

Intervention Again: Children's Comprehension of Copy-Raising

Jinsun Choe

1. Introduction

This paper presents the first investigation of English-speaking children's comprehension of copy-raising structures with an experiencer, and shows that children have similar difficulty with copy-raising as with standard raising – a result which finds no natural explanation with the current grammatical accounts of acquisition of raising. To explain the acquisition of both structures, I propose a unified account that attributes their difficulty to the Performance-based Intervention Effects.

2. Raising and Copy-Raising

Raising is the term used to refer to sentences like *John seems to be happy*, where the NP *John* is semantically linked to the VP *to be happy* in the embedded clause, but is syntactically realized as the subject of the matrix clause. In other words, the matrix subject receives the thematic role associated with the subject position of the embedded clause. One piece of evidence that the matrix subject is not in a thematic relation to the matrix predicate comes from the fact that most raising patterns have an unraised counterpart such as *It seems that John is happy*, where the NP *John* appears in the embedded clause, and a non-referring expletive serves as the matrix subject. Since the NP *John* appears to move from one argument position (in this case, the subject of the embedded clause) to another argument position (the subject of the matrix clause), raising structures are considered a classic example of A-movement, together with passives and unaccusatives. Some examples of raising predicates include *seem*, *appear*, and *tend* – all of which are verbs that lack an external argument.

When a raising predicate has an experiencer argument, the experiencer phrase may occur between the raising predicate and the embedded clause. Thus, in the sentence, *John seems to Mary to be happy*, *Mary* is the experiencer, and it is *John* who looks happy to her.

In addition to the standard raising patterns discussed so far, there is a less-studied pattern – known as Copy-Raising (CR; noted earlier by Postal, 1974; Rogers, 1971) – in which the matrix subject NP is associated with a pronoun inside the embedded clause, as in (1).

- (1) Copy-Raising: $John_i$ seems like he_i is happy.

The CR patterns also have a non-raising counterpart, in which an expletive serves as the subject of the matrix clause, as in *It seems like John is happy*. This shows that the matrix subject position is non-thematic. However, unlike a standard infinitival raising pattern, the CR verb takes a finite complement clause headed by *like*, *as if*, or *as though*. As it is generally assumed that A-movement cannot move an argument out of a finite clause, the syntax of CR has been debated (e.g., Asudeh & Toivonen, 2012; Fujii, 2005; Landau, 2011; Potsdam & Runner, 2001; Ura, 1998), and the overall evidence seems to be in favor of the claim that CR does not involve A-movement, contrary to what the name *Copy-Raising*

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suggests. For example, Potsdam and Runner (2001) propose that copy-raising involves a non-movement A-chain, in which the NP in the matrix subject position originates there. Yet, even the mere presence of A-chain is controversial as there are cases where the pronominal copy is not the subject of the embedded clause, as in (2a) and (2b), and where there is no copy in the embedded clause, as in (2c) and (2d).

- (2) a. Mary appears as if her job is going well.
(from Lappin, 1983, p. 122)
- b. The corpse seemed like the coroner had done an exceptionally bad job of dissecting it.
(from Asudeh & Toivonen, 2006, p. 6)
- c. He seemed like there was no longer any turmoil or emotion over doing the tough things.
(from Landau, 2011, p. 785)
- d. In fact, even the sky appeared as though the clouds themselves had been stripped of life.
(from Landau, 2011, p. 785)

Thus, the CR patterns are considered to be underlyingly different from standard raising, despite the surface-level similarity between the two.

3. Accounting for the difficulty

Various acquisition studies (Choe, 2011; Hirsch, 2011; Hirsch, Orfitelli, & Wexler, 2007; Hirsch & Wexler, 2007) have shown that young children comprehend the unraised pattern (3a), but not its raised counterpart.

- (3) a. Unraised: It seems to Mary that John is happy.
b. Raised: John seems to Mary _ to be happy.

