster. It is described in the next section.

3. The Saliency Experiment

This experiment was designed to investigate the effect that the saliency of this fourth character present in the types of picture in C&W's experiment would have on sentences where Principle B is **not** operative. Children's answers to these sentences could then be compared to their answers to sentences where Principle B is operative: if their answers were similar, this would indicate that Principle B could not be the sole factor guiding children's responses.

Two types of pictures were presented to children. Type I was similar to the ones in C&W's experiment: it had three identical elements performing a reflexive action and a fourth, bigger character not performing a reflexive action. Type II depicted three identical characters touching (or holding) some item of clothing they were wearing (either a hat or a dress) and the fourth character, also wearing the same type of clothing, but not touching it. Examples of the sentences accompanying these pictures are shown below:

(4) a. Type I (QP – him): Is every monster scratching him?
b. Type II (QP – his NP): Is every dog touching her hat?

The rationale was the following. In sentence (4)b above, the QP in subject position can bind the DP 'her hat' without violating Principle B. Both the bound interpretation and the interpretation where 'her hat' refers to the extra sentential character are possible and Principle B is not relevant in these cases. Therefore, if children's attention was drawn to the fourth, more salient character, they should pick that character as the antecedent for the pronoun and so answer 'no' to question (4)b more often. If children pick this fourth character as the antecedent for the pronoun, this choice cannot be attributed to Principle B. However, if their attention was not drawn to that salient character, then they could pick the QP as the antecedent for the pronoun and answer 'yes' to this question more often. On the other hand, in cases like (4)a, Principle B is relevant. The pronoun 'him' cannot be

bound by the QP 'every monster,' as this violates the principle. In this type of picture, a 'yes' answer constitutes a Principle B violation and a 'no' answer doesn't.

The idea was to compare children's response to these two types of questions. If our hypothesis concerning the saliency of the fourth character is on the right track, we predict that children will pick this character as the antecedent for the pronoun more often in both cases, answering 'no' at a higher rate. This would indicate that saliency was indeed influencing children's answers, which in turn would suggest that Principle B has nothing to do with this behavior.

Subjects. 23 English-speaking children ranging in age from 3;7 to 5;11 (mean age = 4;7). They were recruited from a preschool in the Storrs, CT area.

Procedure. The experiment was modeled after the one used in C&W's study. Children were shown pictures and then the experimenter asked yes/no questions about them. No interaction with a puppet took place.

Materials. As discussed above, two types of sentences were tested. Below I provide examples of these sentences (all test sentences are listed in Appendix A):

(5) These are the monsters, this is Aladdin. Is every monster scratching him?

(6) These are the dogs, this is Mama Bear. Is every dog touching her hat?

The picture accompanying (5) was similar to the ones in C&W's experiment. It depicted three smaller monsters scratching themselves and a bigger picture of Aladdin, not scratching himself. The picture accompanying (6) had three female pink dogs wearing hats and touching them. Mama Bear was much bigger than the dogs. She was also wearing a hat, but not touching it.[3] There were 4 trials of each sentence type for a total of 8 sentences tested. There were also 3 filler questions, intended to break the pattern of sentences with QPs and pronouns.

Results. The table below provides the acceptance rates by age group:

Sentence type	***3 year-olds*** **(N = 4)**	***4 year-olds*** **(N = 9)**	***5 year-olds*** **(N = 10)**	***Total Group*** **(N = 23)**
QP – him	56.2%	36.1%	27.5%	35.8%
QP – his NP	68.7%	27.7%	32.5%	36.9%

Table 2 Acceptance rates (Saliency test)

As the table shows, the 3 year-olds accepted these sentences at a much higher rate than the 4 and 5 year-olds. Given the small number of 3 year-old subjects (N = 4), I

[3] Due to permission reasons, the pictures used in the experiment could not be reprinted in this volume. They can be seen in Grolla (2005).

decided to exclude them from further analysis. The table below provides the acceptance rates for 4 and 5 year-olds:

Sentence type	***Group (N = 19)***
QP – him	31.5%
QP – his NP	30.2%

Table 3 Acceptance rates from 4 and 5 year-olds (Saliency test)

As the table shows, 4 and 5 year-old children behaved similarly in both cases, even though in one case a 'yes' response constitutes a Principle B violation, while in the other case it doesn't. This supports my hypothesis about the saliency of the fourth character present in the pictures.

