

Article

Errors of Commission in Constructions Involving Movement to the CP Domain

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Abstract: In this overview paper, I discuss data from child languages available in the literature that instantiate errors of commission. I focus on three constructions involving movement to the left periphery of the clause: the production of aux-doubling (where more than one auxiliary verb, either followed by neg or not, is produced in yes/no and Wh-questions), medial Wh-questions (where two Wh-phrases are produced in long-distance Wh-questions), and the production of full resumptive DPs in the relativized position of the relative clause. I claim that these extra elements are not produced at random places, but precisely at the locations where copies (or traces) of the moved elements are claimed to occur. This is taken as an indication of children's abstract grammatical knowledge.

Keywords: language acquisition; I-to-C movement; wh-movement; relative clauses; resumptives



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1. Introduction

In this article, I will be concerned with children's errors of commission, which can be informally defined as the realization of extra elements in positions where they should not have been produced. These errors of commission are opposed to errors of omission, where children omit material that is required in their language. I will discuss three structures involving the movement of either heads or phrases, in which children produce extra material. The commission errors I am concerned with here are the reduplication of the auxiliary verb (and possibly negation) in questions, as in (1); the pronunciation of a second Wh-phrase in medial position in long-distance Wh-questions, as in (2); and the repetition of the relativized DP head in its base position inside the relative clause, as in (3):

- (1) Reduplication of Aux (and possibly Neg) in questions:
What **did** he **didn't** wanna bring to school?
Why **can't** she **can't** go underneath?

(Guasti et al. 1995, p. 228)

- (2) Medial Wh-phrases in long-distance Wh-questions:
Who do you think **who** is in the box?

(Thornton 1990, p. 204)

- (3) Reduplication of the relativized DP head:
Ich möchte **das Mädchen** sein, wo der Opa **das Mädchen** fotografiert.
I want the girl be where the.Nom grandpa the girl photographs
"I want to be the girl who the grandpa photographs the girl."

(German, Yatsushiro and Sauerland 2018, p. 822)

In all of these cases, the extra material is related to an element that underwent movement to the left periphery of the sentence. These phenomena are attested in many child languages, as will be shown in this survey. In addition to producing these structures with extra material (which are adult-like only in a subset of languages), children are successful in producing structures without them. That is, it is not the case that all of children's productions involve errors of commission at a given point in their development.

I will argue that the pronunciation of extra material in these different constructions should be seen as the instantiation of one single phenomenon. Whitman (2015, p. 222)

describes “overmarkings” in children’s languages as resulting “from giving phonetic expression to a feature or category present, but not phonetically expressed, in the adult grammar”. What Whitman calls “overmarking” might be understood as the errors of commission discussed in this article. In the case of long-distance Wh-questions, for example, children are producing copies of the moved Wh-phrases in places where these elements have landed in their successive-cyclic movement to their final landing site. In languages such as English, French and Portuguese, these copies should be silent. In languages such as German and Romani, they might be pronounced. Therefore, children have to figure out which elements of the structure should be pronounced and which elements should not.

In this overview paper, which is not intended to be systematic, I will discuss the child data available in the literature.^{1,2} I will focus on production studies, but will on occasion discuss comprehension studies, as they might shed light on children’s non-adult productions.

This survey is organized as follows. Section 2 is devoted to the reduplication of the auxiliary verb (and negation) in questions. In Section 3, reduplications in long-distance Wh-questions are discussed. Section 4 examines the reduplication of the relativized DP head, a structure involving resumptive DPs. Section 5 discusses the data presented in these 3 previous sections. Section 6 brings concluding remarks.

2. Reduplication of Aux (and Possibly Negation)

The first type of error of commission to be explored involves the reduplication of a head, the auxiliary verb. I will call these structures aux-doubling structures, following most papers on the subject. The auxiliary verb might be accompanied by the negation marker (“n’t” in the case of English). This reduplication of auxiliary verbs (and possibly negation) is attested in several studies of child English.

In spontaneous production, Woods and Roeper (2020) found 15 cases in the data of the 12 children (between 1;10 and 2;0 years of age) they analyzed. Stromswold (1990) investigated the spontaneous production of 14 children who were between 1;2 and 2;10 years of age in their first recording sessions, and between 1;9 and 7;10 years of age in their last recording sessions. The author observed that, out of 40.600 questions produced by the children, 20 contained aux-doubling: 8 occurred in negative questions and 12 were non-negative. The examples below illustrate the children’s productions, which were all of simple sentences, that is, without embedding. Examples (4a)–(4d) illustrate cases with the auxiliary verb doubled. Examples (4e)–(4f) are cases where the copula is being doubled:

- (4) a. Did I **didn’t** mean to? (3;4)
- b. Do she **don’t** need that one? (3;6)
- c. Does it **doesn’t** move ? (2;10)
- d. Is the clock **is** working? (2;5)
- e. Is this **is** a dog? (2;10)
- f. Is my old baby blanket **is** clean? (3;0)

(Stromswold 1990, pp. 58, 59)

When questions are elicited, children produce a much higher number of aux-doubling than is seen in spontaneous production. In a study of yes/no questions involving subordination, Crain and Nakayama (1987) interviewed 30 children acquiring English between 3;2 and 5;11 years of age in an elicited production task. Children were prompted to ask questions to a puppet, Jabba the Hutt (from Star Wars), based on requests made by the experimenter (“ask Jabba if ____”). The elicited questions were complex sentences containing relative clauses. The main verb in these constructions was the copula “be” and the auxiliary verb inside the relative clause was also “be”, as illustrated in (5a), below. That is, in these sentences, there were two instances of the copula “be”, and the authors wanted to test if the children would move the correct one when applying subject-auxiliary inversion (as in (5b)) or if they would violate structure-dependency, moving the auxiliary verb inside the relative clause, as in (5c):

- (5) a. The boy who is watching Mickey Mouse is happy.
- b. Is the boy who is watching Mickey Mouse happy?
- c. * Is the boy who watching Mickey Mouse is happy?

39 (out of a total of 168 questions produced in the experiment) contained extra auxiliaries, as in (6a). This amounts to 23% of all productions. The other type of error was a restarting error, as in (6b). Crucially, no child violated structure-dependency by moving the wrong auxiliary (as in (5c)):

- (6) a. Is the boy who is being kissed by his mother is happy?
- b. Is the boy who is watching Mickey Mouse, is he happy?

In a follow-up study, the authors wanted to further investigate the nature of children's aux-doubling questions. Given that the same copula "be" was used in both clauses of the sentences elicited in experiment 1, there was no way to know if the children were simply repeating the auxiliary verb inside the relative clause or copying the copula. In the new experiment, 10 of the children who made these errors in experiment 1 were tested again. In this new experiment, the sentences had different auxiliaries in the main and subordinate clauses (such as: "the boy who is happy can see Mickey Mouse"). Children produced more errors in experiment 2 than in experiment 1. These 10 children had produced 65% of errors in experiment 1 and on experiment 2 they produced 79% of errors. The authors speculate that this might be due to the fact that some children may not have been able to use modals in yes/no questions as readily as "is". Crucially, however, no error involved the repetition of the auxiliary present in the relative clause, indicating that the children did not produce questions that violated structure dependency.

Guasti et al. (1995) is another study that elicited questions from children acquiring English. 10 children, aged between 3;8 and 4;7, were interviewed in four sessions over a period of three months. The elicited questions were negative Wh-questions and negative yes/no questions with auxiliaries "do", "be", and modals. In addition to adult-like questions (19% of all questions), 40% of the questions produced by the children had double auxiliaries (as in (7a)) and 7.5% had double auxiliaries and negation (as in (7b)):

- (7) a. What **did** he **didn't** wanna bring to school? (4;1)
- b. Why **can't** she **can't** go underneath? (4;0)

(Guasti et al. 1995, p. 228)

A third study on children's English is Ambridge et al. (2008), who conducted two experiments. In experiment 1, they tested sentences with the auxiliary "can"; 22 children, aged between 3;6 and 7;9 were interviewed in an elicited production task. The children produced 23.97% of aux-doubling questions (as in "Can the boys who can run fast can jump high?"). Experiment 2 involved questions with the auxiliary "be"; 33 children from 4;7 to 5;7 participated. In total, 18.2% of the valid responses were aux-doubling questions (as in "is the boy who is washing the elephant is tired?").

Theakston and Rowland conducted two longitudinal elicitation studies intended to explore children's productions of auxiliaries "be", "do", and modals. In Theakston and Rowland (2009), the production of the auxiliary "be" in declaratives, yes/no questions and Wh-questions is discussed. The 12 children who participated ranged in age from 2;8 at the beginning of the study, to 3;7 at the end. The children were interviewed once every six weeks, throughout the study, in elicitation tasks. Aux-doubling was attested, but at very low rates. The authors do not provide the percentage of aux-doublings produced. Whilst the exact numbers are not specified, they report that error rates with respect to auxiliaries are very low in yes/no questions and Wh-questions, and non-existent in declaratives.

In Rowland and Theakston (2009), the same children were interviewed on the same types of constructions, but targeting the auxiliary "do" and modals "can" and "will". In contrast to what was found in Theakston and Rowland (2009), aux-doubling constituted the

most frequent type of error, decreasing in number with age: at 2;11, 41% of the questions were produced with aux-doubling. At 3;2, 29% and at 3;5, 21% questions were produced with aux-doubling. There were two types of doubling errors. Children produced the positive form of the auxiliary in the initial position and a positive or negative form in the preverbal position (**can** the piglet **can't** push the pram?) or they produced "is" as a generic question marker in the initial position and a positive or negative form in the preverbal position (**is** piglet **can** push the pram?). The children produced more Aux-doubling in negative questions than in positive questions (132 negative questions had double marking and 82 positive questions had double markings).

Comparing the results from Rowland and Theakston (2009) and Theakston and Rowland (2009), it can be observed that the children produced a much higher number of aux-doubling with "do", "can" and "will" than with "be". The results are similar to those of Crain and Nakayama's (1987) study, where children produced fewer cases of aux-doubling in questions with auxiliary "be" (experiment 1) than in experiment 2, in which different auxiliaries and modals were used. Crain and Nakayama reason that this difference might be due to the fact that some children may not have been able to use modals in yes/no questions as readily as "is". The same may have occurred in Rowland and Theakston's study.