This difficulty has often been interpreted as evidence for theories that postulate a deficit in child grammar (Borer & Wexler, 1987). Such grammar-based accounts include the Universal Phase Requirement (UPR; Wexler, 2004), Universal Freezing Hypothesis (UFH; Hyams & Snyder, 2005), and Argument Intervention Hypothesis (AIH; Orfitelli, 2012). While these accounts differ in terms of identifying exactly what poses a problem for children, all three accounts posit that certain syntactic representations are not permitted by child grammar, thus attributing to children's difficulty with raising to a grammatical deficit. Furthermore, these accounts are often referred to as competing theories explaining the acquisition path of A-movement structures, since their claims and predictions are specific to the difficulties associated with classic A-movement structures, such as passives, unaccusatives, and raising.

However, there may be other ways to account for children's difficulty with raising patterns. One such account rests on the idea of the Performance-based Intervention Effects (PIE; Choe, 2012),¹ which proposes that the source of the difficulty in raising patterns (e.g., *John seems to Mary to be happy*) stems from the performance limitations responsible for *intervention effects* in a variety of other constructions. Intervention effects refer to a phenomenon where children show difficulty with structures where an NP intervenes between a filler and the associated gap. These structures include object relatives (4a), object topicalizations (4b), and object *wh*-questions (4c) (e.g., Avrutin, 2000; de Vincenzi, Arduino, Ciccarelli, & Job, 1999; Friedmann, Belletti, & Rizzi, 2009; Friedmann & Lavi, 2006).

¹ While both the AIH (Orfitelli, 2012) and the PIE make use of the term "intervention," the underlying notion is fundamentally different in a grammatical deficit theory compared to a performance-based theory. Furthermore, for the AIH, intervention comes from a structurally intervening argument, and crucially, this intervening argument can be either overt or covert, as long as it is syntactically projected. But for the PIE, the only requirement is that there be an overt NP within an interpretive dependency.

- (4) a. Object relative: The boy who the girl kissed _
 b. Object topicalization: The boy, the girl kissed _
 c. Object *wh*-question: Which boy did the girl kiss _?

Notice that the raising structure in (5) resembles these constructions in that the NP *the girl* intervenes between the raised NP *the boy* and its origination position.

- (5) Raising: The boy seems to the girl _ to be happy.

Thus, under the account of PIE, children's difficulty with raising sentences is due to intervention effects that apply to a variety of structures. In other words, the difficulty is neither specific to the operation of raising, nor limited to A-movement structures.

In fact, it seems that the effects are not even restricted to 'movement' patterns. For example, intervention effects are also observed in children's comprehension of pronouns: Friedmann, Novogrodsky, and Balaban (2010) found that Hebrew-speaking children's comprehension of the pronoun in sentences in which another NP intervenes between the antecedent and the pronoun as in (6a) and (6b) were harder than in sentences in which the antecedent is linearly close to the pronoun as in (6c).

- (6) a. *The boy* and the penguin met and then the penguin soaped *him*.
 b. *The boy* said that the penguin soaped *him*.
 c. The penguin that washed *the boy* soaped *him*.

It is at this point that CR patterns like *The boy seems to the girl like he is happy* comes into the picture.² As noted earlier, this pattern is similar to the standard raising patterns, but crucially, they are analyzed as not involving A-movement. Yet, there is an intervening NP (*the girl*) in an interpretive dependency between *the boy* and its pronominal copy *he*. Thus, the PIE hypothesis predicts children's poor comprehension.

4. Experiment

4.1. Participants

Twenty-two native English-speaking children (3;10 to 5;3, mean age = 4;8) were recruited for the study from the UH Mānoa Children's Center in Honolulu, Hawai'i.

4.2. Procedure

A Truth-Value Judgment Task (Crain & McKee, 1985; Crain & Thornton, 1998) was employed in the current study. Participants were shown illustrated stories on a laptop computer. At the end of each story, a puppet appeared on the screen and made a one-sentence statement about what she thought had happened in the story. Participants were asked to determine whether the puppet's statement was true or false according to the story and to provide justifications for their choices. The whole experiment took no more than thirty minutes for each participant.