As a final remark, I would like to point out that the observations made above concerning this saliency problem does not arise in C&W's pictures showing only Mama Bear and Goldilocks, for sentences of the type "*Is Mama Bear touching her?*" In these cases, the pictures displayed two equal sized characters, which were clearly identified as female. The context did not make one character more salient than the other. Therefore, there is no clear, salient antecedent for the pronoun in this case. Thus, in sentences involving a possible DP antecedent for the pronoun, the confounding factors mentioned above did not arise and children's answers could not have been guided by the saliency of one of the characters.

4. The Grammaticality Judgment Task Experiment

As part of a larger project, this study also tested the same children on another task. The experiment was a type of grammaticality judgment (GJ) task (Hiramatsu and Lillo-Martin (1998) and McDaniel, Cairns and Hsu (1990)). Children were introduced to a puppet which came from the moon and spoke moon-talk. The puppet was presented as a creature that was willing to learn English, but got confused sometimes. The children were then invited to help the puppet to learn English by telling him whether he uttered sentences 'the right way' or not.

Before proceeding, I would like to make some observations concerning the instructions given to children. When children were first introduced to the puppet, in the training session, the puppet uttered some acceptable sentences and some word salad sentences. This was done with the intent to explain the 'game' to them, making explicit the notions of saying the sentences in the 'right way' or the 'wrong way.' After this initial period, all the other ungrammatical sentences included in the training session were formulated in such a way as to teach children to pay attention to subtleties. They were not as clearly ungrammatical as word salad sentences are, but were sentences with one extra word (for example, *the elephant up woke up*) or one word missing (for example, *the fish sleeping*). The reason for such a strategy is due to the types of sentences that children would have to judge later, which were not completely gibberish. As children usually get very involved in the game, if they are really concerned and willing to help the puppet to

learn English, they might consider some sentences as pretty good for someone who is trying hard and had said some really bad sentences in the beginning of the session. They might see it as an improvement and therefore consider it ok. So, in order to make sure children differentiated at least three levels of acceptability, I introduced the term 'weird,' which was used to describe the sentences that were not completely acceptable, but that were not gibberish (like word salad) also.

As for the pictures used in this experiment, they differ in an important way from the pictures used in C&W's experiment (and in the saliency test described above). Although both experiments make use of pictures, they differ in what needs to be depicted in them. In the case of C&W's pictures testing pronouns with possible QP antecedents, the pictures depicted three identical characters performing a reflexive action and a fourth character next to them. In the GJ task I conducted, the pictures testing pronouns with possible QP antecedents had only the three elements that make up the QP. For example, in one of the trials, there were three identical elephants washing themselves in a lake. In this case, the sentence uttered by the puppet was: *Every elephant is washing him*. Children had to say if this sentence was the right way to describe what was going on in the picture. Thus, in this type of task, we do not need more than one possible antecedent for the pronoun. Consequently, if there were no other potential antecedents, the pronouns were never ambiguous, and could only refer to the element performing the reflexive action.[4]

The relevant difference then between these two experiments is the absence of the salient character in the GJ test. This eliminates the confounding factors from C&W's method, delivering more reliable results.

Materials. There were three conditions investigated with four trials each, with a total of 12 sentences tested. Examples of target sentences are presented below (the complete list of sentences is presented in Appendix B):

(7) DP – him: * The little dragon is scratching him.
QP – him: * Every elephant is washing him.
QP – his NP: Every duck is carrying his guitar.

In addition to these target sentences, 6 filler sentences were also included.

Results. The acceptance rates are presented below

Sentence Type	***Group (N=23)***
DP – him	52.1%
QP – him	44.5%
QP – his NP	97.8%

[4] The pictures testing pronouns with possible DP antecedents had only one element performing a reflexive action. For the sentence "the little dragon is scratching him," for example, the picture depicted a little dragon scratching himself.