Xu (2011) tested 16 children acquiring English between the ages 3;6 and 4;11 in an elicitation task, in which positive questions with "can" and negative questions with "can" and "do" were targeted. Questions with "can" had two different types of lead-in. In one of them, the form "not" was pronounced in the lead-in and in the other, the form "n't" was used. The author provides the following example of a lead-in with "not" (after the story was told, the experimenter says to the child): "We know there are some things that Smurf can move. But there's something that he cannot move. Ask Tommy what he cannot move." The production of aux-doubling was higher in negative questions with "do" (27.4%) than in negative questions with "can": in questions with "can" that had "not" in the lead-in, the children produced aux-doubling in 3.2% of them. When the lead-in had "n't", 7.7% of questions had aux-doubling. This higher rate of aux-doublings with "n't" than with "not" led Xu to propose that the children's aux-doubling questions are performance errors, resulting from a repair strategy to save a mislocated "n't".

Turning now to other languages, Schönenberger (2001) studied two children (aged 3;10 and 6;1) acquiring the Lucernese dialect of Swiss German (a V2 language), focusing on verb placement. In a section in which the author discusses unclear verb placement in children's spontaneous productions, it is observed that the two children produced a total of 26 cases of doubling of auxiliary verbs, modals, possessive "ha" (have) or copula "si" ("be"). All of these cases occurred in embedded contexts, with one copy following the complementizer or the subject and the other pronounced in clause-final position. All of these productions are excluded in the target grammar:

- (8) a. [wil er **hät** chalt **hät**] (5;01)
 because he has cold has
 "because he's cold"
- b. Weisch du [dass ich **han** en Fingering **han**] (5;00)
 know you that I have a ring have
 "Do you know that I have a ring?"

(Schönenberger 2001, p. 138)

Schönenberger observes that verb movement in embedded clauses is possible in the adult language, but constitutes a marked option which is only possible in certain types of clauses, being dependent on context. The verb-final pattern is the unmarked or neutral pattern of embedded clauses and is not dependent on context. Even if the embedded cases above the constituted cases of V2 were possible, the production of aux-doubling is not adult-like, as children are pronouncing one copy of the auxiliary verb in the third position (not second) and another one in the final position.

In [Asproudi \(2012\)](#), 90 children acquiring Greek between 4;0 and 7;0 years of age were interviewed in an elicited task targeting long-distance Wh-questions. In general, the children produced adult-like Wh-questions; however, Asproudi mentions six negative short-distance questions that were produced with the doubling of the Wh-phrase and verb, as in the example below:

- (9) **Pu tha pai pu dhe tha pai** kanis?
 where will go-3SG where not will go-3SG no one
 target: Pjos na min pai puthena simera?
 (= "Who should not go anywhere today?")

([Asproudi 2012](#), p. 19)

These experimental data seem to indicate that this phenomenon is more frequent in more complex structures, such as relative clauses, subordinate clauses and sentences with negation. However, it is not the case that aux-doubling is found only in these contexts. Stromswold's examples, taken from spontaneous productions and provided in (4), indicate that children produce aux-doubling even in simple sentences.

Interestingly, [Guasti \(1996\)](#) did not find any case of auxiliary- or verb-doubling in child Italian. In an experiment replicating the [Guasti et al.'s](#) study (1995) for child English, the author observed that the 11 children acquiring Italian (aged 3;1–4;8) produced adult-like affirmative and negative questions.

Taking into consideration all of the doubling cases reported above, it can be observed that children's productions may involve the functional category I, with auxiliaries, modals, and sometimes "n't", as doubled elements. In addition to these elements, some studies have found the doubling of the copula "be", as illustrated in (4). More studies on Romance languages and other families of languages are necessary in order to map the languages that pose difficulties for children and exactly which verbal elements can be doubled.

In this context, it is relevant to bring into this discussion the results of [Hiramatsu's \(2003\)](#) study. The author interviewed 15 English-acquiring children (from 4;0 to 5;0 years of age) on both an elicited production task and a grammaticality judgment task. Hiramatsu observed that the majority of the ungrammatical negative questions produced by the children involved aux-doubling (83% of them). Interestingly, however, when these children were asked to judge questions with aux-doubling, they rejected them 73% of the time. Therefore, the same children who produced questions with aux-doubling judged them unacceptable. Hiramatsu's conclusion is that children's production of aux-doubling cannot be the result of a non-adult grammar.

Children produce structures with doubled auxiliaries, doubled copulas and doubled negation from an early age. The spontaneous productions exemplified in (4) above show that children produce them as early as 2;5 years. In most of the experimental data discussed above, in which children produced aux-doubling, they ranged in age roughly from 3;0 to 6;0. A summary of all these data is provided in Table A1 of Appendix A.

It is important to note that these doubling constructions are not found in all of their utterances containing auxiliaries, copula or negation. The rates of production vary from study to study and seem to also depend on the type of auxiliary used, with auxiliary "be" being the one with the least doublings ([Crain and Nakayama 1987](#); [Rowland and Theakston 2009](#); [Theakston and Rowland 2009](#)).

Finally, it should be observed that, when doubled, the auxiliaries (or copula) are pronounced in their expected base positions, and not in other random places of the structure. This indicates that these productions are not merely the product of a memory lapse, with children uttering a word that they forgot they had already pronounced, as one might hypothesize.

3. Reduplication in Long-Distance Wh-Questions

The production of Wh-phrases in the intermediate position of long-distance Wh-questions has been extensively studied since [Thornton's \(1990\)](#) research on child English.

Thornton investigated the production of long-distance Wh-questions by 21 children acquiring English between 2;10 and 5;5 years of age.

In Thornton's study, children interacted with a puppet rat named Ratty, and were encouraged to ask him questions about what he thought about different things. Thornton describes the procedure as follows (p. 80): "the child and grown up invited the rat to play a guessing game in which the rat had to guess the answers to a series of questions about various situations and events acted out in the workspace". Therefore, for example, after describing various events, the experimenter whispers to the child "we know that Cookie Monster eats cookies, right? But ask the rat what he thinks". The child was then free to ask the question to the rat. In most cases, children asked the expected long-distance question, which in this case started with "what do you think . . . ". Thornton observes that the protocol incorporated embedded questions, but did not use the targeted long-distance questions. Most of the studies to be described below used the same method, as it proved quite effective in eliciting long-distance Wh-questions from children.

Only one child, aged 3;7, did not produce long-distance Wh-questions in this study. In total, 199 long-distance Wh-questions were produced by the other 20 children. Ten children produced only adult-like questions. The other ten children produced, not only adult-like questions, but also questions with a Wh-phrase in the intermediate position, a construction that Thornton calls "medial questions", such as the ones below:

- (10) a. **What** do you think **what** Cookie Monster eats? (5;5)
- b. **What** do you think **where** this froggy lives? (3;11)
- c. **Which Smurf** do you think **who** has roller skates on? (4;9)

(Thornton 1990, p. 87)

The children produced 37 medial questions, which amounts to 18.5% of all the long-distance questions produced. Non-adult-like questions produced by children are usually called medial Wh-questions, as there is an extra Wh-phrase in the medial position of the complex clause. As can be observed in the examples above, medial questions might have identical Wh-phrases (as in (10a), where "what" is pronounced in the beginning of the question and in the intermediate position) or different ones (as in (10b) and (10c), where the Wh-elements differ). The Wh-element might be a single Wh-word (as in (10a) and (10b), where "what" and "where" were produced) or a Wh-phrase (as in (10c), where "which Smurf" appears in the beginning of the question). The Wh-elements produced in the medial position or in the beginning of the question might be the one expected in the target response, or they might be different from them. In some cases, the two Wh-elements are somewhat related, as in (10c), where "which Smurf" and "who" might be analyzed as sharing the [+human] feature. Although Smurfs are not human, they were shown doing things humans prototypically do, such as riding skates, brushing their teeth, and so on. In other cases, however, the two Wh-elements bear no relation, as in (10b). The expected question in this case would be a "where" question, but the child starts with "what" and utters "where" in the medial position.

Given that these questions are not possible in the target adult language, children's productions are not guided by their input. However, it should be noted that several adult languages display constructions that are somewhat similar to medial constructions. In some varieties of adult German, for example, long-distance Wh-questions might have an identical Wh-phrase in the intermediate [Spec, CP]. This construction is called Wh-copying:

- (11) **Wen** denkst Du **wen** sie liebt?
- who think you who she loves
- "Who do you think that she loves?"

(Fanselow and Mahajan 2000, p. 2)

Another construction found in some varieties of adult German (and of adult Hindi) is the partial Wh-movement construction, where an unmarked Wh-word (usually used

to ask questions about propositions, such as “was” in German, analogous to “what” in English) appears in the matrix [Spec, CP] and the Wh-phrase being questioned appears in the embedded [Spec, CP]. The Wh-word in the matrix [Spec, CP] is considered a scope marker, as it marks the question as a long-distance question:

- (12) **Was** denkst Du **wen** sie gesehen hat?
 what think you who she seen has
 “Who do you think that she has seen?”

(Fanselow and Mahajan 2000, p. 1)

Several analyses have related children’s medial Wh-questions to these constructions found in adult German and Hindi. It is beyond the scope of this paper to discuss the analyses put forth to explain these non-adult productions, with our focus being on describing their properties. I refer the reader to the works cited in this section for the different analyses that have already been proposed for children’s productions.

Resuming our presentation of studies on long-distance Wh-questions, another study on child English was conducted by Lutken et al. (2020). They interviewed 30 children, aged between 4;0 and 6;1 in an elicited production task. The children produced approximately 22% of reduplications in subject and object questions.

Liter et al. (2022) conducted an elicited production task with 85 children, aged between 3;6 and 6;2 years of age, acquiring English as their native language. In total, 42 children produced at least one medial Wh-question. On average, 17.8% of these children’s productions contained a medial Wh-phrase, as illustrated below:

- (13) a. **What** do you think **how** he got lift up? (4;7)
 b. **Who** do you think **what** popped the balloons? (4;7)
 c. **What** do you think **which kid** jumped into the water? (4;7)
 d. **Who** do you think **who** kissed the boy? (4;7)

(Liter et al. 2022, p. 13)

Turning now to other languages, Grolla et al. (2020) investigated the production of long-distance Wh-questions by children acquiring Brazilian Portuguese as their native language. Adult Brazilian Portuguese does not allow Wh-copying or partial Wh-movement. In this language, the most frequent form of Wh-questions has the Wh-element moved to the left periphery. Although Wh-movement is possible, it is not obligatory, as Wh-in-situ is also possible in the language, both on root and embedded clauses.

