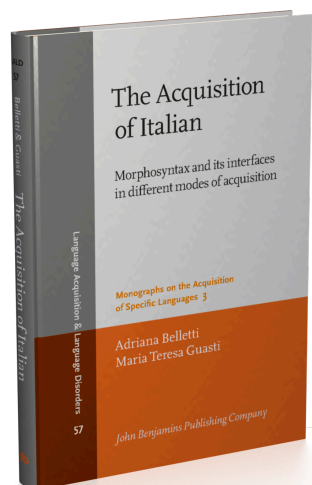


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The Acquisition of Italian

Morphosyntax and its interfaces in different modes of acquisition

Adriana Belletti and Maria Teresa Guasti

University of Siena/University of Geneva / University of Milano Bicocca

A major contribution to the study of language acquisition and language development inspired by theoretical linguistics has been made by research on the acquisition of Italian syntax. This book offers an updated overview of results from theory-driven experimental and corpus-based research on the acquisition of Italian in different modes (monolingual, early and late L2, SLI, etc.), as well as exploring possible developments for future research. The book focuses on experimental studies which address research questions generated by linguistic theory, providing a detailed illustration of the fruitful interaction between linguistic theorizing and developmental studies. The authors are leading figures in theoretical linguistics and language acquisition; their own work is featured in the research presented here. Students and advanced researchers will benefit from the systematic review offered by this book and the critical assessment of the field that it provides.

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“A highly readable, truly informative, and remarkably thought provoking piece of work.”

Gennaro Chierchia, *Harvard University*

“*The Acquisition of Italian* is a comprehensive, up-to-date overview of grammatical development in Italian-speaking children. [...] I highly recommend this volume to anyone interested in grammar acquisition in young children, especially as viewed through the lens of Italian.”

Nina Hyams, *UCLA*

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CHAPTER 5

The acquisition of relative clauses

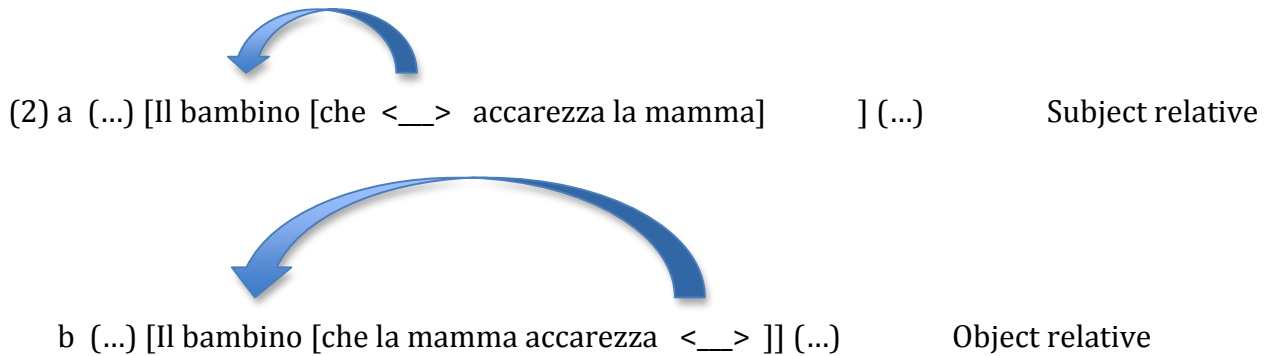
1. Introduction.

As is the case in many languages, standard headed restrictive relative clauses in Italian have a gap within the relative clause, which immediately follows the relative noun phrase head; the gap corresponds to the argument position of the relative head inside the relative clause. Throughout, the general term “relative clauses” or “relatives” will be used; it will only refer to restrictive relative clauses (unless otherwise specified). The gap is notated as “<__>” in the following examples (1)a, b illustrating a subject and an object relative, respectively; (1)c illustrates an object relative with a post-verbal subject, a possible structure in Italian. As will be discussed later, when the relative head and the post-verbal subject share the same number (e.g. both singular as in 1c), the relative is ambiguous as it can also be interpreted as a subject relative with identical linear word order with (cfr. 1a). Both (finite) subject and object relatives are introduced by the relative complementizer “che” (the same complementizer introducing finite declaratives in Italian); if the relative head corresponds to a prepositional phrase, a relative pronoun is contained within the PP, as illustrated in (1)d:

- | | | |
|-------|--|-----------------------------|
| (1) a | Il bambino che < __ > accarezza la mamma | Subject relative |
| | the boy that hugs the mother | |
| b | Il bambino che la mamma accarezza < __ > | Object relative |
| | the boy that the mother hugs | |
| c | Il bambino che – accarezza < __ > la mamma | Object relative with post- |
| | the boy that hugs the mother | verbal subject |
| d | Il bambino con cui/il quale la mamma sta parlando < __ > | PP/Indirect object relative |
| | the boy with whom the mother is talking | |

The dependency holding between the relative head and the corresponding gap within the relative clause is best characterized as a movement dependency, along the schematic lines in

(2)¹, in which the relative head moves into a dedicated left peripheral position within the CP; for concreteness, the derivation is illustrated through a raising analysis of relative clauses (Bianchi 1999, Kayne 1994; Friedmann, Belletti, Rizzi 2009, Rizzi 2004a for further details). As the discussion of the present chapter will concern Subject and Object relatives of the type in (1)a and (1)b, the illustration refers to these sentences:



In several varieties of Italian (and in dialects spoken in Italy), relatives are often realized with a resumptive pronoun rather than a gap within the relative clause. In Italian, resumptive relatives typically belong to an informal somewhat substandard register;² normatively, they are not considered “correct”, although they are fairly common in colloquial speech³. The resumptive pronoun is a clitic pronoun. As there are no subject clitics in standard Italian, subject resumptive relatives are not distinguishable from subject gap relatives, as the resumptive pronoun should correspond to a null subject *pro*, the silent equivalent of a weak subject clitic (Cardinaletti & Starke 1999). Object relatives, in contrast, contain an accusative object clitic within the relative clause, corresponding to the relative head as illustrated in (3) (relative head and clitic are co-indexed for clarity):

¹ In cartographic terms (Cinque 2002, Rizzi 2004b, Belletti 2004b, for a first systematic illustration of the overall cartographic approach), a dedicated head attracts into the articulated CP (Rizzi 1997) the relative head noun phrase of the relative clause within its specifier. For recent version of the raising analysis see Cecchetto & Donati (2011). A detailed discussion of the precise analysis of restrictive relatives and the comparison between the so called matching and raising analyses is beyond the scope of the present chapter, as it would take the discussion too far afield. Any analysis would anyway involve the creation of a long distance A' dependency, along the lines schematized in (2). For the sake of simplicity, it is assumed in (2)a that in subject relatives movement of the subject occurs from the preverbal subject position (see footnote 30, example (40) for a more precise representation; nothing hinges on this particular assumption here).

² Whereas in dialects relativization through resumption may be the only relativization strategy.

³ Depending on the variety of Italian, the register may be considered more or less informal. In varieties which are strongly influenced by the close dialect, resumptive relatives may be considered fairly standard. This may be the case for the varieties of Italian spoken in Veneto. However, “standard” relatives in Italian are gap relatives.

(3) Il bambino_i che la mamma lo_i accarezza <__>
 the boy that the mother him_{cl} hugs

In indirect relatives, the clitic within the relative clause, corresponds to the relevant indirect clitic (if it exists, e.g. *Il bambino che la mamma gli dà un bacio* <__>//The kid that the mother gives a kiss to-him_{cl}; /*Il bambino che la mamma ne parla sempre*<__>//The kid that the mother always talks of-him_{cl}). As will be discussed later in the chapter, children often produce resumptive relatives, for both direct and indirect object relatives (Guasti & Cardinaletti 2003). Various analyses can be proposed for resumptive relatives. Sometimes it is assumed that resumption is the signature of a derivation not involving movement (e.g., within the literature on atypical development Friedmann & Costa 2011). Alternatively, resumptive relatives can be assumed to involve a doubling-type derivation, in which the relative head and the clitic are merged within the same “big DP” (Cecchetto 2000, Kayne 2005, Belletti 2005)), the relative head undergoes movement into the dedicated left peripheral position within the CP as in (2), and the clitic is stranded inside the relative clauses⁴. The essential features of this derivation, which will be assumed here for concreteness, are schematically illustrated in (5):



(5) (...) [Il bambino_i [che la mamma lo_i accarezza [DP __ __]]] (...)