4.3. Materials

Each participant was shown ten stories in total: two warm-ups, two control items (unraised sentences), four critical items (CR sentences), and two fillers. Three types of sentences were used,

² An anonymous reviewer brought to my attention one recent study by Rett, Hyams, and Winans (2013) who looked at naturalistic use of CR in children (among other things). All of the examples they report of CR in children from CHILDES lack an intervening experiencer, suggesting the rarity of such structures in children's speech. A similar finding is also reported in Choe (2012) with the standard raising patterns.

balanced for match and mismatch³: (1) control test items included unraised sentences with a medial experiencer-phrase; (2) CR sentences with Gender Mismatch, in which the experiencer and the pronominal copy are of different genders; and (3) CR sentences with Gender Match, in which the experiencer and the pronominal copy are of the same gender. These sentences were counterbalanced across three lists. The complete script of a sample story and the corresponding pictures are shown below in Figure 1 (note that these stories were presented with matching visual scenes, making for a fun, cartoon-like experiencer for the children). A sample set of test items (mismatch) is presented in Table 1.

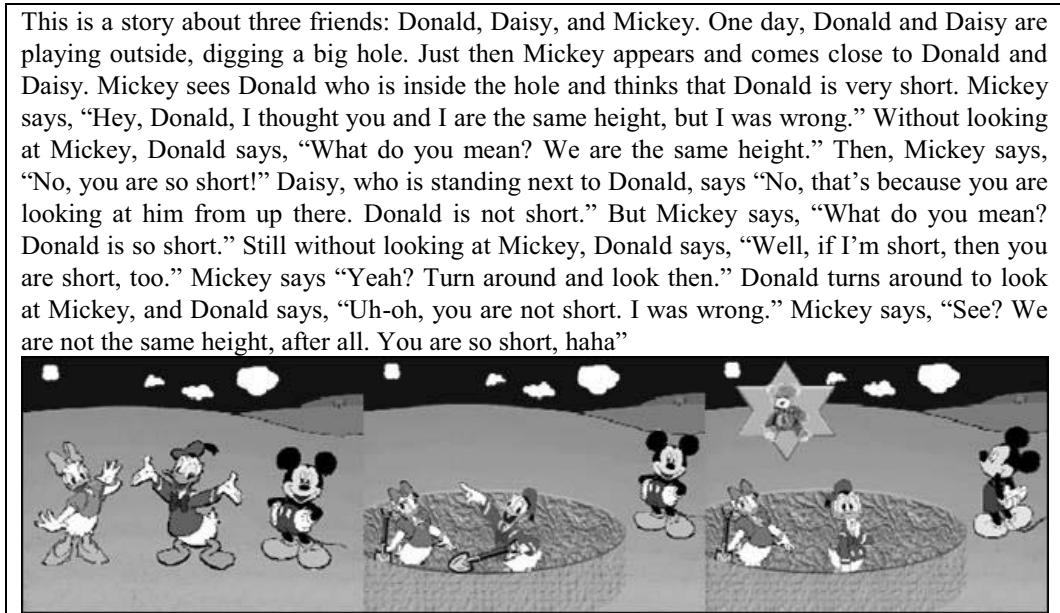


Figure 1. A sample story and pictures (CR-Gender Match)⁴

Table 1. A sample set of test sentences (mismatch)

	Mismatch items
Unraised	It seems to Donald like Mickey is short.
CR-Gender Mismatch	Lisa seems to Bart like she is studying. ⁵
CR-Gender Match	Mickey seems to Donald like he is short.

4.4. Results

Data from one child (a four-year-old) were excluded from the subsequent analysis as he did not respond correctly to the filler items. The results from the remaining 21 children are presented in Figure 2 in the form of the mean percentage correct for the three different conditions (Unraised, CR-Gender Mismatch, and CR-Gender Match).

³ Match items are those where the target response is “true”; mismatch items are those where the target response is “false.”

⁴ The character Daisy appeared in the story to allow for the felicitous use of the experiencer phrase (e.g., *to Donald*), because without the alternative experiencer in the context, the experiencer phrase would be superfluous, and therefore infelicitous (See O’Brien et al. (2006) for a similar argument with the *by*-phrase in passives).