In Grolla et al.’s study, 72 children between 4;2 and 6;5 years of age were interviewed. Out of the 70 children who produced long-distance Wh-questions, 31 produced medial Wh-questions. Out of 1,083 long-distance questions produced, 104 were medial Wh-questions (9.6%). All of the questions involved the movement of the Wh-element, with no Wh-in-situ questions produced.

Grolla (2022) also investigated 21 Brazilian Portuguese-acquiring children between 4;3 and 5;11 years of age. In this study, three conditions were tested: long-distance Wh-questions with the verb “achar” (“think”); long-distance Wh-questions with verb “achar” and with negation; and long-distance Wh-questions with the factive verb “saber” (“know”). Questions with the verb “think” were used as control, intended to test whether the children would produce medial Wh-questions in this context. The other two conditions refer to structures that correspond to islands in languages, such as in German. In the varieties of this language where Wh-copying and partial Wh-movement are possible, they are allowed with a verb such as “think”, but not in negative and factive contexts.

Below, I provide examples of the medial questions produced by the children: (14a) is a medial question produced in response to the control condition with verb “achar” (“think”); (14b) is a medial question produced with negation, a structure that would not be allowed in adult German; and (14c), which would also be ungrammatical in adult German, is a medial question with factive verb “saber” (“know”):

- (14) a. **Quem** você acha **quem** abraçou a fada? (4;3)
 who you think who hugged the fairy
 "Who do you think hugged the fairy?"
- b. **Quem** você não acha **quem** não gosta de formiga? (5;11)
 who you not think who not like of ants
 "Who don't you think likes ants?"
- c. **Quem** você sabe **quem** andou no barco? (5;8)
 who you know who drove the boat
 "Who do you know drove the boat?"

(Grolla 2022, p. 264)

Children produced medial Wh-questions in all of these conditions, with no statistical difference between them. In total, 233 long-distance Wh-questions were produced: 197 were adult-like and 36 had two Wh-elements. Out of these 36 questions, 27 were medial Wh-questions with a Wh-element in medial position, as illustrated in the examples above. In addition to producing these 27 medial Wh-questions, children also produced nine questions with the second Wh-phrase in the argument position inside the embedded clause, as in the example below:

- (15) **Quem** você acha que a fada abraçou **quem**?
 who you think that the fairy hugged who
 "Who do you think that the fairy hugged?"

(Grolla 2022, p. 266)

All of these nine questions were direct object questions. These results are intriguing, as children are known to avoid Wh-in-situ in the language.³ Productions such as (15) might be due to the fact that the children interviewed in this study were in a more advanced stage in their development, and therefore closer to the adult grammar. These children were between 4;3 and 5;11 years of age, whereas the children investigated in the longitudinal studies reporting the late acquisition of Wh-in-situ were younger (between 2;0 and 4;0 years of age).

Grolla (2022) notes that adult German does not allow Wh-in-situ in Wh-copying and in partial Wh-movement constructions. Thus, a question such as 0, produced by children acquiring Brazilian Portuguese, would not be licit in the varieties of adult German that allow Wh-copying. However, one could argue that in adult Hindi, partial Wh-movement is constructed precisely in this way: with one Wh-element in the beginning of the question and the second one left in-situ (as Hindi is a Wh-in-situ language; Fanselow 2006). Note, however, that in Hindi, the Wh-element in the beginning of the question is fixed, it is the neutral Wh-word "kyaa" ("what") and no Wh-copying is possible. In this language, all of the partial Wh-movement questions must leave the second Wh-element in-situ.

Thus, what is found in child Brazilian Portuguese is not possible in adult German nor in adult Hindi: adult German does not allow Wh-copying and partial Wh-movement in the negative or factive islands and does not allow the second Wh-element to be left in situ. Adult Hindi does not allow the second element to be moved to the medial position (it is always left in situ) and does not allow Wh-copying. Grolla (2022) concludes that children's productions are not regulated by the rules that govern the licensing of partial Wh-movement or Wh-copying in adult languages.

Turning now to child Dutch, Jakubowicz and Strik (2008) interviewed 24 children, between 4;2 to 6;11 years of age, and 12 adult controls in an elicited production task. Out of 436 long-distance Wh-questions produced by the children, 268 were medial Wh-questions (61.4%), as illustrated below:

- (16) a. **Wat** zei Billy **wat** Kikker eet?
 what said Billy what Frog eats
 "What did Billy say Frog eats?"
 b. **Wat** zei Billy **wie** water drinkt?
 what said Billy who water drinks
 "Who did Billy say drinks water?"

(Jakubowicz and Strik 2008, pp. 123, 124)

It should be noted that the target language (the specific dialect of Dutch that the children were exposed to) allows both partial Wh-movement and Wh-copying, in addition to Wh-fronted long-distance questions. Although partial Wh-movement and Wh-copying are allowed, they were not frequent in the adults' data: adults produced mostly fronted Wh, with only 14 cases of partial Wh-movement and Wh-copying out of a total of 232 long-distance Wh questions produced (6%).⁴

For child French, there are several studies in collaboration between Oiry and Demirdache. In Oiry (2011), the author brings the complete results, that were partially presented in Demirdache and Oiry (2007) and in Demirdache and Oiry (2008). Oiry (2011) interviewed 32 children between 2;11 and 6;3 years of age. In addition, 18 adults were tested as controls. There were two conditions in the study relating to the felicity conditions for the use of scope-marking constructions (which are being called partial Wh-movement constructions in this survey) and for long-distance questions. The felicity conditions considered by Oiry are described in Dayal (1994) for the adult languages that display such constructions. Oiry wanted to test if the children's production of medial questions is in accordance with them. In order to clarify the conditions, consider the following target question being asked to a boy named Leo, who is the child's interlocutor in the experiment: "what do you think that Mummy bought you for your birthday?"

Condition 1 has the following context: Mummy bought Leo something for his birthday and Leo believes that she did. This is called "the presuppositional context", as it satisfies the presupposition associated with the embedded clause, namely, that Mummy bought something. In this case, Oiry claims that it is felicitous to use partial Wh-movement constructions in adult languages, such as in German. In this case, a simple Wh-question ("what did Mummy buy for your birthday?") would also be appropriate.

Condition 2 has a different context: Mummy did not buy Leo something for his birthday, but he believes that she did. This is the "non-presuppositional context", as the presupposition of the embedded clause in the target question is not satisfied. In this context, Oiry claims that it is infelicitous to use the partial Wh-movement construction or a simple question. It is more appropriate to ask: what do you think she bought you for your birthday?

In reporting the results, Oiry divided the children in three groups, depending on their pattern of responses. Group 1 did not produce any long-distance Wh-questions. This group was composed of 13 of the youngest children (mean age 4;5). Group 2 had 10 children, with a mean age of 5;00. They produced only a few long-distance questions. The third group (composed of 10 of the oldest children, mean age 5;7) produced long-distance questions in both contexts, being adult-like. Oiry focused her discussion on the results of the older group. These children produced 31.75% of long-distance questions in the presuppositional context and 64% in the non-presuppositional context. This context is the one that is more suitable for the use of a long-distance question. Medial questions were produced more frequently in the presuppositional context (18%) than in the non-presuppositional context (7%), and this result was statistically significant ($p < 0.05$).

Another important result from this study is that the children produced a considerable number of long-distance Wh-questions with the Wh in-situ, something that Bošković (1998) and Cheng and Rooryck (2000) claimed to be ungrammatical in the adult language. On the other hand, Adli (2006), Pollock (1998) and Starke (2001) claim that Wh in-situ is acceptable in embedded contexts. Oiry's results contribute to this debate, as the children produced 12.75% of long-distance questions with the Wh in-situ in presuppositional contexts (versus

19% of Wh-movement in this context). In non-presuppositional contexts, the children produced 18% of long-distance Wh-in-situ (versus 46% of Wh-movement). Examples of medial questions (17a) and questions with Wh-in-situ (17b) are provided below:

- (17) a. **Qu'est-ce** que tu penses **où** il est caché, le p'tit lapin?
 what-is-it that you think where he is hidden the small rabbit
 "Where do you think he is hidden, the small rabbit?"
 (Oiry 2011, p. 12)
- b. Tu penses que ta maman t'as acheté **quoi**?
 you think that your mother you-has bought what
 "What do you think that your mother bought you?"
 (Oiry 2011, p. 16)

Jakubowicz and Strik (2008) also discuss data from children acquiring French.⁵ In their test, 24 children, between 4;0 and 6;9 years of age, were interviewed. The protocol was the same as the one administered to children acquiring Dutch, in the study reported above. The children produced 15.4% of medial questions, such as the ones below:⁶

- (18) a. **Où** Lala a dit **où** le poisson nage?
 where Lala has said where the fish swims
 "Where did Lala say that the fish is swimming?"
- b. **Qu'est-ce que** Billy a dit **qui** boit de l'eau?
 what is it that Billy has said who drinks water
 "Who did Billy say drinks water?"
 (Jakubowicz and Strik 2008, pp. 119, 120)

In Spanish, Gutiérrez Mangado (2006) conducted a longitudinal study with one child, aged 4;9, in the first session. The child was interviewed every four or five weeks over a period of 1 year and 5 months. The child produced a total of 160 long distance Wh-questions, 82 of which were medial Wh-questions, as the one provided below:

- (19) ¿**Dónde** crees **dónde** ha ido el niño? (5;7)
 Where think-2SG where has gone the child
 "Where do you think where the child has gone?"
 (Gutiérrez Mangado 2006, p. 268)

Lutken (2021) investigated the production of long-distance Wh-questions in child German. This is a particularly relevant language to be investigated, as some varieties of adult German display Wh-copying and partial Wh-constructions. Specifically, in this case, the dialect these children were acquiring allows these constructions. Therefore, if this type of Wh-question is part of what children hear, do children produce structures that are deviant from them or do they show adult-like behavior? Lutken interviewed 28 children, between 3;11 and 6;8 years of age. There were two tasks, one in which there was a lead-in before the child asked a question and another without this lead-in. Lutken observes that the children produced questions with Wh-phrases in the medial position that are grammatical in the adult language. In the lead-in condition, children produced 55% of questions with a Wh-phrase in the embedded [Spec, CP]. The adults produced only 18.4% of these questions. In 68.7% of the time, the adults' productions were a sequence of questions, as in: "what do you think? can the witch stop the evil?". In the condition without the lead-in, children produced 50% of such constructions (and the adults produced 80.3%).