Table 4 Acceptance rates for 3, 4 and 5 year-olds

As the table shows, children correctly accepted possessive pronouns bound by QP antecedents at a high rate, 97.8% of the time. In the case of pronouns bound DPs, we see that children's acceptance rate is 52.1%. For sentences with pronouns bound by QP antecedents, children's acceptance rate was 44.5%.

Comparing the answers that the same 4 and 5 year-old children gave to the test sentences from the saliency test and from the GJ test, we obtain the table below:

Sentence Type	***GJ task***	***Saliency test***
QP – him	43.5%	31.5%
QP – his NP	97.3%	30.2%

Table 5 Acceptance rates from 4 and 5 year-olds (N = 19)

The table shows that children behaved differently in the two tests. In the GJ task, they accepted pronouns locally A-bound by QP antecedents 43.5%. In the saliency experiment, they accepted them only 31.5%. In the case of possessive pronouns, children had an acceptance rate of around 97% in the GJ task, but in the saliency test, the acceptance rate revolved around 30%.

The results of these two tests bring evidence that (i) saliency has an effect on children's behavior and (ii) when there is not a more salient character, children violate principle B at a considerable rate (43% for 4 and 5 year olds). In the next section, it is observed that the remarks made above for C&W's methodology also extend to another method employed in principle B acquisition studies, the truth-value judgment task.

5. Truth-Value Judgment Task

Besides C&W's (1990) methodology, the truth-value judgment task has also been extensively used in order to test children's knowledge of Principle B. One such study is Thornton and Wexler (1999) (T&W). In this method, the experimenter uses toys and props in order to tell children short stories. In the end a puppet says what he thinks happened in the story. Children have to judge whether what the puppet said is true or false. Using this method, T&W found that children accepted pronouns bound by DP antecedents 58% of the time and pronouns bound by QP antecedents 8% of the time.

Similarly to the claim made by C&W, T&W argue that children had a low acceptance rate of pronouns bound by QPs because they were constrained by Principle B. As was the case with the experiment in C&W's study, I believe that T&W's experiment has a confounding factor in cases involving possible QP antecedents. This claim has also been made by Conroy, Takahashi, Lidz, and Phillips (2006) and Elbourne (2005). Let us

take a look at the general lines of a story in T&W's study leading up to a sentence with a pronoun potentially bound by a QP (T&W (1999:142)):[5]

(8) "Bert and three reindeer friends have a snowball fight, and they all get covered in snow. When they go inside, Bert is shivering, so he asks the reindeer to brush the snow off him. Two of the reindeer (separately) refuse, saying they have too much snow to deal with, and they brush themselves. The third reindeer helps Bert a little bit, but then brushes the snow off himself. Bert thanks the helpful reindeer for starting to brush him. He says he's sorry he can't reciprocate by helping brush the reindeer; he needs to finish brushing all the snow off himself because he's still very cold.
Puppet: Every reindeer brushed him."

As pointed out in Conroy et al (2006), Elbourne (2005) and Grolla (2005) in this story Bert is more salient than the other characters. This is acknowledged by T&W themselves, when they claim that the background behind this story is that Bert has a problem: he wants the reindeer to brush the snow off him. The way the story is told, we have Bert as the protagonist, and three other animals involved in it. As is clear from the story above, these other three animals are not as prominent as Bert is. They do not have names (they are referred to as 'the reindeer,' 'the third reindeer,' 'the helpful reindeer'). They do not have the urgency that Bert has, as they do not ask each other to brush the snow off them. Only Bert is depicted as someone having this need. Also, I suspect that the three reindeer are identical looking. Bert, on the other hand, is physically different, which makes him stand out.

So, the fact that Bert is more prominent in the story might be the reason why children took him as the antecedent for the pronoun. Conroy et al (2006) investigated this hypothesis by testing children using the TVJT, but with improved experimental materials. Among several changes, they made the protagonist not so salient (they did so by making the characters in the stories have a clear identity, and having needs, just like the protagonist). This improved experimental test had an impact on children's behavior. The authors tested 16 English-speaking children aged 4;0-5;6 years (mean 4;6 years). Children accepted a pronoun bound by a DP antecedent 11% of the time and a pronoun bound by a QP antecedent 14% of the time. Therefore, by improving the experimental method, children behaved similarly with DP and QP antecedents, just like what happened with the saliency test I conducted.