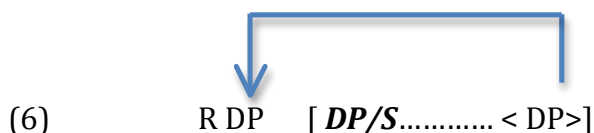
Summarizing, the derivation of relative clauses in Italian involves the creation of a long distance (movement)-dependency holding between the relative head filling a dedicated position within the left peripheral CP, and the corresponding gap within the relative clause; the dependency of resumptive relatives holds between the relative head and the corresponding clitic. From the point of view of the interpretation, the interpretive function of a restrictive relative clause is to restrict the set of referents about which the relative clause

⁴ Hence, according to this view, resumptive relatives are special instances of clitic doubling. The analysis briefly described in the text owes a lot to the influential analyses of quantifier floating and of cliticization of Sportiche (1988, 1996); Belletti (2005) for discussion. It captures both the movement properties of cliticization and relativization and the apparent lack of movement suggested by the presence of the clitic in the position in which a gap would be expected if the moved phrase were the entire DP.

predicates some property. Clearly, relative clauses are complex structures overall, as even this brief description of the Italian case suggests.

Thus, it is no surprise that relative clauses have been identified in the acquisition literature as some of the hardest structures to acquire, in the different languages studied over a long period of time (Friedmann & Novogrodsky 2004, Håkansson & Hansson 2000, Mc Kee et al. 1998, Tavakolian 1981, a.o.). Some relative clauses are properly understood rather late in the course of typical development. A crucial difference is observed between Subject relatives, acquired earlier and with no special difficulty by young children already around age 3 and a half, and Object relatives, acquired much later, around age (5)-7. This asymmetry is long lasting, as it is still observed in adults' comprehension, as revealed by studies on adult parsing (footnotes 18, 23). In atypical development, the proper acquisition of Object relatives is also, not surprisingly, hard as revealed by studies on Italian SLI children and in other forms of atypical development. This chapter reviews some of the fundamental results on the acquisition of Italian relative clauses, whose study has received a lot of attention in recent years and has given rise to an especially productive synergy between experimental work and theoretical elaboration. We briefly outline below the basic features of the theoretical account that we will assume in this chapter.

The theoretical account in the interpretation of the source of the complexity of (headed) object relatives will be in terms of intervention.⁵ Informally put for now, a crucial property in the derivation of a headed Object relative containing a lexical subject (in the preverbal position) is that an intervention situation is necessarily created, as is clear from the schemas in (2)b and (5) above: the lexical subject intervenes in the structure in the establishment of the long distance dependency between the relative head and the position of its original merge within the relative clause (gap). (6) schematizes the intervention situation (the merge position of the relative head is indicated by its copy with <>):



⁵ See also chapter 4 and chapter 6 for the analogous interpretation in the analysis of passives and wh-questions.

In section 4 the theoretical account in terms of locality and intervention will be elaborated in detail.

The chapter is organized as follows. We start out by reviewing results from production studies (sections 2.1 through 2.4), moving then to comprehension studies in typical development (sections 3 through 3.1.2). The theoretical interpretation of the emerged developmental path will be presented in section 4 (4-4-3). A review in section 5 of some results from forms of atypical development, from SLI, to hearing-impaired children, to autistic children and children with developmental dyslexia/DD will conclude the overview. Section 6 summarizes the findings and concludes the chapter with some considerations for future research.

2. Production.

2.1 The production of subject and object relatives in typically developing children

A number of works have addressed the acquisition of relative clauses in typically developing monolingual Italian-speaking children from the point of view of their ability to produce a Subject or an Object relative in an experimental situation of elicitation. The cross-linguistic acquisition literature has characteristically concentrated on the comparison between the acquisition of these two types of restrictive relatives, where the object is a direct object (not a prepositional object); Italian studies are no exception (but see Guasti & Cardinaletti 2003 on prepositional relatives). Overall, all results have shown a significant difference between the relatively smooth early production of Subject relatives, which contrasts with the significantly harder and later capacity to produce Object relatives.

A first pilot study (Utzeri 2007) adapted for the first time to Italian the elicitation procedures designed in Novogrodsky & Friedmann (2006), which consisted of a Preference Task (PT) and a Picture Description Task (PDT). In the Preference task, children were asked to choose between two boys or two girls involved in two different situations described by the experimenter by saying which child of the two they would prefer to be. In the Picture description task, the child had to continue with the description of a picture introduced by the experimenter; the situation depicted in the pictures was such that the production of either a

Subject or an Object relative was expected.⁶ As the Preference Task has then been utilized in several other experiments to be presented below, which have adapted the design to Italian in a more articulated and controlled way than in the pilot, we only report here the basic results from the first running of the experiment given their significance. We will then move to the subsequent studies. Consider an example of the exchanges and of the elicited expected relatives:

1.

Experimenter: Ci sono due bambine. Una bambina sta leggendo una storia, l'altra bambina sta ascoltando una storia. Quale bambina preferiresti essere? Inizia con

“(Preferirei essere) la bambina ...

There are two girls. One girl is reading a story, the other girl is listening to a story. Which girl would you rather be? Start with “I would rather be the girl....

Target answer *Subject relative*:

(Preferirei essere ...)

La bambina che ___ sta leggendo una storia

The girl that ___ is reading a story

2.

Experimenter: Ci sono due bambine. La mamma sta baciando una bambina, il nonno sta baciando un'altra bambina.

Quale bambina preferiresti essere? Inizia con “(Preferirei essere) la bambina ...

There are two girls. The mother is kissing one girl, the grandfather is kissing the other girl.

Which girl would you rather be? Start with “I would rather be the girl....

⁶ In the PDT adapted from Novogrodsky & Friedmann (2006), two pictures are presented, one showing one character performing an action over another character, the other showing the reverse situation. The experimenter describes the first picture and then asks an eliciting question as in i a, b for subject and object relatives respectively:

i. *Experimenter: In these pictures, there are two rabbits. In one picture, the rabbit is pushing the penguin and in the other picture the penguin is pushing the rabbit. Which rabbit is this (pointing to the first picture)? Start with “This is the rabbit....”*

a. Target SR: Il coniglio che spinge il pinguino

“The rabbit that is pushing the penguin”

Experimenter: And now which rabbit is this (pointing to the second picture)? Start with “This is the rabbit..”

b. Target OR: Il coniglio che il pinguino spinge

“The rabbit that the penguin is pushing”

Target answer *Object relative*:

(Preferirei essere...)

La bambina che la mamma sta baciando ___

The girl that the mother is kissing ___

The Preference Task has two conditions: a Verb change condition, of which (1) is an illustration (for a Subject relative) and a Subject change condition, of which (2) is an illustration (for an Object relative; for the elicitation of a Subject relative the change affects the object in the relative). There were 41 school age children tested (age range: 6-11), and 30 adults (age range: 15-73). The overall results for children are the following:

Subject relatives: out of 649 elicited Subject relatives, children produced 1156 Subject relatives

Object relatives: out of 649 elicited Object relatives, children produced 144 Object relatives

This is a striking and huge difference. It clearly shows that it is hard for children to produce Object relatives; there is no comparable difficulty with the production of Subject relatives, which have also been produced in place of an Object relative in a significant proportion (whence the big number of subject relatives produced).

The first pilot study had various limits, the most important one being the lack of a careful analysis of the data divided per age; subsequent studies have corrected this limitation and have also investigated the production of relatives in younger children, as will be discussed below. However, this first pilot adaptation to Italian of the Preference Task has also an important merit: it is the first study, which has discovered for Italian that children in the age range analyzed tend not to produce Object relatives, and rather prefer to transform the target Object relative into a Subject relative, without misinterpreting the task. Indeed, children adopted various strategies, such as changing the verb of the relative clause in such a way that the intended meaning would still be preserved. This is the case illustrated in (5); in (5a) we have the sentence produced by the child and in (5b) the expected response.

- (5) a. Il bambino che riceve un bacio dalla mamma
the child that receives a kiss from the mother

- b. Il bambino che la mamma bacia
the child that the mother kisses

The most important strategy adopted in order to produce a Subject relative in place of an Object relative still preserving the intended meaning, however, is through use of Passive: it is the first time that this production strategy has been systematically documented as being widely adopted in Italian. Some resort to passive when an object relative was elicited had also been reported in Guasti & Cardinaletti (2003), where a different elicitation design adapted to Italian from Hamburger & Crain (1982) was utilized. In the pilot results reported here, a widespread resort to Passive when an Object relative was elicited has been shown to be even stronger in the productions of the group of adult controls. Let us refer to the Subject relatives in the passive when an Object relative is elicited as Passive Object Relatives (Belletti 2014 Contemori & Belletti 2013), sometimes abbreviated as POR. Thus, the overall group of 41 children produced Passive Object Relatives in 36% of the cases, i.e.: *il bambino che è pettinato dalla mamma* (the child that is combed by the mom) in place of *il bambino che la mamma pettina*; in 23% of the cases children used a *si*-causative type of structure (cfr. Chapter 4), e.g. *il bambino che si fa pettinare dalla mamma*, again in place of *il bambino che la mamma pettina*. Hence, overall, the group of children produced Passive Object Relatives in 59% of the cases. The overall group of adults did so at a much higher rate, in 93% of the cases. In other words, adults essentially did not produce (active) Object relatives in the elicitation conditions, but produced Passive Object Relatives, instead. These findings have been confirmed in various other studies, which have also considered children of younger ages; this has in turn permitted to address the study of the emergence of use of Passive Object Relatives in development. We now turn to these studies.