Lutken speculates that the low rate of partial Wh-movement questions produced by the adults in the lead-in condition might be related to the structure of the lead-in used (page 301): "... Perhaps the fact that the lead-in itself would always be a complete question (*Was glaubst Du? what do you think?*) biases adults to treat it as a monoclausal question, to be followed by another monoclausal question, rather than the beginning of a biclausal question".

Examples of the children's productions are provided below: (20a) is an example of a target-like partial Wh-movement construction; (20b) is an example of a long-distance Wh-question. Lutken observes that this is not a typical long-distance construction, as it has "den/der" in the intermediate position. The adult construction should have "dass" ("that"). The elements the child produced ("der/den") are used in relative clauses:

- (20) a. **Was** glaubst Du, **wer** die gute Fee ist?
 "Who do you think is the good fairy?"
 b. **Wen** glaubst Du **den-der** uns helfen kann?
 "Who do you think can help us?"

(Lutken 2021, p. 310)

The types of mistakes children produced most frequently were related to the use of the wrong morphological case or number, in addition to the use of the wrong element in the intermediate position, as illustrated above.

Turning now to Greek, Asproudi (2014) interviewed 90 children, between 4;0 and 7;0 years of age. Group A included 30 children aged between 4;0 and 5;0. Group B included 30 children aged between 5;0 and 6;0. Group C included 30 children aged between 6;0 and 7;0. The elicitation task targeted long-distance Wh-questions. Asproudi did not provide the list of items that were elicited, but the examples seem to indicate that only direct object questions with the same verb ("hide") were elicited. The procedure was as follows. The experimenter hid five toys in five boxes and then asked the child to guess which toy was in each box. Then, the child was to ask the puppet (who had not seen the exchange between child and experimenter) which toy was hidden in each box (for example: "which comb are you guessing that she (i.e., the experimenter) hid in box 3?"). In group A, 16.45% of the questions were long-distance Wh-questions (82.22% were short distance questions and less than 2% were isolated Wh-words or no responses). In group B, 28% of questions were long-distance questions (and 71.56% were short-distance). Group C produced 48.89% of long-distance Wh-questions and 50.44% of short-distance questions.

The numbers above for long-distance questions include not only grammatical questions, but also ungrammatical questions with medial elements. Asproudi categorizes these medial questions as partial Wh-movement questions (when the two Wh-elements were different from each other, as in (21a) below) and as Wh-copying questions (when they were identical, as in (21b)). The children in group A did not produce medial questions. Out of all the long-distance questions produced by the children in group B, 68.25% were grammatical, 1.59% were partial Wh-movement and 5.56% were Wh-copying. For the children in group C, out of the total of long-distance questions produced, 77.27% were grammatical, 3.18% were partial Wh-movement and 3.64% were Wh-copying. Examples of the children's productions are provided below:

- (21) a. **Pu** mandevis esi **pja** ine i kafe bala?
 where guess-2SG you which be-3SG the brown ball
 target: Pu mandevis oti ine i kokini bala?
 (= "Where are you guessing the red ball to be?")
 b. Esi **pu** mandevis i kokini bala **pu** ine?
 you where guess-2SG the red ball where be-3SG
 target: Pu mandevis oti ine i kokini bala?
 (= "Where are you guessing the red ball to be?")

(Asproudi 2014, pp. 209, 210)

Asproudi observes that the overwhelming majority of long-distance questions produced by the children were well-formed, with medial constructions being very rarely produced. However, what seems relevant in this data is the somewhat low rates of long-distance Wh-questions produced. As mentioned above, the older group, with children between 6;0 and 7;0 years of age, produced around 49% of long-distance questions. The younger group produced only 16.45% of long-distance Wh-questions. This result is in

contrast to those found elsewhere in the literature. In the other studies mentioned above, the children tended to produce a much higher rate of long-distance Wh-questions. It is possible that the method used may have influenced the children. In the examples provided in (21) above, it seems that all of the questions had the same structure. If this was the case, then the children may have used some form of strategy, resorting to short-distance questions (as in “which is in box 5?”, an example provided on page 208), as it is clear from the context which verb is omitted (“hide”). Therefore, it could be argued that, with this low rate of long-distance Wh-questions produced, it is not surprising that the number of medial questions produced was also low.

All of the studies mentioned above used some kind of elicitation method, targeting production. In what follows, I discuss some comprehension studies, as they might help clarify the children’s productions. Four studies will be discussed, namely, [De Villiers et al. \(1990\)](#); [McDaniel et al. \(1995\)](#); [De Villiers et al. \(2011\)](#); and [Lutken et al. \(2020\)](#).

[De Villiers et al. \(1990\)](#) tested 25 children acquiring English, between 3;7 and 6;11 years of age in a question-after-stories task. The children heard stories and had to answer questions related to them. The questions had either no material in the medial position (as in “when did the boy say he hurt himself?”) or had a Wh-phrase in that position (as in “when did the boy know how he hurt himself?”). The children’s responses were mostly compatible with the adult grammar, providing an answer to the leftmost Wh-word. However, around 6% of the time, the children provided an answer to the medial Wh-word. These cases are considered medial answers, because it looks as if the child is considering the leftmost Wh-element as a scope marker, similar to what happens in partial Wh-movement languages.

In addition, targeting English, [McDaniel et al. \(1995\)](#) conducted a study with 32 children, aged between 2;11 and 5;7 years of age when the study began. The study involved four sessions with each child, and the sessions were 3 to 4 months apart. The task was a grammaticality judgment task in which both grammatical and ungrammatical long-distance Wh-questions were presented to children. The grammatical long-distance questions were either tensed or infinitive and targeted either the subject or the direct object position. The ungrammatical long-distance questions had Wh-phrases in the beginning of the sentence and in the intermediate position, were tensed or infinitive, and targeted either the subject or direct object position. The children accepted the grammatical sentences at high rates (between 93% and 98% for all of the constructions for all children in all sessions). The children had somewhat high rates of acceptance of the ungrammatical constructions as well. The acceptance rates varied between 16% and 34% in the first session and decreased to between 13% and 27% in the fourth session, depending on the construction (with subject or direct object, tensed or infinitive). The adults totaled a 0% acceptance for all the ungrammatical constructions.

A result that goes in the same direction was found in the study by [De Villiers et al. \(2011\)](#). The authors tested 398 children between 4;0 and 9;0 years of age.⁷ The study involved a comprehension task, in which short narrative scenarios and a sequence of three pictures to elicit answers to a variety of complex Wh-questions of the type: “How did the woman learn what to bake?” were given. The answers were coded as short-distance answers (when children answered the top verb, i.e., how she learned), long-distance answers (when they answered the lower verb, i.e., how she baked) and medial answers (when they answered the medial Wh-word, i.e., what she learned to bake). Children of all ages provided medial answers. Their rates were: 46.7% (4-year-olds), 37.9% (5-year-olds), 26.7% (6-year-olds), and 18.7% (7–9-year-olds).

Taking into consideration the results of [McDaniel et al.’s \(1995\)](#) grammaticality task and the results of [de Villiers et al.’s](#) comprehension task, a trend can be observed: the children accepted medial questions around 15% to 30% of the time and interpret questions with a Wh-word in the medial position as medial questions at considerable rates (46% to 18%, depending on their age).

These results are hard to interpret. If the children’s grammar allows medial Wh-questions, as the productions observed in other studies might indicate, they should have

accepted these questions at higher rates and should have interpreted them as medials more often. However, if their grammar does not generate these medial questions, the children should have rejected them at higher rates and not interpret them as medials.

A more recent study might help clarify the matter. In addition to the production study presented above, [Lutken et al. \(2020\)](#) also tested children in a comprehension task involving questions with Wh-phrases in the medial position. Their study reports the results from 32 children, between 3;11 and 6;1 years of age. The method was a question-after-stories task, which contained questions such as:

- (22) a. How did Evil Steve tell Detective Sherry what he was gonna steal?
b. What did Evil Steve tell detective Sherry that he was gonna steal?

In the story, Evil Steve tells Detective Sherry he was going to steal the queen's diamond ring, when in reality he plans to steal the queen's crown. He tells her this by writing a letter. His initial plan was to tell her by broadcasting it on TV, but this plan fails, and he ends up writing the letter. Thus, the story presents two possible means of communication and two possible objects to be robbed. This makes it possible to pair every question with a correct answer and an equally salient incorrect answer. The saliency of both options is critical in this design.

Question (22a) is similar to the questions used in the studies mentioned above. This design allowed the authors distinguish between non-embedding responses and medial question responses. If the children's answer to (22a) is "the ring" (what he said he would steal), this indicates a medial interpretation, as it indicates that the children are considering "how" as a scope marker and considering "what" to be the real Wh-element to be answered. If they answer by naming what Evil Steve actually stole (the crown), this indicates a monoclausal interpretation: the children are answering the embedded question (what he was going to steal). In these cases, it could be argued that the children simply ignored the first part of the question or that they had forgotten it. Question (22b) is a non-ambiguous long-distance Wh-question. The correct answer to this question is "the ring". If the children possess non-adult grammar, in which medial Wh-questions are possible, both questions in (22) will be synonymous.

The first question was answered correctly 67.7% of the time (providing the correct manner, "with a letter") and the second one was answered correctly 80.2% of the time (providing "the ring" as the answer). This indicates that, overall, the children answered correctly. The other answers provided for (22a) were: 8.3% false object ("the ring"), 8.3% true object ("the crown") and 11.5% distractor manner ("TV"). For question (22b), 16.7% of answers were the true object ("the crown").

Only 8% of the answers to (22a) can be considered non-adult, medial answers. Performance on this condition was better than in condition (22b), however, there were no statistical differences between the two. The authors observe that the number of occurrences of "the ring" as the response to (22a) was not significantly different from the occurrence of answers indicating memory lapses. These results lead the authors to conclude that there is no evidence that children interpret questions such as (22a) as medial questions.