⁵ The test sentence for the CR-Gender Mismatch condition was presented with a different story (where both Bart and Lisa appeared) than the one in Figure 1.

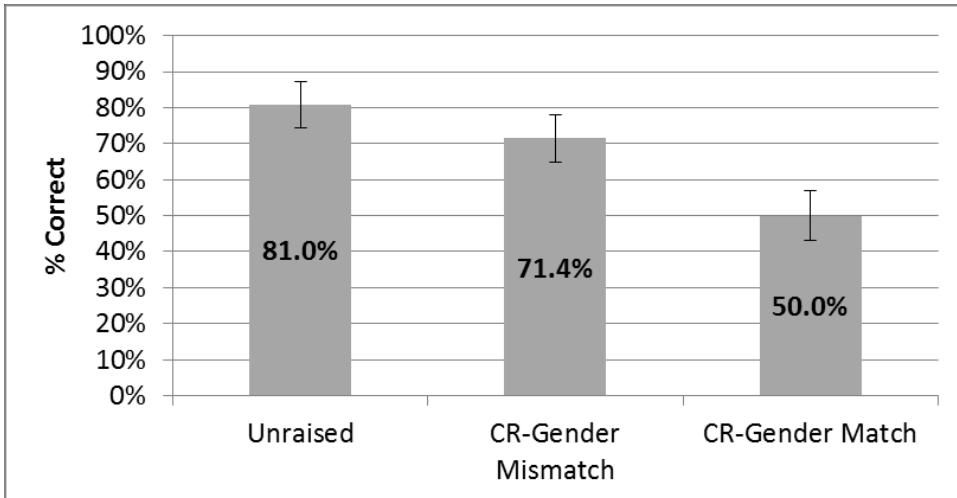


Figure 2. Mean accuracy in each condition

The children showed fairly good comprehension on the Unraised condition (81%), but their comprehension on the CR-Gender Match condition was right at chance, 50%. Comprehension was better on the CR-Gender Mismatch condition (71.4%); I take this to mean that children used the gender cue to interpret the referent of the pronominal copy. The CR-Gender Match condition is thus the crucial pattern for assessing children's comprehension of CR, which turns out to be problematic for children.

When a repeated measures ANOVA was conducted with each condition as a within-subject variable, it revealed a main effect of condition ($F(2, 40) = 6.79, p = 0.003$). Pairwise comparisons found that while there was no significant difference between Unraised and CR-Gender Mismatch conditions ($p > 0.1$), the differences between Unraised and CR-Gender Match conditions and between CR-Gender Mismatch and CR-Gender Match conditions were both significant ($p = 0.004$ and $p = 0.035$, respectively).

Furthermore, Figure 3 presents the results of only those children who responded to the Unraised condition with perfect accuracy (100%), thus filtering out the children who may have had trouble comprehending the verb *seem* itself. This requirement resulted in the exclusion of data from seven children,⁶ leaving data from 14 children.