Belletti & Contemori (2010) readapted to Italian the Preference test just described from Novogrodsky & Friedmann (2006)⁷ and tested the children's production of Subject and Object relatives starting at a younger preschool age. Forty-eight Italian-speaking children aged 3;4-6;5 participated in this study. Contemori & Belletti (2013) is a further extension of this study to a wider population of 97 Italian-speaking children aged 3;4 up to 8;10 (thus adding

⁷ Analogous adaptation has been done for a number of other languages under the COST/A33 project. Friedman et al. in prep. for the report of the crosslinguistic results.

children older than 6;5 already present in the first study). This second study also contains an adaptation of the Picture Description Task. The main features of these studies are reported here and in 2.2, 2.3 below.

The Preference Task elicited the production of Subject relatives and of Object relatives along similar lines as those described above for the first pilot experiment. In a first Study, 10 Subject and 10 Object relatives were elicited. Both the subject and the object of the relative clause were singular, under a verb change condition and an object or subject change condition; active clause were both singular, under a verb change condition and a subject change condition. In the first study, 6 items were added (3 in the subject change condition and 3 in the verb change condition) in the elicitation of Object relatives in which the subject of the relative clause was plural in number; this was done in order to avoid the ambiguity which may arise in the number match condition in Italian, illustrated in the relative clause in (5):

(5) Vorrei essere il bambino che accarezza la mamma

I would rather be the child that hugs the mother

(5) can be interpreted either as a Subject relative with the post-verbal noun phrase being the direct object of the verb of the relative clause, or it can be interpreted as an Object relative with the post-verbal noun phrase being the post-verbal subject of the relative clause, as in (1)c of the introduction. The ambiguity of sentences like (5) comes from the grammatical possibility in Italian of admitting lexical subjects in post-verbal position. The intrinsic ambiguity of sentences like (5) makes it hard to evaluate the results of the elicitation task in the case of Object relatives. Children's productions as in (5) may be evaluated as errors in which the child has produced a Subject relative instead of the expected Object relative, or else they can be evaluated as correct productions in which the child has made use of a post-verbal subject. As use of a post-verbal subject could be appropriate under the discourse conditions of the elicitation situation (especially under the subject change condition)⁸, the proper

⁸ There are two children. The doctor examines one child, the nurse examines the other child. Which child would you rather be? Start with "I would rather be the child..."

Target: Vorrei essere il bambino che il dottore/l'infermiera visita

or

Vorrei essere il bambino che visita il dottore/l'infermiera_/ ("I would rather be the child that the doctor/nurse examines... or... that examines the doctor/the nurse").

evaluation of similar productions by children is simply impossible. Since children can produce post-verbal subjects from early ages – with production increasing at age 5, as reported in Belletti & Contemori 2010 – whether productions of sentences like (5) should be interpreted as target Object relatives or as non-target Subject relatives remains a necessarily arbitrary decision left to the experimenter’s judgment. The only clear Object relatives produced under the matching condition are those in which the lexical subject is preverbal as in (6), those in which the child utilizes a resumption relativization strategy, in which the relative clause contains a resumptive clitic pronoun corresponding to the relative head, as in (7), or else, possibly, also a non-target resumptive relative in which the resumptive element is a full noun phrase, corresponding to the relative head as in (8), a strategy which is known cross-linguistically to be resorted to especially by young children:

(6) Il bambino che la mamma accarezza ___
the child that the mother hugs ___

(7) Il bambino che la mamma lo accarezza ___
the child that the mother him-cl hugs ___

(8) Il bambino che la mamma accarezza il bambino (or: quel bambino; quell’altro bambino...)
the child that the mother hugs the child (or: that child; that other child)

The most reasonable conclusion that can be drawn from these considerations is that some ambiguous productions by children are indeed target productions containing a post-verbal subject whereas some are in fact non target subject relatives with a direct object following the verb of the relative clause. Belletti & Contemori (2010) provide two calculations of the relatives produced by children when an Object relative was elicited: one including both the (irresolvable) ambiguous productions and the unambiguous ones, and one only counting the unambiguous Object relatives. In both cases, the production of Subject relatives (SR) is generally significantly higher than the production of Object relatives (OR). In a second run of the experiment the other possible mismatch condition for OR has been implemented, in which the head of the relative clause is plural and the subject is singular. Also in this study, the production of OR is significantly lower than the production of SR in all age groups. A summary

of the results presented is given in Table 1, derived from Belletti & Contemori (2010):

Table 1. Percentages of Subject and (ambiguous if nothing is indicated and unambiguous, marked with Unam) Object relatives with Singular (Sing) and Plural (Pl) head (H) produced by the 48 children (adapted from Belletti & Contemori 2010)

		3;4-3;11	4-4;11	5-5;11	6-6;5
SR	SingH	72.9	93.6	91.4	95.7
	PlH	60.8	90	84.7	88.6
OR	SingH	76.5	85.7	71.8	59.8
	PlH	51.6	65.7	60	55.7
	UnamSing H	36	52	42	37.5
	UnamPl H	39	52	49	53

The production of Object relatives seems to be rather high in the first three groups under the Singular head/Subject (and verb) singular or plural condition (up to 85.7), including number match items (first row, mainly)⁹. This result is clearly affected by the inclusion in the counting of the ambiguous productions as it is also suggested by the much lower score in the number mismatch condition (second row). Interestingly, when only clearly unambiguous Object relatives are considered, the percentages of target productions is even lower. This is expected in particular in the case of the Singular head condition, as the ambiguity problem triggered by the number match condition is factored out.¹⁰

2.2. The production of Passive Object Relatives in children

In their larger study, Contemori and Belletti (2013) concentrated on the production of ORs just taking into consideration unambiguous ORs and a larger group of 3;4-8;10 children. This work is in line with the results just summarized in the previous section; the interesting

⁹ Recall that 10 items contained the match-condition Singular head/Subject singular and only 6 the mismatch condition Singular head/Subject plural. Thus, the amount of potentially ambiguous ORs is higher than the potentially unambiguous ones. Moreover, sometimes children changed the number of the subject (and agreeing verb) in the relative clause, which lead to the re-establishment of a match-condition. This happened both in the SingH and in the PlH batteries, which is the main reason why there are in fact also some ambiguous relatives in the PlH battery, although to a smaller extent. On the change of the subject number see the discussion in Belletti & Contemori (2010) who interpret it (at least in part) as cases of number attraction from the relative head. See also chapter 6 for the similar phenomenon in wh-questions.

¹⁰ The lower score in the PLH condition in both SR and OR suggests that processing plurality may be harder for children anyway. See chapter 1 on verbal inflection for relevant considerations.

finding reported in Contemori and Belletti (2013) is the high recourse to the production of a POR instead of the elicited OR, particularly significant in the oldest group of children. Contemori and Belletti (2013) report that, as children grow older, use of passive in the relative clause increases as a way to respond to the elicitation of an OR, with the production of different types of passives in the POR as those in (9)¹¹:

- (9) a “si fa”- causative: Il bambino che si fa pettinare dalla mamma
the child that SI-makes comb by the mother
- b copular: Il bambino che è pettinato dalla mamma
the child that is combed by the mother
- c reduced: Il bambino pettinato dalla mamma
the child combed by the mother

This is interestingly revealed by the growing number of children responding with a POR in the two groups of comparable size of the 6 and the 8 year olds, illustrated in the following Table 2:

TABLE 2 Recourse to passive in the relative clause yielding to production of POR when OR is elicited

Age groups	Number of participants	Participants producing PORs
6-6;11	23	8
8-8;11	22	16

This result is also in line with the conclusion in Belletti & Contemori (2010) in this respect, summarized by the following graph discussed in Belletti (2012), based on (a smaller group of)

¹¹ Young children start with the production of passive sentences like (9)a with a “si fa”-caus passive, whereas adults prefer sentences like (9)c with a reduced passive. No “si fa”-causative passive in adults’ production were observed, and no reduced passive in young children’s productions were found. See below for more discussion. A developmental path has probably been identified through these results on the acquisition of passive, discussed in Manetti & Belletti (2014). See also chapter 4. Lack of reduced PORs in children suggests that these structures are in fact complex; this aspect of children’s behavior does not support an analysis of PORs as involving adjectival types of passive, allegedly easier for children (Chapter 4).

children up to age 6:11.