Considering the results of all of these studies (which are summarized in Table A2 of Appendix A), it is possible to conclude that children show similar behavior in different languages with respect to the production of medial Wh-phrases in long-distance questions. These questions are produced by children acquiring Germanic languages (English, German, Dutch), Romance languages (Spanish, French, Brazilian Portuguese), and Greek. Medial questions were not found in 100% of their utterances. Their rates of production vary between studies and between languages. In English, different studies have obtained around 20% of medials. In a similar fashion to what was seen in the case of aux-doubling, in most of the experimental data discussed on medial questions, the age range goes roughly from 3;0 to 6;0.

These productions involve identical Wh-elements or different Wh-elements in the matrix and embedded [Spec, CP] positions, and are produced in tensed clauses. Some older studies have found that children interpret sentences with medial Wh-phrases as partial Wh-movement constructions, but a more recent study with a more controlled methodology did not find this to be the case. In Lutken et al.'s study, the children produced medial Wh-questions, but did not interpret questions with two Wh-elements as medial questions. This asymmetry between production and comprehension seems to be an additional characteristic of this error of commission.

I would like to stress the fact that children's productions of Wh-phrases in intermediate positions are not random: these errors of commission can be described as the overt realization of the Wh-element exactly in the positions where the Wh-phrase is claimed to land on its way to its final landing site, in accordance with successive-cyclic movement. Errors of commission with the reduplicated forms in random positions of the structure are not found. These facts could be taken as evidence that children's grammars involve successive-cyclic movement from an early age. This abstract knowledge seems to emerge with no overt evidence from the input.

4. Resumptive DPs in Relative Clauses

The production of relative clauses by children has been widely investigated in the languages of the world. In almost all of these studies, it is reported that children produce resumptive DPs, such as in the example below:

- (23) I choose **the lion** [that the girl pets **the lion**].

In (23), the relative DP head, "the lion", is repeated inside the relative clause, in its argument position. In classical raising analyses for relative clauses, such as [Kayne \(1994\)](#) or [Bianchi \(1999\)](#), the relativized NP originates inside the relative clause and raises to [Spec, CP]. This movement leaves a copy in an argument position inside the relative clause. Therefore, children's productions of resumptive DPs might be analyzed as the pronunciation of this lower copy.

These productions are attested in many child languages, even when they are not possible in the target language. The frequency of this production widely varies between studies and between languages. In what follows, I provide a list of studies and their results regarding resumptive DP production.⁸

In Cantonese, [Lau \(2016\)](#) interviewed 24 children, aged 4;2–5;10 in an elicited production task. In this experiment, 34 adult controls were also tested. Resumptive DPs were observed in both the children's and the adults' productions, although no percentage is provided for these productions. The adults produced some resumptive DPs in subject and object relatives. The children produced more resumptive DPs than the adults in both positions. Below, I provide an example of the children's production:

- (24) [RC **maa4maaa1** laam2zyu6 neoi4neoi5] go2 go3 **maa4maa1**
 mother hug-CONT daughter that CL mother
 "The mother that (the mother) is holding the daughter"

([Lau 2016](#), p. 376)

In Catalan, [Gavarró et al. \(2011\)](#) interviewed 20 5-year-olds in an elicited production task in which subject and direct object relatives were elicited. Most of the subject relatives (86.5%) were produced in an adult-like fashion, with a gap in the relativized position; 11.5% were headless relatives and 1.5% were fragments. As for the direct object relatives, several strategies were produced, with the target unambiguous relatives being produced only 7.5% of the time. The other strategies produced in this condition included object relatives with resumptive pronouns (17%), subject relatives (13%), fragments (4.5%). Relatives with a resumptive DP in the direct object position were produced 12.5% of the time. An example is provided below:

- (25) M'agradaria ser **el nen** que el veí pentina **el nen**.
 CL would-like to-be the boy that the neighbour combs the boy
 "I would like to be the child that the neighbour is combing (the child)".

(Gavarró et al. 2011, p. 43)

In English, McKee and McDaniel (2001) conducted two experiments aimed at eliciting relative clauses with different relativized syntactic positions. In experiment 1, only subject relatives were investigated. These included short-distance subject relatives (as in "the elephant that __ is flying on a plane"), embedded subject ("the pizza that Ariel dreamed __ was yummy"), subject in unextractable position ("the lion that Grover doesn't know what (it) ate") and in "whenever" relatives ("the boy that, whenever it rains, (he) cries"). For this study, 82 children, aged between 3;5 and 8;11 years of age, and 34 adults were interviewed. The children produced resumptive DPs in all of the types of subject relatives elicited, although the percentages are not provided. The children produced more resumptive pronouns than resumptive DPs and the positions where both resumptive pronouns and resumptive DPs were produced more frequently are: subject in unextractable position and "whenever" relatives. The adults rarely produced full resumptive DPs. These occurred in only seven cases of their 252 productions, but it is not specified in which positions these were produced.

In experiment 2, 89 children, between 3;5 and 8;1 years of age, and 20 adults were interviewed. This experiment targeted direct object, object of preposition, genitive subject (as in "the baby that (her) teddy bear is riding in the wagon") and genitive object ("the robber that Dorothy is swinging (his) rope"). The children produced resumptive DPs in all of these positions, but, again, no rates of production were provided. The adults in this experiment produced no full resumptive DPs.

Pérez-Leroux (1995) interviewed 11 children acquiring English between the ages of 3;5 and 5;5 in an elicited production study. The relative clauses elicited were subject, direct object, locative, oblique and possessive. Her results show that the children produced 10 resumptive elements, seven of which were pronouns and three of which were resumptive DPs, with no specification of the syntactic positions in which these elements were produced.

Kim and O'Grady (2016) conducted an elicited production task in English in which 21 children, aged 5;0 to 6;10, and 27 adults participated. Several syntactic positions were tested, and the children produced resumptive DPs in almost all of them. Resumptive DPs were produced in 5.7% of object relatives (as in (26a)), in 11.4% of indirect object relatives (as in (26b)), and in 29.5% of oblique relatives (as in (26c)). No resumptive DPs were produced in subject relatives:

- (26) a. **The couch** [that the boy pushed **the couch** toward the table]
 b. **The boy** [that the girl is giving a bag to **the boy**]
 c. **The box** [that the boy put the book on **the box**]

(Kim and O'Grady 2016, p. 1050)

One production (out of 135) of a resumptive DP was found in the adults' productions: an indirect object relative.

In French, Labelle (1990) interviewed 108 French-speaking children 3;0 and 6;0 years of age, in an elicited production task, targeting subject, direct object, indirect object, genitive and locative relative clauses. A total of 1348 relative clauses were produced by the children, 16% of which had resumptive DPs (76 relative clauses). These were distributed in the following way: 21 in direct object relatives, 30 in indirect object relatives and 25 in locative relatives. No resumptive DP was produced in genitive relatives. An example of resumptive DP in a locative relative is provided below:

- (27) Sur **la boîte** que la petite fille est debout sur **la boîte** (4;04)
 "On the box that the little girl is standing on the box"

(Labelle 1990, p. 100)

In German, [Yatsushiro and Sauerland \(2018\)](#) report an elicited production study conducted with 82 monolingual German-speaking children (between 4;6 and 8;7 years of age) and 40 adult speakers of German. In this experiment, 37 children were tested on one list of stimuli (with singular head nouns), and 45 children were tested on a second list (with plural head nouns). The authors observe that German is a V2 language, and in embedded contexts, the verb sits in the final position. Another property of the language is that nominative and accusative determiners share the morphological form for singular feminine (“die”) and singular neuter (“das”). In addition, relative pronouns and definite determiners share the same form for nominative and accusative for all gender and number combinations. As a result of these characteristics, some relative clauses are temporarily or even globally ambiguous. In some cases, the disambiguation can only be decided considering the verbal morphology. This is the reason for the authors’ decision to include both singular and plural heads, as this would allow them to test if verbal morphology would help the children.

Subject and object relatives were elicited. The authors provide the total number of relatives with a resumptive element filling the relativized position (adding both resumptive pronouns and resumptive DPs, without separating them). There were 78 filled-gap relatives with singular heads (21.1%) and 184 with plural heads (40.9%). These figures show that children produce a higher number of resumptives with plural heads.

Examples of resumptive DPs with singular (28a) and plural (28b) relative heads are provided below:

- (28) a. Ich möchte lieber **das Mädchen** sein,
 I want better the girl be
 das der Opa **das Mädchen** fotografiert.
 who.neut the.nom grandpa the girl photographs
 “I want rather be the girl who the grandpa photographs the girl.”
 ([Yatsushiro and Sauerland 2018](#), p. 822)
- b. Ich möchte bei **den Kindern** sein,
 I want among the children be
 die die Tante **die Kinder** anmalt. (5;10)
 who.pl the aunt the children paints.sg
 “I want to be among the children who the aunt paints the children.”
 ([Yatsushiro and Sauerland 2018](#), p. 824)

[Adani et al. \(2016\)](#) conducted an elicited production task with 72 children acquiring German between the ages of 4;0 and 9;8. Resumptive DPs were produced by all age groups: the 4-year-olds produced 6.5%; the 5-year-olds produced 5.7%; the 6-year-olds produced 15.4%; the 7-year-olds produced 7.2%; the 8-year-olds produced 5.7%; and the 9-year-olds produced 5% of resumptive DPs in their responses.

In Greek, [Theodorou and Grohmann \(2012\)](#) tested 33 children, between 5;0 and 8;11 years of age, acquiring Cypriot Greek as their native language. The method was an elicited production task targeting subject and direct object relatives. Resumptive DPs were found in four out of 70 relatives produced by the 5-year-olds, 2 out of 90 relatives produced by the 7-year-olds and 1 out of 90 produced by the 8-year-olds. The 6-year-olds did not produce resumptive DPs. There was a much higher number of relatives produced with resumptive pronouns (a total of 73 for all age groups), which the authors claim to be fully grammatical in the target language. One possible explanation for the low production of resumptive DPs would be related to the availability of resumptive pronouns in the language. If the relativized position inside the relative clause is filled with resumptive pronouns, there would be fewer opportunities for the resumptive DP to emerge.