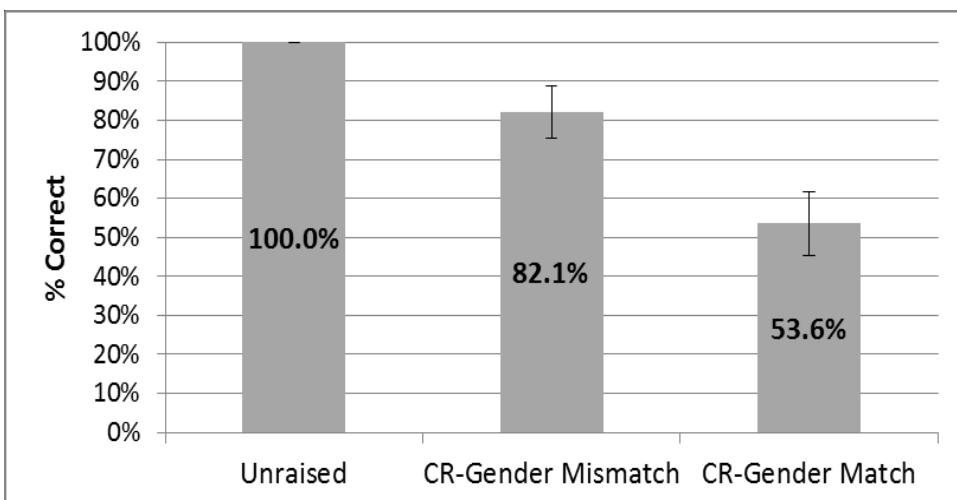


Figure 3. Mean accuracy of children who scored 100% on Unraised

⁶ The overall scores of the seven excluded children were 42.9% on the Unraised, 50.0% on the CR-Gender Mismatch, and 42.9% on the CR-Gender Match condition.

The results are similar to the overall results shown in Figure 2 in that the children still had difficulty only in the CR-Gender Match condition (53.6%), while their comprehension on the CR-Gender Mismatch condition was fairly good (82.1%).

5. Discussion

The present study investigated English-speaking children's comprehension of CR patterns (e.g., *Bart seems to Lisa like he is studying*) in which a pronominal copy occupies the embedded subject position, in contrast to the gap found in standard infinitival raising sentences. The results showed that the children had difficulty comprehending the CR pattern when the intervener was a possible candidate for the antecedent of the pronominal copy. That is, the children's mean accuracy on the CR-Gender Match condition, where the gender of the pronominal copy was matched with that of the experiencer NP, as in (7a), was significantly lower than their mean accuracy on the CR-Gender Mismatch condition, as in (7b), or on the Unraised condition, as in (7c).

- (7) a. CR-Gender Match: Donald seems to Mickey like he is short.
 b. CR-Gender Mismatch: Bart seems to Lisa like he is studying.
 c. Unraised: It seems to Mickey that Donald is short.

The pattern that was found is not surprising, because the gender cue was available for the children to correctly interpret the referent of the pronoun only on the CR-Gender Mismatch condition, resulting in better comprehension than on the CR-Gender Match condition. As such, the children's poor comprehension on the CR-Gender Match condition suggests that CR patterns containing an intervening experiencer pose a difficulty for children, when there is no gender cue to help them pick out the correct referent of the pronominal copy. Thus, the results of the current study are in line with the idea of the Performance-based Intervention Effects (PIE) in children's misinterpretation of raising-type patterns, in which an intervening nominal (in this case the experiencer) in an interpretive dependency causes parsing difficulties that result in degraded comprehension. Furthermore, these results are consistent with the finding of Friedmann, Belletti, and Rizzi (2009) that Hebrew-speaking children have difficulty comprehending object relatives regardless of whether there is a gap or a resumptive pronoun, which Friedmann et al. also attribute to the presence of an intervening NP within the dependency. These are also consistent with the finding of Friedmann, Novogrodsky, and Balaban (2010) that children's pronoun comprehension is sensitive to the existence of another NP between the antecedent and the pronoun (i.e., intervention effects).

Also noteworthy is that despite the name, it is usually assumed that copy-raising patterns are not formed with the help of A-movement; rather, the matrix subject appears in the appropriate position to begin with (Potsdam & Runner, 2001; Asudeh & Toivonen, 2012). Thus, children's difficulty with CR patterns calls for a more generalized intervention analysis of raising that extend across multiple constructions. In other words, this broader explanation for the difficulty associated with the raising patterns may serve to better capture the results on CR, as compared to other accounts (e.g., UPR, UFH, and AIH) which restrict the difficulty to A-movement structures.

In conclusion, the Performance-based Intervention Effects (PIE) hypothesis is consistent with the previously observed difficulty of object relatives, object topicalizations, and object *wh*-questions. In addition, the PIE provides a unified explanation for the difficulty associated with both the standard raising patterns (e.g., *Donald seems to Mickey to be short*) and CR patterns (e.g., *Donald seems to Mickey like he is short*).

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