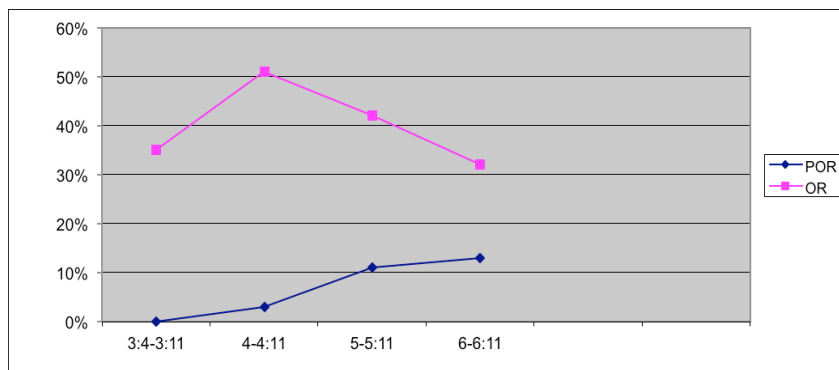


Figure 1: Development of production of ORs and PORs in a group of children from 3;4 to 6;1 ¹²

The increase in the use of passive in the relative when an OR is elicited is also found in Guasti et al. (2012)a in which a different elicitation technique had been used modeled after the classical design in Hamburger and Crain (1982) and Crain & Thornton (1998). Two different groups of children had been tested in this study, aged 5 and 9; recourse to POR is found in both groups, but significantly more in the older group (see also chapter 6, section 4 for similar trends in wh-questions).

2.3. The production of Passive Object Relatives in adults in comparison with children of different ages

When exposed to the same elicitation task through the Preference test, Italian speaking adults tested in Belletti & Contemori (2010) and, with a bigger group, in Contemori & Belletti (2013) made an extreme recourse to use of PORs. In fact, only between 3% and 10% of the elicited ORs were actually produced in the target way. The rest were all PORs.

Although the experimental setting may turn out to be in some way critical in providing a reason for the described adults' and related children's behavior in a way which is yet to be understood, still this behavior cannot be simply considered a task-related effect. As discussed in Contemori & Belletti (2013), use of a POR, instead of an OR, also shows up with a different

¹² When passive becomes fully productively available, resort to POR by children increases and the production of active object relatives, which is present in a limited amount in young children (see also Table 1), decreases. Hence, older children do not struggle anymore for the production of (active) object relatives as they do at the young ages, with very limited success though (Table 1). See Belletti (2012) for further discussion on this point, addressing the issue of the comparison between the complexity of the computations involved in passive and in object relatives. See also below for further relevant considerations.

type of task, a Picture Description Task (adapted from Novogrodsky & Friedmann 2006); the shape of the results is the familiar one with older children making increasing use of PORs as a reaction to the elicitation of an OR, reaching 73% in the age range 8-8;10. The fact that, as mentioned in the previous section, Guasti et al. (2012)a also found a larger resort to passive in the relative in the older group of the children they tested with a totally different technique confirms that we are not faced with a task related effect.

Belletti & Chesi (2011) tested a different group of Italian speaking adults with an adaptation of the same Preference task in which the animacy feature of the relative head and of the subject of the relative clause was manipulated. The research question was whether manipulation of animacy could favour the production of an OR, in particular in the mismatch in animacy condition between the relative head and the subject of the relative clause (e.g. relative head [-anim] subject of the relative [+anim]). The results clearly indicated that preference to resort to a POR was maintained also under this manipulation. Thus, although adults are able to process ORs in Italian, under the experimental conditions they went clearly for the production of a subject relative in the passive, i.e. a POR. This confirms that the behaviour shown by children goes in fact toward an approximation to the adults' behaviour, as suggested in 2.2.¹³

The research question whether mismatch in animacy between the relative head (inanimate) and the subject of the relative clause (animate) plays some facilitating role in favouring the production of an OR was also tested in Guasti et al. (2012)a. The main result in this study showed that mismatch in animacy appears to be of some help for the younger children tested aged 5, but not for the older ones, aged 9, who prefer to opt for a POR. This is also consistent with the finding reported from Belletti & Chesi (2011) who did not find any animacy effect in the group of adults tested through the Preference task. Thus, animacy appears to be a feature which may be taken advantage of in the early stages of development, but which is not directly relevant, at least as far as production is concerned, in the mature computational system. Thus, older children not only appear to be closer to adults in their increasing resort to passive and PORs, but also in their decreasing consideration of the animacy feature.

¹³ As discussed in Belletti & Chesi (2011), use of a POR is not due to the frequency of these type of structures in the input, which are in fact even rarer than active object relatives in the Italian corpora studied. See section 4.3 for more on this study.

2.4 The position and nature of the subject in the object relatives produced by children

Although, as we have discussed, the production of OR by children is rather limited in the experimental conditions tested, some OR are produced by them. Belletti & Contemori (2012) have studied children's productions of ORs according to the position – pre- or post- verbal – and nature – overt or null pronominal – of the subject of the relative clause. As for the position, the results from the Preference Task of the study presented in 2.1 have already indicated children's ability to locate the subject in the post-verbal position and use it in the appropriate discourse conditions (typically as the focus of new information) from early on, with an increase of production of post-verbal subjects over pre-verbal ones around age 5. The production of both pre- and post-verbal subjects then decreases, as past this age the production of POR starts growing, as discussed, and the issue of the location of the subject does not arise anymore: the external argument is expressed with the *by*-phrase, if overt; its discourse value can be the same as that of a post-verbal subject, focus of new information.

All in all, children are adequate in the processing of overt lexical subjects in the production of the OR, when they are produced, which is, we recall, a small amount, both in absolute and in comparison with SR. In some cases, in particular under the verb change condition of the experiment, the subject of the relative clause could be interpreted as given; thus, leaving it unpronounced was a felicitous reaction to the elicitation question. Again, children did not show any problem in the production of null subjects in these conditions.

A further new research question is addressed in Belletti & Contemori (2012) with children aged 3 to 7;11, which crucially hinges on the status of the subject of an object relative clause: lexical DP or pronoun. Recall that, given the null subject nature of Italian, a pronoun can be null or overt, according to whether it counts as given or as new information. In the version of the Preference Task discussed so far, the subject of the relative clause was always a lexical noun phrase; under the new design the subject was always a pronoun, either overt as or null as in (10) eliciting the two possible answers in (11) and (12) respectively; it is either 1st or 3rd person as is illustrated in (13)a,b (the head of the relative was inanimate; given the conclusion of the previous section 2.3 although this factor may play some role, it is probably not crucial see below).

(10) Experimenter: C'è un bambino e ci sono due panini. Un panino l'ha ricevuto e un panino l'ha preparato lui. Secondo te il bambino quale panino vorrà mangiare per primo?

“There is a boy and there are two sandwiches. The boy received one sandwich and he prepared the other sandwich. Which sandwich do you think he would like he would like to eat first?”

Possible target answers (depending on which Verb the child prefers):

Verb [- S]¹⁴

(11) Vorrà mangiare il panino che *pro* ha ricevuto

He will want to eat the sandwich that *pro* has received

“He will want to eat the sandwich that he received”

Verb [+ S]

(12) Vorrà mangiare il sandwich che *pro* ha fatto lui

He will want to eat the sandwich that *pro* has prepared he

“He will want to eat the sandwich that he prepared”

(13) a

Experimenter: Ci sono due palloni. Un pallone l'hai comprato e un pallone l'hai vinto al Luna Park. Con quale pallone vorresti giocare?

“There are two balls. You bought one ball and you won the other ball at the Luna Park. With which ball would you like to play?”

Target answer: (Vorrei giocare con La palla/Quella) che *pro* ho comprato/vinto

“(I would play with the ball/the one) that I bought/won”

(13) b

Experimenter: C'è una bambina e ci sono due canzoni. Una l'ha sentita alla televisione e l'altra l'ha imparata a scuola. Secondo te la bambina quale canzone vorrà cantare?

“There is a girl and there are two songs. The girl heard one song on the TV and she heard the other song at school. Which song do you think she would like to sing?”

¹⁴ The notation Verb [- S]/ Verb [+S] refers to the absence/presence of the overt pronominal subject in the introductory eliciting story.

Target answer: (Vorrà cantare La canzone/Quella) che pro ha sentito a scuola / alla televisione

“(She would sing the song/the one) that she heard at school / on the TV.”