In Hebrew, [Armon-Lotem et al. \(2006\)](#) interviewed 20 children, aged between 3;4–6;0, in an elicited production task. In Hebrew, resumptive pronouns are obligatory in indirect object, oblique and locative relatives. They are optional in direct object and embedded subject relatives (as in “the boy that Mary thinks that (he) likes cheese”) and ungrammatical

in the highest subject position of relatives (as in “the boy that (*he) likes cheese”). Although resumptive pronouns are obligatory in some positions, resumptive DPs are always ungrammatical. In the results, the authors report that resumptive DPs were produced only in locative relatives (20% of these relatives). Resumptive pronouns were used at high rates in all PP relatives. Given that the children produced resumptive pronouns, which are grammatical in almost all the positions that were tested, the lack of resumptive DPs is not surprising. This would be similar to what was seen in for Cypriot Greek above.

Arnon (2011) investigated the spontaneous productions of two children acquiring Hebrew as their native language. The data were collected from the Ravid database (Ravid 1995) and it contains longitudinal data from two children, aged 1;8 and 0;9 at the beginning of the recordings, and lasting six years. This corpus contained 87 relative clauses produced by the children between the ages of 2;2–6;3 (60% of them produced by the older sister, 40% by the younger brother). Resumptive DPs were detected only in the earlier recording sessions (although no exact ages of these productions were provided):

- (29) Et ha-balon ∫e-Sivan atfa balon (3;5)
 ACC the-balloon that-Sivan wrapped balloon
 “The balloon that Sivan wrapped the balloon”

(Arnon 2011, p. 17)

Arnon (2010) conducted an elicited production task with 23 Hebrew-speaking children, who ranged in age from 3;6 to 5;3. The majority of the relative clauses produced were grammatical (92%). The main source of ungrammaticality was the use of ungrammatical resumptive pronouns in subject relatives and ungrammatical resumptive DPs in object relatives. The children produced more ungrammatical subject relatives (15%) than ungrammatical object relatives (4%).

Friedmann et al. (2015) interviewed 87 Hebrew-speaking children, aged 7;4–17;0. In their elicited production task targeting subject and direct object relatives, only 0.5% of object relatives contained a resumptive DP. No subject relative was produced with these elements. As observed above, Hebrew is a language where resumptive pronouns are grammatical in the object position of relative clauses. Out of the grammatical object relatives produced, 66% of them had a resumptive pronoun. As discussed, in regard to the studies above, this low rate of resumptive DPs is not surprising, given that the language displays a strategy to fill the relativized position with a pronoun, which decreases the chances of having a DP in that position. Another reason is that the participants were older children with more advanced linguistic development.

In Italian, Bolognesi (2013) interviewed 71 Italian-speaking typically-developing children and adolescents. They ranged in age from 4;10 to 17;7. The method was an elicited production task targeting subject and direct object relatives. Resumptive strategies were produced only by the three younger groups: the kindergarten group (between 4;10 and 5;10 years of age), the first year of primary school group (between 5;10 and 6;9 years of age) and the second year of primary school group (between 6;10 and 7;10 years of age). The subject relatives were generally adult-like, with no resumptives (either pronouns or DPs) produced. The object relatives were produced more frequently with a resumptive pronoun than a resumptive DP, and this pattern is common to all of the three groups: kindergarten 11% vs. 8%; first year of primary school 14% vs. 8%; second year of primary school 13% vs. 1%. An example of an object relative with a resumptive DP is provided below:

- (30) Il bambino che il papà lava il bambino.
 “The child that the father washes the child.”

(Bolognesi 2013, p. 77)

Utzeri (2007) tested 41 Italian-speaking children attending primary school (aged 6;0–11;0) and 30 Italian-speaking adults in an elicited production task, targeting subject and object relative clauses. Both the children and the adults produced subject relatives with a gap in all

trials. In terms of object relatives, Utzeri observes that adults produced only three of them, out of the 440 that were elicited. Amongst these, two out of these three object relatives had a resumptive pronoun, and one had a gap. The author observes that resumptive pronouns are widely attested in spoken register in the adult language. This low number of object relatives is due to the fact that adults tended to turn object relatives into subject relatives. That is, instead of producing the target object relative “the child that the mother wraps up”, they produced the passivized version, as in “the child that is wrapped up by the mother”. Furthermore, 93% of the elicited object relatives were produced as subject-passivized relatives by the adults. The children produced 21% of object relatives, a surprising result, as they produced a much higher number of object relatives than the adults did. One of the reasons for this might be that the children have not completely mastered passives yet; 60% of children’s object relatives had resumption. Of these, 22% had a resumptive DP and 78% had a resumptive pronoun.

Volpato and Vernice (2014) conducted an elicited production task with 39 children acquiring Italian, aged between 4;11 and 10;3, targeting subject and object relatives. They found 11 resumptive DPs produced in 312 object relatives. No resumptive DPs were produced in subject relatives.

In Korean, Kim (2015) interviewed 21 children, aged between 5;1 and 6;10. In addition, 11 adult native speakers were also tested in this elicited production task. In Table 4 of their paper, it is reported that 1% of subject relatives and 10% of object relatives had resumptive DPs (as the one illustrated in (31)) which are ungrammatical in the adult language:

- (31) [namca-ka yeca-lul po-nun] yeca-ey-yo
 man-Nom woman-Acc see-RC.Prs woman-Dat-Decl
 “The woman that the man sees the woman”

(Kim 2015, p. 433)

Kim and O’Grady (2016) also detected resumptive DPs in their study. The authors tested 25 children (5;0– and 6;7 years of age) and 21 adults. The children produced resumptive DPs in indirect object relatives (7/125 (5.6%)), in oblique relatives (11/125 (8.8%)), in object relatives (7/125 (5.6%)), but no resumptive DPs in subject relatives (0/125).

In Mandarin, Hsu et al. (2009) tested 23 monolingual children with a mean age of 4;8 years. Ten adult native speakers also participated in the study. Resumptive DPs are ungrammatical in Chinese, yet this was found to be the most commonly produced error in the children’s productions: 48 resumptive DPs (7.3% of their responses) in total. In object relatives, 38 resumptive DPs were produced (11.6%) and in subject relatives, 10 resumptive DPs were produced out of 668 relatives. The authors observe that only children produced resumptive DPs in the subject position. The adults produced just three resumptive DP errors, all of them in object relatives. Approximately half of the children’s resumptive DP errors occurred in headless relatives (without the head noun) and half of them occurred in headed relatives. The authors explain that headless relatives with resumptive DPs look similar to internally-headed relatives. Yet, in Mandarin Chinese, head-internal relatives, such as the one below, are not allowed in the adult grammar:

- (32) xiao-nūhai zai kan dianshi de (na-ge dianshi)
 little-girl DUR watch TV DE that-CL TV
 “The TV which the little girl is watching (the TV)”

(Hsu et al. 2009, p. 343)

Hu et al. (2016) tested 125 children and 20 adults in their experiment. The children ranged in age between 3;0 and 8;0 and were acquiring Mandarin Chinese as their native language. The test was an elicited production task targeting subject and direct object relatives. The authors observe that relative clauses with resumptive DPs were produced by the children both in subject relatives (1.3%, 13 out of 998) and in object relatives (11.8%, 80 out of 678). The adults also produced resumptive DPs, but only in object relatives (22.5%,

45 out of 200). Resumptive DPs were observed in every age group. However, the majority were produced by younger children: 31 by 4-year-olds; 37 by 5-year-olds; 2 by 6-year-olds; 15 by 7-year-olds; and 7 by 8-year-olds. An example of an object relative with a resumptive DP is provided below:

- (33) mama qin xiaopengyou de xiaopengyou
 mother kiss child DE child
 “The child that the mother kisses (the child)”

(Hu et al. 2016, p. 331)

Hu et al. found that resumptive DPs were significantly more common in object relatives than in subject relatives. The authors observe that their data is in accordance with the data reported by Hsu et al. (2009) in reference to children’s language. However, the adult data differ in both studies. While in Hu et al.’s (2016) study, adults produced 22.5% of object relatives with resumptive DPs (45 out of their 200 utterances in the object relative elicitation), in Hsu et al.’s study, this production was only 1.9% (3 out of 169 utterances). Hu et al. argue that this discrepancy is partly due to the different tasks employed and the smaller number of participants in Hsu et al.’s study (10 adults in Hsu et al. vs. 20 adults in Hu et al.).

Hu et al. observe that relatives with resumptive DPs are forbidden in prescriptive grammar; however, they applied a grammaticality judgment task for the adults in order to establish their status among native speakers. The results show that the gap strategy was the preferred strategy. However, at the individual level analysis, there was a considerable number of participants who accepted relative clauses with resumptive DPs. These results are in line with what was found in the production study, in which a number of adults produced resumptive DPs.

In Palestinian Arabic, Botwinik et al. (2015) investigated the production of relative clauses in 60 children, between 3;0 to 9;0 years of age, in an elicited production task. Relatives with resumptive DPs were produced in the following positions: direct object (1 production), indirect object (1 production), PP locative (6 productions) and P selected [as in “is afraid of”] (6 productions). The production of DP resumptives decreased with age: 3;0-year-olds produced seven resumptive DPs, 5;0-year-olds produced five; and 8;0-year-olds produced two, for a total of 14 resumptive DP relatives.

In what follows, I present data from Portuguese, separated into Brazilian Portuguese (BrP) and European Portuguese (EP). In BrP, Rangel (2016) conducted an elicited production task with 90 children, between 4;0 and 6;11 years of age. In addition, 30 adults were also interviewed. Direct object and PP relatives were elicited. In direct object relatives, the children produced considerable rates of resumptive DPs: 4-year-olds produced 13.2%; 5-year-olds 12.7%; and 6-year-olds 5.4%. The adults produced no resumptive DPs. The example below illustrates the production of an object relative with a resumptive DP:

- (34) **A cachorra** que o aspirador está engolindo **a cachorra**
 the dog-fem that the vacuum is swallowing the dog
 “The dog that the vacuum is swallowing the dog”

(Rangel 2016, p. 103)

In PP relatives, the rates of resumptive DPs are much higher: 4-year-olds produced 19.4%; 5-year-olds 24.3%; 6-year-olds 16.5%; and adults 2.2%. The example below illustrates a PP relative with a resumptive DP:

- (35) Expected: escolho o velho de quem a onda levou a garrafa
 (I) choose the old-man from whom the wave took the bottle
 Produced: escolho **o velho** que a onda levou a garrafa **do velho**
 (I) choose the old-man that the wave took the bottle from-the old-man
 “I choose the old man that the wave took the bottle from the old man”.