Another piece of evidence corroborating the hypothesis that Bert's prominence in T&W's experiment might influence children's responses comes from studies with adult speakers of English. Morrow (1985) investigated the influence of protagonist status on referent assignment. In his experiment, subjects read a story with a protagonist and a non-protagonist. At the end of the story, a sentence containing an ambiguous pronoun was presented. Subjects were asked what the 'he' referred to in that last sentence. The results are that subjects are more likely to choose the protagonist when the protagonist was

[5] Thornton and Wexler mention that these are just the general guidelines of the story. In narrating the stories, the experimenter was careful not to use reflexive pronouns, for example.

thematically prominent *or* most recently mentioned. Subjects preferred the non-protagonist only when the non-protagonist was thematically prominent *and* most recently mentioned. Oppy and Long (1996) also found that adults are more likely to pick the protagonist of a story as the referent of an ambiguous pronoun.

Therefore, if children are like adults in this matter (and we have no reason to suspect they aren't), they will pick Bert in the story above as the antecedent for the pronoun, given that Bert is more thematically prominent and was most recently mentioned. If this is so, children's behavior in those tests might be telling us nothing about their knowledge of Principle B.

6. Conclusion

The problems detected in C&W's methodology are remarkably similar to the ones detected in T&W's experiments. It seems that studies using the TVJ task and the yes/no questions for investigating children's knowledge of Principle B ended up having a confounding factor when the possible local antecedent for the pronoun was a QP. In these cases, the character not mentioned in the target sentence (e.g., Goldilocks or Bert) is made more salient than the characters that make up the QP (e.g., three bears or three reindeers). We cannot exclude the possibility that this is the reason why children took that DP as the antecedent for the pronoun, and if that is the case, then their knowledge of Principle B was not actually tested on those experiments.

In the experiment I conducted using the GJ task, the context (i.e., the pictures) did not provide other potential antecedents for the pronoun, as discussed above. The advantage of this methodology over the one used by C&W is then clear: it did not have a salient character able to influence children's answers. If the salient character is not present, the confounding factor is absent, making the results more reliable.

By removing this confounding factor, we are left with the result that children indeed accept pronouns bound by both QP and DP antecedents at a considerable rate. Although these results are not inconsistent with Reinhart's (1983) version of the Binding Theory, they can no longer be considered a strong argument for it.

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Appendix A (Saliency Experiment)

QP – him

1. Here are the girls. Here's the dog. Is every girl touching her?
2. Here are the monsters. Here's the prince. Is every monster scratching him?
3. Here are the bears. Here's the monster. Is every bear touching him?
4. Here are the monsters. Here's Aladdin. Is every monster scratching him?

QP – his NP

5. Here are the dogs. Here's Mama Bear. Is every dog touching her hat?
6. Here are the girls. Here's Snow White. Is every girl holding her dress?
7. Here are the princesses. Here is Mama Bear. Is every princess holding her dress?
8. Here are the dogs. Here's Cinderella. Is every dog touching her hat?

Appendix B (Grammaticality Judgment Task)

DP – him	1.	The little dragon is scratching him.
	2.	The spider is brushing her.
	3.	The elephant is washing him.
	4.	The little bear is brushing him.
QP – him	5.	Every spider is washing her.
	6.	Every elephant is washing him.
	7.	Every dog is scratching him.
	8.	Every bear is brushing him.
QP – his NP	9.	Every cat is washing her face.
	10.	Every kangaroo is cleaning his glasses.
	11.	Every witch is washing her crystal ball.
	12.	Every duck is carrying his guitar.

Departamento de Lingüística
Faculdade de Filosofia, Letras e Ciências Humanas
Universidade de São Paulo
Av. Prof. Luciano Gualberto, 403
São Paulo – SP – Brazil – 05508–900

egrolla@usp.br