Details aside, the most relevant result in this version of the elicitation experiment through the Preference Task is that children showed no special problems in the production of the elicited OR, from the youngest ages, both with 1st and with 3rd person either overt or null subject. They also showed a very good mastery of the discourse conditions. A summary of the relevant results is given in Table 3:

TABLE 3a

Raw figures and percentages of overt post-verbal or null pronominal subjects produced when the introductory story contained the pronominal subject, divided according to the target choice made by children

(from Belletti & Contemori 2012)

Verb [+ S]	3 -3;11	4-4;11	5-5;11	6-6;11	7-7;11
Postverbal-S	15/23 65%	28/38 74%	54/60 90%	68/75 91%	49/53 92.5%
Null-S	8/23 35%	10/38 26%	6//60 10%	7/75 9%	4/53 7.5%
Verb [- S]					
Postverbal-S	3/49 6%	5/76 7%	5/61 8%	2/78 3%	1/49 2%
Null-S	46/49 94%	71/76 93%	56/61 92%	76/78 97%	48/49 98%

TABLE 3b

Raw figures and percentages of ORs produced in the 1st and 3rd person condition out of the total of expected ORs

(from Belletti & Contemori 2012)

1st person	3 -3;11	4-4;11	5-5;11	6-6;11	7-7;11
OR	77/110 70%	117/140 83%	121/140 86%	148/160 92.5%	104/110 94%
3rd person					
OR	64/110 58%	116/140 83%	116/140 83%	149/160 93%	97/110 88%

Table 3a, directly taken from Belletti & Contemori (2012), indicates the appropriate use by children of all ages of post-verbal and null subjects: only in the Verb[+S] condition use of a post-verbal subject is felicitous in the OR (ex (12)) and post-verbal subjects are virtually

absent in the Verb[-S] condition¹⁵; reciprocally, only a null subject is appropriate in Verb [-S] condition, and indeed null subjects are virtually the sole choice made by children, from the very young group on. But let us now concentrate on the values in Table 3b, adapted from the same article. The results here are in sharp contrast with the results seen so far in the previous sections, according to which ORs are hard for children, and so they are hardly produced. Table 3b shows that in the version of the Preference Task in which the subject of the relative clause is pronominal, be it null or overt, ORs are produced by children, with no special difficulty.

Indeed, the crucial factor in making the children's performance good with these ORs seems to be the pronominal nature of the subject of the relative clause, in contrast with the version of the Preference Task discussed in 2.1 and 2.2 in which the head of the relative was a lexical noun phrase and the subject of the relative clause was also a lexical noun phrase (examples in (1)).¹⁶ Recall that, as is also discussed in Guasti et al. (2012)a, children typically tend to make the relative head pronominal with use of the demonstrative pronoun "quello/quella", which is a natural choice in all the elicitation designs considered:

- (14) Quello che i gatti rincorrono
the one that the cats are chasing

As noted by the authors, although this occurs more with OR, it also often happens in subject relatives, which suggests that, the pronominal nature of the relative head may not be a crucial factor in the OR case. As mentioned above, Guasti et al. (2012)a also note that use of an inanimate head ameliorates the performance of younger children (5 y.o.) in their groups, but not of the older ones (9 y.o.) for which the (in)animacy of the relative head appears to be uninfluential. Taken together with the results obtained with adults from Belletti & Chesi (2011), one may conclude that the fact that in the version of the Preference Task under discussion here the relative head was inanimate (see examples above), whereas it was mostly animate in the version discussed in the previous sections, should probably not be considered a crucial factor in enhancing children's performance. In conclusion, the major factor ameliorating/facilitating the production of object relatives here appears to be brought about by use of a pronominal instead of lexical subject in the relative clause, overt (and post-verbal

¹⁵ See Crain et al. 1990 for comparable young children data from Italian showing proper mastery of post-verbal subjects. See also chapter 7 for a general overview on the acquisition of subjects.

¹⁶ On the facilitating role of pronominal subjects also in adults see Gordon et al. (2004), Warren & Gibson (2005); and the discussion in Belletti & Rizzi (2013) and below.

given its status as focus of new information) or null. A note of caution is, however, in order here. The described design did not have a condition eliciting an overt pre-verbal pronominal subject, hard to create in a null subject language like Italian since a preverbal subject, which is a given/topic like subject, is typically realized as a null (pronominal) subject. Hence, we have here a confound: when the pronoun is overt it is also post-verbal. It would be most welcome to be able to tease apart in a new design the pronominal vs lexical nature of the subject and its overt vs null status. This project is yet to be implemented.

Data from Guasti & Cardinaletti (2003) confirm that children (age range 5;6-9;6) do produce post-verbal subjects in relatives also with lexical subjects with no difficulty. (15) is an example of one of the relevant children's productions in the relatives studied in that work, elicited through an adaptation to Italian of the original design from Hamburger & Crain (1982):

(15) Tocca la panca che ci sono i due bambini (7;2)
touch the bench that there-CL are sitting the two children

Note, incidentally use of the clitic resumptive strategy in the indirect relative in (15). This is a fairly common strategy in children's speech, as noted in 2.1 also in the production of (direct) object relatives, but especially so in indirect relatives. Guasti & Cardinaletti (2003) suggest that use of the relative pronoun, which should be used in indirect relatives – e.g. *Tocca la panca su cui sono i due bambini*/touch the bench on which are the two children, for example (15)– is a very formal type of production, as relative pronouns are only found in indirect relatives in Italian (cfr. Examples in (1)); children probably only acquire it late, most likely through explicit teaching at school.

We now turn to the presentation of the results from comprehension.

3. The comprehension of subject and object relatives in typically developing children

Adani (2011), building on Adani (2008), tested the comprehension of SRs and ORs in Italian speaking children in the age range 3-7 y.o. Given the ambiguity of Italian relative clauses in

which the relative head and the post-verbal noun phrase in the relative clause match in number described in 2.1/example (1c), as the post-verbal noun phrase may be interpreted either as a direct object or as a post-verbal subject, Adani (2011) tested the comprehension of unambiguous relatives of the type in (16), in which the relative head (singular) and the noun phrase internal to the relative clause (plural) mismatch in number. The relative clauses are right branching relatives in which the relative head is the object of the matrix clause and the noun phrase in the relative clause can be either the subject (relative = SR, abbreviated as OS) or the object of the relative clause (relative = OR, abbreviated as OO); the noun phrase in the relative clause can be found in the post-verbal position and is interpreted as a post-verbal subject (relative = OR, abbreviated as OOp), as is unambiguously indicated by the plural verbal agreement:

- (16) a Indica il gatto [che sta bagnando le rane]. (OS)
Point to the cat that is wetting the frogs
- b Indica il gatto [che le rane stanno bagnando]. (OO)
Point to the cat that the frogs are wetting
- c Indica il gatto [che stanno stanno bagnando le rane]. (OOp)
Point to the cat that are wetting the frogs
Point to the cat that the frogs are wetting

This work uses the same experimental technique and pictures utilized in De Vincenzi et al. (1999) to test subject/object wh-questions; in this methodology a single picture with two possible referent choices is presented to the experimental subjects.¹⁷ See (17) for a sample of the pictures used:

(17)

¹⁷ This is done in order to avoid a number of potential confounds that have been sometimes claimed to possibly arise. E.g.: choice between two distinct pictures, often utilized in the majority of works, may be sometimes considered pragmatically infelicitous (although not necessarily); selection among four possible choices instead of two etc. may end up being too complex etc. The reader is referred to Adani's paper for an illustration of the methodological issues.

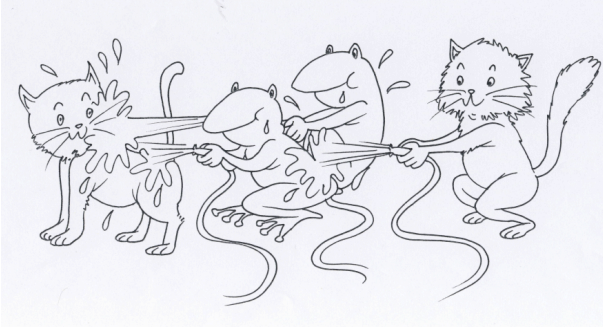


Figure XX. Example of material used in Adani (2011)

The main features of the results have indicated that:

- SR/OS: are the best understood at all ages, up to 91% in the youngest age group 3;4-3;11
- OR/OO: are understood at chance (53%) at the youngest age group 3;4-3;11; then, the comprehension increases (up to 83% at age 4-4;10; 74% at age 5-5;11; 85% at age 6-6;11; 89% at age 7-7;9)¹⁸
- OR/OOp: are poorly understood at all ages (36% at age 3;4-3;11; 59% at age 4-4;10; 54% at age 5-5;11; 55% at age 6-6;11); only the oldest group reaches a good comprehension in this condition (70%, age range 7-7;9).

The overall results are consistent with the general finding across languages that SRs are better comprehended than ORs and that the comprehension of the latter structures improves with age. The results specifically also clearly illustrate that the OOp condition is the hardest to parse. Thus, the processing of a post-verbal subject appears to significantly increase the difficulty of the parsing of the (already) complex Object relative structures.