(Rangel 2016, p. 109)

In EP, [Costa et al. \(2011\)](#) conducted an elicited production task with 60 children, between the ages of 3;9 and 6;2. In addition, 20 adults were also tested. Out of a total of 600 relatives, 56 contained a resumptive DP, as in the example below:

- (36) Gostava de ser **o menino** que o avô visita **o menino**.
 Liked to be the boy that the grandpa visits the boy
 "I'd like to be the child that grandpa visits the child."

(Costa et al. 2011, p. 1094)

In Spanish, [Pérez-Leroux \(1995\)](#) interviewed 26 children between the ages of 3;5 and 6;8. The children produced 42 resumptives in direct object and oblique positions: 22 were resumptive pronouns and 20 were resumptive DPs.

[Ezeizabarrena \(2012\)](#) interviewed 15 children acquiring Spanish between the ages 4;10 and 7;2 in an elicitation task. The author found only four instances of resumptive DPs in the earliest child sample, one in a subject relative and three in object relatives. No pronominal resumptives were produced.

In Serbo-Croatian, [Goodluck and Stojanović \(1996\)](#) investigated the production of relative clauses with 42 children between 4;0 and 6;0 years of age. Their study was an elicited production task. Serbo-Croatian displays both short-distance relatives and long-distance relatives with three different complementizers: "sto", "koji" and "za koga". In short-distance relatives, the children produced a total of 56 resumptive DPs and they were distributed among subject relatives (eight resumptive DPs), direct object relatives (27 resumptive DPs), indirect object relatives (eight resumptive DPs) and oblique relatives (13 resumptive DPs). The total number of relatives produced was 863. As for long-distance relatives (with complementizers "sto" and "koji"), a total of eight resumptive DPs were produced: five in subject relatives and three in direct object relatives.

In Turkish, [Özge et al. \(2010\)](#) interviewed 36 children between 5;0 and 8;0 years of age. The children produced 24.5% of ungrammatical responses, some of which were similar to the example in (37), which can be analyzed as a resumptive DP relative:

- (37) İneğ-in koyun-u it-tiğ-i koyun
 cow-GEN sheep-ACC push-DIK-3SG.POSS sheep
 "The sheep that the cow pushed the sheep."

(Özge et al. 2010, p. 7)

Finally, in Wenzhounese (a variety of Wu spoken in Southern Zhejiang province, in China), [Hu et al. \(2018\)](#) investigated the production of relative clauses by 56 children between 3;0–6;10 years and 26 adults, using an elicited production task. Interestingly, in the adult language, relative clauses with resumptive DPs are possible. Children produced six resumptive DPs (0.5%) and adults produced 34 (6.5%).

The list above indicates that resumptive DPs are produced by children acquiring a wide variety of languages. As was the case with aux-doubling and medial Wh-questions, children do not produce resumptive DPs in 100% of their relative clauses and these elements are not found in random positions of the structure. They tend to be more frequent in the embedded positions (such as oblique, indirect object, and locatives), and to be scarcer in the subject position. Table A3, in Appendix A, shows an overview of these results.⁹

As mentioned in the beginning of this section, assuming a classical raising analysis for relative clauses ([Kayne 1994](#); [Bianchi 1999](#)), the derivation of the relative would involve the movement of relativized NP from inside the relative clause to [Spec, CP]. The resulting structure involves the moved NP in [Spec, CP] and its copy in the argument position inside the relative clause. In the adult language, the relative NP head in [Spec, CP] is pronounced, but its lower copy in argument position isn't. It could be hypothesized that, when children produce resumptive DPs, they are pronouncing this lower copy of the relative head.

Before ending this section, I would like to present [Cinque's \(2011\)](#) discussion on languages displaying doubled headed relatives. Cinque observes that there are several

two analyses differ in what is assumed to be the structure of the nominal phrase in the argument position of the relative clause. In Cinque's analysis, there is a functional phrase with a functional head associated with a DP. In classical raising analyses, this functional head is not assumed.

If one assumes Cinque's analysis to be correct, the children's resumptive DPs would not indicate the pronunciation of a lower copy left by movement. It would instead indicate the pronunciation of the associated DP functional head left inside the relative clause. A potential problem with this hypothesis is the fact that the resumptive DPs produced by the children are identical to the head of the relative clause. This means that the alleged functional head being left inside the relative clause would be identical to the moved NP. In order to see this, consider a relative clause such as (26a), from Kim and O'Grady's (2016) study, repeated below for convenience:

- (40) **The couch** [that the boy pushed **the couch** toward the table]

Following Cinque's proposal, the underlying structure would be: [_{FP} [_{DP} couch] couch] in the argument position inside the relative clause. The DP "couch" would move to [Spec, CP], leaving the functional head "couch" behind. In this case, the functional head left inside the relative would not be a general term (like 'THING', 'PERSON' or 'CITY'), as in the languages mentioned by Cinque.

This fact does not necessarily invalidate a hypothesis based on Cinque's proposal. However, more assumptions would be required in order to explain why the functional head is always identical to the nominal head. Cinque did not put forth an analysis for these cases, although he listed several languages in which the DP left inside the relative clause is identical to the head of the relative clause.

Although it might not be feasible to extend Cinque's analysis to the children's data analyzed in this paper, it is relevant to have in mind all the possibilities available for relative clauses in adult languages, as this sheds light on what is made available by Universal Grammar and what can be expected in language acquisition.

5. Discussion

In the three sections above, I discussed children's errors of commission, where children produced extra material that is not licit in their target languages. These errors of commission are not the result of simple repetition of words or phrases in random places in the sentence. All of these errors emerge in structures involving movement to the left periphery of the sentence (either C⁰ or [Spec, CP]) and they have in common the fact that these "extra" elements are pronounced in the same positions where copies (or traces) left by movement are claimed to occur.

In the case of aux-doubling, the auxiliary verb (either followed by negation or not), is produced both at its final landing site, C⁰, and in its base position, I⁰, as illustrated in (41) below (repeated from (7b) above). In the case of medial Wh-questions, children produce the Wh-element in its final landing site (the matrix [Spec, CP]) and a second Wh-element, which can be pronounced in the embedded [Spec, CP] (as in (42) below, repeated from example (10a)). This second Wh-element might also be pronounced in its argument position (as illustrated with Brazilian Portuguese data in (43) below, repeated from example (15) above). In relative clauses, children pronounce the relative DP head in the matrix clause and in its base position inside the relative clause (as in (44), repeated from (26a) above) (in the structures below, only the main relevant aspects are depicted; other structural details are left aside):

- (41) a. Why [**can't**] she [**can't**] go underneath?
 b. Why [**can't**] she [t] go underneath?
- (42) a. [**What**] do you think [_{CP} [**what**] Cookie Monster eats [t]]?
 b. **What** do you think [_{CP} [t] Cookie Monster eats [t]]?

As summarized in Appendix A, the list of languages in which these productions are found varies depending on the error. Aux-doubling has been widely studied in child English and there are only two other languages where this error has been described: a dialect of Swiss German and Greek. Aux-doubling has not been detected in child Italian. Wh-questions with medial Wh-phrases have already been studied in the following child languages: Brazilian Portuguese, Dutch, English, French, German, Greek, and Spanish. Relative clauses containing full resumptive DPs have been found in many child languages: Cantonese, Catalan, English, French, German, Greek, Hebrew, Italian, Korean, Mandarin, Palestinian Arabic, (Brazilian and European) Portuguese, Spanish, Serbo-Croatian, Turkish, and Wenzhounese.

This survey encompasses the languages for which production studies have been found with explicit reference to these errors of commission. It is our hope that more languages will be investigated in the future, so that a more complete characterization of these errors can be accomplished.

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Appendix A

Tables A1–A3 summarize the data discussed in Sections 2–4. Table A1 shows the main information from aux-doubling data. Table A2 shows information from medial Wh-questions data. Table A3 shows information from resumptive DP data.

Table A1. Data on Aux-doubling.

Language	Study	Method	Age-Range	N	Results
English	Stromswold (1990)	Spontaneous	Initial: 1;02 Final: 7;10	14	20 aux-doublings: 8 negative, 12 affirmative
	Woods and Roeper (2020)	Spontaneous	Initial: 1;10 Final: 2;0	12	15 aux-doublings: 8 negative, 7 affirmative
	Crain and Nakayama (1987)	Elicited	3;2–5;11	30	Exp 1 ('be'): 23% of aux-doublings Exp 2: 79% of aux-doublings
	Guasti et al. (1995)	Elicited	3;8–4;7	10 (4 sessions)	40% with aux-doubling 7.5% with aux/neg doubling
	Ambridge et al. (2008)	Elicited	Exp 1: 6;3–7;9 Exp 2: 4;7–5;7	22 33	Exp 1 ('can'): 23.97% Exp 2 ('be'): 18.2%
	Theakston and Rowland (2009)	Elicited ('be')	Initial: 2;8 Final: 3;7	12 (6 sessions)	Mean (y/n): 0.08–0.25 Mean (Wh-q): 0–0.08
	Rowland and Theakston (2009)	Elicited (‘do’, ‘can’, ‘will’)	Initial: 2;8 Final: 3;7	12 (6 sessions)	Aux-doubling by age group: 2;11: 41% 3;2: 29% 3;5: 21%

Table A1. Cont.

Language	Study	Method	Age-Range	N	Results
	Xu (2011)	Elicited	3;6–4;11	16	27.4% of aux-doubling in neg questions with ‘do’ 3.2% of aux-doubling in questions with ‘cannot’ 7.7% of aux-doubling in questions with ‘can’t’
	Hiramatsu (2003)	Elicited Grammaticality judgment	4;0–5;0	15	83% of aux-doubling production 73% rejection of aux-doubling
Swiss German (Lucernese)	Schönenberger (2001)	Spontaneous	Initial: 3;10 Final: 6;1	2	26 aux-doublings
Greek	Asproudi (2012)	Elicited	4;0–7;0	90	6 aux-doublings in neg questions
Italian	Guasti (1996)	Elicited	3;1–4;8	11	0 aux-doubling

Table A2. Data on medial Wh-questions.

Language	Study	Method	Age-Range	N	Results
English	Thornton (1990)	Elicited	2;10–5;5	21	18.5% of medial questions
	Lutken et al. (2020)	Elicited	4;0–6;1	30	22% of medial questions
		Comprehension	3;11–6;1	32	8.3% of medial answers
	Liter et al. (2022)	Elicited	3;6–6;2	85	17.8% of medial questions
	De Villiers et al. (1990)	Comprehension	3;7–6;11	25	6% of medial answers
	McDaniel et al. (1995)	Grammaticality	2;11–5;7 in first session (4 sessions)	32	13–34% acceptance of medials
	De Villiers et al. (2011)	Comprehension	4;0–9;0	398	% of medial answers by age group: 4;0: 46.7% 5;0: 37.9% 6;0: 26.7% 7;0–9;0: 18.7%
Brazilian Portuguese	Grolla et al. (2020)	Elicited	4;2–6;5	72	9.6% of medial questions
	Grolla (2022)	Elicited	4;3–5;11	21	15.4% of medial questions
Dutch	Jakubowicz and Strik (2008)	Elicited	4;2–6;11	24	61.4% of medial questions
	Strik (2009)	Elicited	2;10–6;11	34	medials found at high rates
French	Oiry (2011)	Elicited	2;11–6;3	32	18% in presuppositional context 7% in non-presuppositional context
	Jakubowicz and Strik (2008)	Elicited	4;0–6;9	24	15.4% (76/493) of medial questions
	Strik (2009)	Elicited	3;3–6;9	36	medials are found at lower rates than what Dutch children produced
Spanish	Gutiérrez Mangado (2006)	Elicited/longitudinal	Initial: 4;9 Final: 6;2	1	82/160 of medial questions
German	Lutken (2021)	Elicited	3;11–6;8	28	Lead-in: 55% of medial questions Without lead-in: 50% of medial questions
Greek	Asproudi (2014)	Elicited	4;0–7;0	90	Group A: no medial questions produced Group B: 1.59% partial Wh-movement 5.56% Wh-copying Group C: 3.18% partial Wh-movement 3.64% Wh-copying

Table A3. Data on resumptive DPs *.

Language	Study	Method	Age-Range	N	Results
Cantonese	Lau (2016)	Elicited	4;2–5;10	24	RDPs found in adults' and children's productions
Catalan	Gavarró et al. (2011)	Elicited	5;0	20	12.5% of RDPs in ORCs
English	McKee and McDaniel (2001)	Elicited–SRCs	3;5–8;11	82	RDPs produced
		Elicited–DO, PP, genitive	3;5–8;1	89	RDPs produced in all positions
	Pérez-Leroux (1995)	Elicited	3;5–5;5	11	3 RDPs produced
	Kim and O'Grady (2016)	Elicited	5;0–6;10	21	RDPs by position: 0% SUBJ 5.7% DO 11.4% IO 29.5% OBL
French	Labelle (1990)	Elicited	3;0–6;0	108	16% RDPs in total. By position: 21 DO 30 IO 25 LOC
German	Yatsushiro and Sauerland (2018)	Elicited	4;6–8;7	37	21.1% RDPs with singular heads 40.9% RDPs with plural heads
	Adani et al. (2016)	Elicited	4;0–9;8	72	RDPs by age group: 4;0: 6.5% 5;0: 5.7%, 6;0: 15.4%, 7;0: 7.2%, 8;0: 5.7% 9;0: 5%
Cypriot Greek	Theodorou and Grohmann (2012)	Elicited	5;0–8;11	33	RDPs by age group: 5;0: 4/70 7;0: 2/90 8;0: 1/90
Hebrew	Armon-Lotem et al. (2006)	Elicited	3;4–6;0	20	20% of LOC relatives with RDPs
	Arnon (2010)	Elicited	3;6–5;3	23	4% RDPs in ORCs
	Arnon (2011)	Spontaneous	Initial sessions: 1;8–0;9 Lasted 6 years	2	RDPs found in initial sessions
	Friedmann et al. (2015)	Elicited	7;4–17;0	87	0.5% of RDPs on ORCs
Italian	Bolognesi (2013)	Elicited	4;10–17;7	71	RDPs by age group: Kindergarten: 8% 1st year: 8% 2nd year: 1% All older children: 0%
	Utzeri (2007)	Elicited	6;0–11;0	41	22% of ORCs with resumption had RDP
	Volpato and Vernice (2014)	Elicited	4;11–10;3	39	11 RDPs in 312 ORCs

Table A3. Cont.

Language	Study	Method	Age-Range	N	Results
Korean	Kim (2015)	Elicited	5;1–6;10	21	1% RDP in SRCs 10% RDP in ORCs
	Kim and O’Grady (2016)	Elicited	5;0–6;7	25	RDPs by position: 0% SUBJ 5.6% IO 8.8% OBL 5.6% DO
Mandarin	Hsu et al. (2009)	Elicited	mean 4;8	23	7.3% (48) of RDPs: 11.6% (38) in ORCs 1.5% (10) in SRCs
	Hu et al. (2016)	Elicited	3;0–8;0	125	RDPs by age group/position: Children: 1.3% SRCs 11.8% ORCs Adults: 22.5% ORCs
Palestinian Arabic	Botwinik et al. (2015)	Elicited	3;0–9;0	60	RDPs by age group: 3;0: 7 5;0: 5 8;0: 2
Brazilian Portuguese	Rangel (2016)	Elicited	4;0–6;11	90	RDPs in ORCs by age group: 4;0: 13.2% 5;0: 12.7% 6;0: 5.4% RDPs in PP relatives by age group: 4;0: 19.4% 5;0: 24.3% 6;0: 16.5%
European Portuguese	Costa et al. (2011)	Elicited	3;9–6;2	60	56 RDPs (out of 600 relatives)
Spanish	Pérez-Leroux (1995)	Elicited	3;5–6;8	26	20 RDPs in ORCs
	Ezeizabarrena (2012)	Elicited	4;10–7;2	15	4 RDPs (1 in SRC and 3 in ORCs)
Serbo-Croatian	Goodluck and Stojanović (1996)	Elicited	4;0–6;0	42	Short-distance relatives: 56 RDPs Long-distance relatives: 8 RDPs
Turkish	Özge et al. (2010)	Elicited	5;0–8;0	36	some RDPs produced
Wenzhounese	Hu et al. (2018)	Elicited	3;0–6;10	56	Children: 0.5% RDPs Adults: 6.5%

* RDP: Resumptive DPs; SUBJ: subject; DO: direct object; IO: indirect object; OBL: oblique; LOC: locative; ORC: object relative clause; SRC: subject relative clause.

Notes

- ¹ In order to make this overview as comprehensible as possible, I conducted an extensive search on Google Scholar, selecting all the studies (dissertations, journal articles, books, book chapters, conference proceedings, master’s theses and working papers) which investigated the acquisition of one of the three structures under analysis. After this initial search, all of the pre-selected publications’ bibliographies were consulted, in order to complete the list with all of the publications on these subjects. From this list, I selected all of the publications that presented new data on one of the three subjects under investigation. Publications that did not bring new data were not included.
- ² When reporting information from these original papers (such as examples, rates and number of productions), I reproduce what was provided in the original studies with no alterations. In some papers, when exact figures are not provided, this is acknowledged. The reader should keep in mind that in several of the studies, the reduplication of auxiliaries, Wh-elements or relative DP heads is not the main aspect under investigation. In these cases, the authors might not bring detailed information on children’s productions of these elements. Sometimes, there is just the mention of such productions, but no examples are provided.

Other times, the authors provide the raw number of productions, without any statistical analysis or even the percentage of productions. In some cases, it was possible to calculate percentages and I did so. In other cases, the total amount of productions was not clearly stated and so it was not possible to calculate percentages on my own. As for the examples that are provided to illustrate children's productions, I replicate them as they were presented in the original papers. If the original paper does not bring glosses, but only a general translation to English, this is how this is presented in this survey. In some papers, the child's age is provided with his (or her) production. In some papers, it is not. Thus, in this survey, the age at which a given sentence was produced is provided only when available.

- 3 In studies on spontaneous production (Sikansi 1999; Grolla 2009), it has been found that Wh-in-situ emerges quite late (after 3;6 years of age) and is the least produced strategy in children's productions. In Vieira and Grolla (2020), which reports the results of an experimental study with older children (between 4;6 and 5;6 years of age), children produced a much lower percentage of Wh-in-situ than adults, showing a preference for the moved strategy.
- 4 Strik (2009) reports data from 34 children acquiring Dutch from 2;10 to 6;11 years of age (constituting a superset of the group reported in Jakubowicz and Strik (2008)). Although this is a short paper where no exact figures were provided, Strik observed that the same pattern reported in Jakubowicz and Strik (2008) is found in the larger set of data, with children of all ages producing medial Wh-questions and adults producing a small proportion of such structures.
- 5 Strik (2009) also reports data from 36 children acquiring French from 3;3 to 6;9 years of age (a superset from the group reported in Jakubowicz and Strik (2008)). She found the same pattern as reported in Jakubowicz and Strik (2008), with children of all ages producing medial Wh-questions.
- 6 In Jakubowicz and Strik's (2008) Table 4 (page 119), it is shown that 76 of the questions children produced were long distance Wh-questions with a Wh-phrase in medial position. In order to obtain this number (76 productions), I counted all the occurrences in the PM (partial movement) cells and in the Wh-copying cells for the 4- and 6- year-olds (excluding adults). The total number of long-distance questions produced is provided in Table 3, page 115. The total number of questions produced by 4- and 6-year-olds is 493 questions. The figure of 15.4% (76/493) of medial questions was thus calculated by me, as the authors did not provide it.
- 7 The study was also conducted with 192 language-impaired children, but here I report the results of the typically developing children only.
- 8 This survey focuses on structures where children produce reduplications of full phrases that have been moved in the structure. For this reason, I will not discuss the production of resumptive pronouns inside relative clauses, as these cases do not have a full copy of the moved phrase pronounced in its base position. Children's productions of resumptive pronouns are mentioned when the original papers do not separate their rates of production from the rates of production of full resumptive DPs.
- 9 In general, the studies where resumptive DPs are described do not have these elements as their main focus of investigation. In most of the studies described above, the aim was to investigate children's production of relative clauses targeting different syntactic positions, in order to observe children's difficulties in each of them. Resumptive DPs are often listed in a section listing 'production errors', and are seldom analyzed more deeply. In several of the studies reported, no percentage of production of resumptive DPs is provided, as can be seen in the results cells of Table A3, where data on resumptive DPs are listed.

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