In a Picture selection task Arosio et al. (2009) tested the comprehension of subject and unambiguous object relatives in partly older children (139) aged 5, 7, 9, 11. They tested the comprehension of unambiguous ORs in two conditions: in a number match condition between the relative head and the subject of the relative clause in preverbal position (18c); in a number mismatch condition with the subject in post-verbal position (18b). The types of sentences utilized are given in (18):

¹⁸ The method used seems indeed to be effective in providing optimal condition to enhance children's comprehension, as shown by the good performance at age 4-4;10.

- | | | | |
|------|---|--|----------------------|
| (18) | a | Fammi vedere il cane che insegue i cavalli
Let-me see the dog that chase _{3g} the horses
“Show me the dog that is chasing the horses” | SR |
| | b | Fammi vedere il cane che inseguono i cavalli
Let-me see the dog that chase _{3pl} the horses
“Show me the dog that the horses are chasing” | OR: AGREEMENT |
| | c | Fammi vedere il cane che il cavallo insegue
Let-me see the dog that the horse chase _{3sg}
“Show me the dog that the horse is chasing” | OR: POSITION |

The results found the familiar clear subject/object asymmetry with SRs comprehended better than ORs. The authors also found that ORs disambiguated through the position of the subject as (18)c were better comprehended than ORs disambiguated through number agreement. The authors interpret this difference in terms of real time parsing as due to the later stage at which the checking of morphosyntactic agreement features is performed compared to the early assignment of thematic roles: Under the assumption that the parser tries to close the dependency of the relative head as soon as possible, the first analysis at the complementizer is always a SR interpretation (coherently with the results found with *wh*-questions in De Vincenzi 1991). In ORs with a preverbal subject, the noun phrase in the relative can be immediately associated its Theta-role as the External argument due to its position in the clause so that the reanalysis can be quickly performed together with the correct theta-role assignment; in contrast, verbal agreement with the post-verbal subject implies that reanalysis takes place once Theta-roles assignment has already taken place. Hence, in these structures, reanalysis takes place later and they are consequently the hardest structures to comprehend.

Contemori & Belletti (2013) have tested the comprehension of ORs of the two types found in children’s (spontaneous and elicited) production, though to a limited extent as discussed, i.e. with a gap and with a resumptive pronoun (19a,b). They have then compared the comprehension of both these structures with the comprehension of different types of PORs also found in children’s production (especially in the experimental conditions eliciting the production of object relatives described in 2.1, 2.2; 19c-e). Children were aged 6 - 8;10, namely they were all within an age span in which passive is known to be mastered relatively well by children, as was also indicated by the increasing use of PORs in their (elicited) production (see 2.2). (19) summarizes the sentence types tested:

- (19) a Mostrami la bambina che la giraffa lava **OR - gap**
 Show me the girl that the giraffe is washing
- b Mostrami la bambina che la giraffa *la* lava **OR - resumptive clitic**
 Show me the girl that the giraffe is washing her-CL
- c Mostrami la bambina che si fa lavare dalla giraffa **POR - "si fa"-caus**
 Show me the girl that is washed by the giraffe
- d Mostrami la bambina che è lavata dalla giraffa **POR - copular**
 Show me the girl that is washed by the giraffe
- e Mostrami la bambina lavata dalla giraffa **POR - reduced**
 Show me the girl washed by the giraffe

The test was run through a binary Picture matching task¹⁹, using picture of which (20) is an illustration:

(20)



The aim of this comprehension test was to determine whether (and from which age) children comprehend those relatives that they appear to master, to different extents, in production, i.e., different types of Passive Object Relatives/PORs and ORs with gap and with resumptive clitic. The most relevant aspect of this comprehension experiment is its comparative dimension both between production and comprehension and between active ORs and (types of) PORs. The results are summarized in Table 4. They clearly indicate a major divide: active ORs either

¹⁹ Kindly made available by Naama Friedmann and used in several other studies by various authors as well.

with gap or with resumptive clitic are significantly harder to comprehend than any type of POR, which are well comprehended at all ages tested; with POR with “si-fa caus” passive as those which are best understood. These results are consistent with those from production and indicate that indeed, children comprehend what they also produce.

Table 4. Percentages of relatives correctly comprehended by children
(adapted from Contemori & Belletti (2013))

	6;5-6;11	7-7;11	8-8;10
OR – gap	63	64	64
OR – res cl	66	69	77
POR “Si fa” – caus	83	87	95
POR – copular	76	85	92
POR – reduced	77	85	94

3.1 Intervention and feature mismatch in the comprehension of object relatives

The results from comprehension described in the preceding section, much as those from production described in section 2, have clearly indicated that young (3-4 years) and also older (5-7 years) children acquiring Italian experience the same difficulty with the processing of ORs that has been described in the rich literature on the acquisition of relative clauses cross-linguistically (see references in the introductory section; with subtle differences sometimes related in part to the design utilized). SRs are well processed by typically developing children from the youngest age (3 to 4 years). The significant difference between the good mastery of SRs vs the poor mastery of ORs is a cross-linguistic robust finding to which developing children acquiring Italian conform.²⁰ In section 4, the grammatical interpretation proposed for this asymmetry in terms of intervention as hinted at in the introduction will be illustrated in detail through the system proposed in Friedmann, Belletti, Rizzi (2009), in terms of the syntactic principle of Relativized Minimality (Rizzi 1990, 2004a).

²⁰ A residue of the harder status ORs compared to SRs is also found in well established results from the literature on the adult parsing of these and other related structures involving A' dependencies such as clefts and wh-interrogatives. For a recent discussion, Belletti & Rizzi (2013).

The following two sections now review some relevant experimental results obtained through the manipulation of morphosyntactic features of the relative head and of the intervening subject in ORs. The rationale behind this manipulation is the following and is twofold: i. changing some feature(s) of the relative head and the intervening subject, thus creating a feature mismatch situation between the two, may make these two noun phrases different in a way that may render the intervention effect milder; ii. it seems reasonable to check the possible effect of dissimilarity starting from morphosyntactic features such as gender and number²¹, as these are features which minimally distinguish noun phrases in languages which overtly express them in their morphology, as is the case in Italian, e.g. *bambino* vs *bambina*// *bambino* vs *bambini*. This rationale is directly inspired by the grammatical approach in terms of intervention presented in Friedmann, Belletti, Rizzi (2009) to account for development referred to above and illustrated in further detail in section 4.²²

3.1.1 The comprehension of Object relative and Number mismatch

Adani et al. (2010) investigated three groups of Italian-speaking children aged 5-7-9, tested with a four-picture selection task on their comprehension of ORs. The authors compared the comprehension of ORs under the number match and number mismatch condition in sentences of the type in (22):

- (22) a Il leone che il gatto sta toccando è seduto per terra M
 the lion-SG that the cat-SG is touching is sitting SG
- b Il leone che i coccodrilli stanno toccando è seduto per terra MM
 the lion-SG that the crocs-PL are touching is sitting SG
- c I coccodrilli che i leoni stanno toccando sono seduti per terra M
 the crocs-PL that the lions-PL are touching are sitting PL

²¹ Case is another possible natural candidate, not for Italian, but in other languages where it is morphologically present; the point has been addressed in Arosio, Yatsushiro, Forgiarini, Guasti (2012) for German, and Guasti, Stravakaki, Arosio (2012) for Greek.

²² In a similar vein, a closely related approach is proposed in Grillo (2008) to interpret classical data from the literature on acquired aphasia.

- d I cocodrilli che il leone sta toccando sono seduti per terra MM
 the crocs-PL that the lion-SG is touching are sitting PL

The authors also tested the match and mismatch condition for the gender feature. The test sentences and results on the gender condition are presented and discussed in the next subsection specifically dedicated to the gender feature.

Each picture contained four possible options as in the sample below. Children had to choose the picture matching the sentence presented to them in one of the conditions in (22)²³:



Fig. 1. A sample of experimental pictures.

The results have clearly shown that:

- 5 year olds are significantly less accurate than both 7 and 9 year olds
- the Number Mismatch condition is significantly more accurate than the Match condition in all groups

As for the comparison between the number feature and the gender feature also discussed in the experiment, the overall result is that the number conditions were significantly more accurate than the gender conditions. See section 3.1.2 for additional discussion on gender. Relevant results are summarized in the following Table 5):

²³ Pictures used for the test sentences to be presented in (25) below.

Table 5 Percentages of correct comprehension in each group for the match (M) and mismatch (MM) condition
(adapted from Adani et al. 2010)

Feature	Match	G5yo	G7yo	G9yo
Number	M	41	79	85
	MM	64	88	95

As can be seen in (22) the test sentences were all center-embedded Object relatives, which are known from classical psycholinguistic literature (Chomsky & Miller 1963) to be generally harder to parse than right branching Object relatives, which have characteristically been tested in works on development. The authors explicitly justify this experimental choice with the idea that use of the harder structure could amplify the potential effect of the morphosyntactic feature manipulation.²⁴

Adani et al. (2010) have shown that number matters. This connects to the results from Arosio et al. (2009) presented in section 3, examples (18) in which the comprehension of right branching relatives was investigated with a pair choice picture task, which had indicated that Object relatives disambiguated by the preverbal position of the subject were the best understood by children. Recall that the test sentences compared disambiguation through the position of the subject with disambiguation through verbal agreement. In the latter case the subject was postverbal in the sentences tested. In Arosio et al. (2009) there were no test sentences like (23) below in which the subject of the relative clause was both preverbal and plural, triggering verbal agreement in a mismatch situation with the singular relative head.

(23) Fammi vedere il cane che i cavalli inseguono
show me the dog that the horses are chasing

This was done in order to avoid a possible confound as two possibly relevant conditions are combined in (23): position of the subject and number mismatch between the subject and the relative head. Given the results from the number experiment presented in this section from Adani et al. (2010), and the results from Arosio et al. (2009) discussed in section 3, it is expected that sentences like (23) in which both the position of the subject and the number

²⁴ The effect could have otherwise remained obscured in children who were not particularly young and already had a rather good comprehension.

condition are combined should be best comprehended by children. Although the experimental material utilized was different from the one utilized by Arosio et al. (2009), the results from Adani (2011) presented in 3, seem to go in this direction as sentences like (16)c, repeated in (24) below for convenience, were indeed the best understood ORs by the (older, 7,9) children tested:

- (24) Indica il cavallo [che i leoni stanno inseguendo]. (OO)
 ‘Point to the horse that the lions are chasing’

3.1.2 The comprehension of Object relatives and Gender mismatch

As mentioned in the preceding sub-section, Adani et al. (2010) also tested, with exactly the same methodology, the comprehension of (center-embedded) Object relatives in which the relevant feature manipulated in the match and mismatch condition is the gender feature. The type of sentences tested in these conditions are illustrated in (25):

- (25) a Il gatto che il topo sta lavando è salito sullo sgabello M
 the cat-M that the mouse-M is washing has climbed on the stool
- b Il gatto che la capra sta lavando è salito sullo sgabello MM
 the cat-M that the goat-F is washing has climbed on the stool
- c La capra che la mucca sta lavando è salita sullo sgabello M
 the goat-F that the cow-F is washing has climbed on the stool
- d La capra che il gatto sta lavando è salita sullo sgabello MM
 the goat-F that the cat-M F is washing has climbed on the stool

The main results are summarized in Table 6.

Table 6 Percentages of correct comprehension in each group for the match (M) and mismatch (MM) conditions
(from Adani et al. 2010)

Feature	Match	G5yo	G7yo	G9yo
Gender	M	36	74	85
	MM	38	81	90

As in the former case with the number feature, the most interesting age is the youngest one, i.e. the group of 5 y.o. whose comprehension is still rather poor. A comparison with Table 5 indicates that the Number condition is more accurate than the Gender condition and that, overall, the mismatch condition is more accurate than the match condition. The comparison between the amelioration induced by the gender mismatch condition is, however, milder than the one induced by the number mismatch condition.

This shape of these results, and the details emerging from the statistical analysis, led the authors to propose that the different role played by the two morphosyntactic features may be due to their different prominence within the functional structure of the noun phrase, hence, essentially, to a different status of the two features. This issue will be taken up in section 4.1 again and discussed also in the light of further results on the role of gender mismatch in modulating intervention, to which we now turn from Belletti, Friedmann, Brunato, Rizzi (2012).

The authors investigated the role of gender features in a cross-linguistic perspective. In this work a comparison is made between the possible role of gender mismatch in facilitating the comprehension of Object relatives in two languages, Hebrew and Italian, which both have a rich overt manifestation of the gender feature in their morphology. Children (31) of the same (young) age (3;9-5;3/5; M4;7 in both languages) have been tested in their comprehension of Object relatives in the gender match and mismatch conditions illustrated in (26) with the Italian material:

(26) **SR same gender**

Mostrami la bambina che disegna la donna

Show-to-me the girl (fem) that draws the woman (fem)

“Show me the girl that draws the woman.”

SR different gender:

Mostrami la bambina che disegna il dottore

Show-to-me the girl (fem) that draws the doctor (masc)

“Show me the girl that draws the doctor.”

OR same gender:

Mostrami la bambina che la donna disegna

Show-to-me the girl (fem) that the woman (fem) draws

“Show me the girl that the woman draws.”

OR different gender:

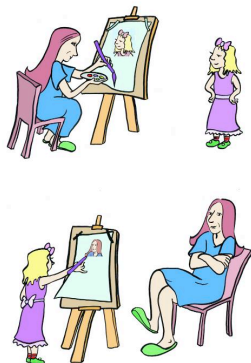
Mostrami il dottore che la bambina disegna

Show-to-me the doctor (masc) that the girl (fem) draws

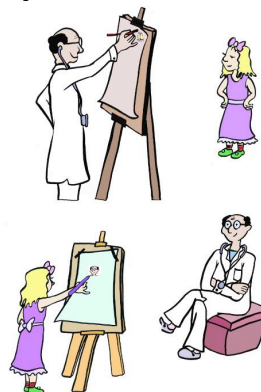
“Show me the (male) doctor that the girl draws.”

Comprehension was tested using a sentence-picture matching task (adapted to Italian from the Hebrew version in Friedmann and Novogrodsky, 2004). Children heard a sentence, and were presented with two pictures. One of the pictures matched the sentence, and in the other the role of the characters in the picture was reversed, as in the similar test described in section 3, example (20). A sample of the pictures used in the gender match and mismatch condition is given in (27) and (28) for the same gender and the different gender condition respectively:

(27)



(28)



Results showed a very different effect of gender mismatch in the two languages in the comprehension of Object relatives, as illustrated by the following Table 7:

Table 7 Percentage of correct responses by Italian-speaking and Hebrew-speaking children (3;9-5;3/5; M4;7 in both languages)

(adapted from Belletti, Friedmann, Brunato, Rizzi 2012)

	Subject relative same gender	Subject relative different gender	Object relative same gender	Object relative different gender
Italian	82%	86%	52%	57%
Hebrew	85%	89%	67%	81%

Whereas Subject relatives were very well understood by all of the children, Object relatives were poorly understood in both languages in the same gender condition. The effect of gender mismatch is significantly strong in Hebrew, and it sharply ameliorates children’s performance; it is virtually absent in Italian. The statistical analysis confirms the sharp distinction between the two languages.

Given the controlled comparison described, in which exactly the same material and method has been used in the two languages investigated with children of exactly the same age, these results indicate neatly that the role of the same morphosyntactic feature may vary from one language to the other, independently of its richness and possibly widespread presence in a given language, as is the case for both Italian and Hebrew. The question then becomes why it should be so. The authors have proposed to express this difference in terms of the different formal status of the same gender features in the two languages with respect to the locality principle of Relativized Minimality that constrains syntactic computations. The following section 4 outlines in more details the approach developed in Friedmann, Belletti, Rizzi (2009), on which this proposal in Belletti, Friedmann, Brunato, Rizzi (2012) as well as the closely related proposal in Adani et al. (2010) presented in 3.1.1, and Adani 2010 discussed in 3, are all grounded.

4. Toward interpreting children’s development: Intervention and the locality of syntactic dependencies.

In Friedmann, Belletti, Rizzi (2009) a featural approach to the syntactic principle Relativized Minimality (RM, Starke 2001; Rizzi 1990, 2004a; and, along similar lines, Grillo 2008, for

aphasia) was assumed to interpret the difficulty that children experience cross-linguistically in their development of an adequate mastery of ORs, which is also residually manifested in the slower parsing of the same structure by adults (Belletti & Rizzi 2013 for recent discussion, and the references cited therein). Belletti (2012, 2014) assumed the same approach to account for the ample use of PORs/Passive Object Relatives, i.e. Subject relatives in the passive produced when an Object relative is elicited, which is resorted to widely by adults in Italian and which Italian-speaking children also tend to use as they grow older and master the passive computation better. As presented in section 3, example (19) the privileged status of (different types of) PORs as opposed to active Object relatives (either with gap or with resumptive clitic pronoun) is also found in the comprehension results.

Based on results from (mainly) comprehension experiments in Hebrew speaking children (age range: 3;7-5), Friedmann, Belletti, Rizzi (2009) proposed that the difficulty in the processing of ORs that children showed in that language, and which contrasts with their good mastery of SRs from the youngest age tested, can be attributed to the operation of the same syntactic locality principle interpreted in featural terms, featural-RM, which is known from theoretical work in syntax to constrain syntactic computations in general (similarly to principles of Minimal search as in Chomsky, 2000, 2001). Consider the classical schema of the RM principle in (29):

(29) In a configuration:

XZY
 target intervener origin

a local relation between X and Y cannot be established if Z intervenes, and Z is a position of the same type as X.

Same type = sharing relevant features

(Rizzi 1990, 2004a)

Following Rizzi's approach, Friedmann, Belletti, Rizzi (2009) proposed that a feature that they label +NP is among the attracting features of the relative head in the CP space of relative clauses, as it appears to be in other A'-dependencies such as wh questions of the type in

(30)a²⁵. Adopting Starke’s featural implementation of the RM principle, if the feature composition of the target position of syntactic movement is enriched of some feature to which the principle is sensitive, so that it becomes dissimilar enough from the intervener, the resulting structure is better processed in the adult grammatical system. This accounts for the better status of cases of extraction from a *wh*-island as (30)a, in which the *wh*-phrase *which problem* is extracted from the indirect *wh*-question introduced by *how* (the *wh*-island) and moved into the target position in the main clause CP. The *wh*-phrase *how* is then the intervener with respect to the moved *wh*-phrase *which problem*. (30)a contrasts with the ungrammatical (30)b, a classical RM violation in which the target and the intervener are identical in the feature composition relevant for the principle. As the ungrammaticality of (30)c shows, it is not sufficient to manipulate either the target or the intervener in order to make them dissimilar in feature composition for the structure to become better processed: the crucial role is played by the feature composition of the target position of movement, as enriching the feature composition of the intervener with exactly the same NP feature does not yield any amelioration in (30)c.

- (30) a ? Which problem do you wonder how to solve <which problem>
 b *How do you wonder who behaved <how>
 c *How do you wonder which problem to solve <how>?

Thus, the featural approach to RM, phrased in Starke’s terms, can be summarized as in (31) from Friedmann, Belletti, Rizzi (2009), where A and B are an abbreviation for any feature, relevant for the principle:

- (31)
- | | | | | | | | |
|-------|-------|-------|----|------|---------|----|---------------|
| | X | | Z | | Y | | |
| (I) | +A | | +A | | <+A> | * | (identity) |
| (II) | +A,+B | | +A | | <+A,+B> | OK | (inclusion) |
| (III) | +A | | +B | | <+A> | OK | (disjunction) |

According to (31), identity of features between target and intervener yields ungrammaticality, whereas disjunction yields full grammaticality. Also the situation of proper inclusion of the

²⁵ In the relevant cases discussed the feature is realized in full lexical noun phrases , e.g. lexical head of the relative clause/lexical subject in the relative; lexical noun phrase in which-questions of the type in (30)a.

feature(s) of the intervener within the target yields an amelioration up to acceptance; examples like (30)a are one representative case, as (32) schematically illustrates:

(32) Which problem do you wonder how to solve <which problem>?
 Q NP Q Q NP

Q=the interrogative attracting feature

The schema in (31) describes adults' grammars and it underscores one crucial aspect of the functioning of the locality principle: the crucial role is played by the feature composition of the target; if it is enriched of feature(s) to which the principle is sensitive, so that the feature composition of the intervener becomes properly included within the feature composition of the target, the structure is properly processed by the adult system. As the target is the head attracting movement into the CP space in the derivation of A' dependencies – e.g. relatives, and wh-questions as in (30)a – according to (31), the statement in (33) can be made:

(33) The crucial role is played by morphosyntactic attracting feature(s) triggering syntactic movement

Thus, not only the relevant features considered for the computation of dissimilarity between the target and the intervener are morphosyntactic features given the very nature of the formal grammatical principle; it is also the case that the only morphosyntactic features to which the syntactic principle is sensitive are attracting features, those features which trigger syntactic movement.²⁶

On the basis of these background considerations, Friedmann, Belletti, Rizzi (2009) have proposed that:

- i. a nominal feature labeled +NP is among the attracting features in (restrictive) headed relative clauses much as it appears to be in wh-questions as (30)a;

²⁶ This account is very much in the spirit of memory-based parsing accounts formulated in the psycholinguistic literature, e.g. Gordon et al. (2004). According to Gordon et al., much as in the account presented in the text, it is not just any dissimilarity between target and intervener, e.g. the relative head and the intervening subject (see discussion below) which makes the Object relative structure better parsed by adults, but the only relevant dissimilarity, which counts is the one expressed by morphosyntactic features. However, as is discussed in some detail in Belletti & Rizzi (2013), the formal syntactic interpretation described in the text goes one step further: it is not the case that any morphosyntactic feature plays a crucial role, but only features attracting syntactic movement do, which are expressed in the target.

- ii. the proper computation of the feature inclusion relation described in (31)II is subject to development

Recall that the feature inclusion relation described in (30)b is the relation that yields a properly processed rather acceptable structure in the adult grammar (e.g. (30)a/(31)II). The hypothesis put forth by Friedmann, Belletti, Rizzi (2009) is that this takes some time: children have difficulty in processing the featural inclusion relation. Hence, intuitively put, in the child grammar there is no real difference between a situation of identity and a situation of inclusion. This interpretive hypothesis of development is schematized in (34)

(34)

	X	Z	Y		
				Children	Adults
identity:	+A ...	+A ...	<+A>	*	*
inclusion:	+A,+B ...	+B ...	<+A,+B>	*	ok
disjunction:	+A ...	+B ...	<+A>	ok	ok

Identity between X (target) and Z (intervener) is excluded by both children and adults, whereas disjunction is properly computed by both; there is development in the proper computation of the intermediate inclusion relation.²⁷

This hypothesis accounts for why children have difficulty with the proper processing of headed Object relatives with an intervening lexical subject within the relative clause. As is illustrated in (35), the (hard for children) inclusion relation inevitably obtains in headed Object relatives with an intervening lexical subject within the relative clause (+R stands for

²⁷ To some extent the inclusion relation is computationally harder/more complex also for adults as witnessed by the non perfect status of sentences like (30)a, in which the wh-island violation is ameliorated but not totally eliminated. Hence, it is no surprise that the computation of the inclusion relation is harder, or even impossible for the (young) children's immature computational system. The view endorsed in the text and in the quoted references is that grammar and processing are not different independent systems; grammatical principles drive processing in both production and comprehension, but some computational steps may be harder and then take some time to be fully mastered. Belletti & Rizzi (2013) for further discussion.

the feature attracting the noun phrase head of the relative clause into the dedicated position within the CP (see (2) and footnote 1):

(35)

(Show me) **the elephant** that **the lion** is wetting <**the elephant**>

+R, +NP	+NP	+R, +NP
X	Z	Y

The described approach put on the research agenda the natural question of which features are those to which featural RM is sensitive. This is precisely the research question addressed in the experiments described in 3.1.1 and 3.1.2, from which a different status of the number and the gender features has emerged in Italian. The following section takes up the issue in further detail.

4.1. Feature mismatch and the grammatical status of morphosyntactic features

Adani et al. (2010) proposed that the facilitating effect that the number mismatch condition appears to have in children's comprehension of Object relatives in Italian presented in 3.1.1 can be interpreted in terms of the featural approach to RM discussed in the preceding section by assuming a hierarchical representation of different morphosyntactic features inside the DP structure. According to the authors' proposal, the number feature corresponds to a prominent head in the functional structure of the noun phrase. Such prominence may be exploited by the computational system in calculating the dissimilarity relevant for the locality principle, which helps in modulating intervention making it milder in the mismatch situation, for the (older) children tested in their experiment. Given the results from the comparison with the gender feature in the equivalent mismatch condition emerged from their experiment, the authors concluded that the gender feature should be considered a less prominent feature within the DP functional structure of the noun phrase, which should thus not be accessible for the computation of the dissimilarity relevant for featural RM.

The comparative results between Hebrew and Italian described in 3.1.2, have clearly indicated that the role of the morphosyntactic gender feature is not the same in the two languages: gender mismatch modulates intervention thus enhancing the comprehension of Object relatives only in Hebrew, but not in Italian, despite the fact that gender is a

morphosyntactic feature widely represented in Italian as well as in Hebrew. The conclusion that can be drawn from these comparative results is that the status of a morphosyntactic feature is not uniform across languages, but it crucially depends on properties of the grammatical system of each language. Following the system in Friedmann, Belletti, Rizzi (2009), Belletti, Friedmann, Brunato, Rizzi (2012) proposed that the crucial property determining the status of a given morphosyntactic feature is whether the feature is among those triggering syntactic movement. These are the features to which the locality principle is known to be sensitive from solid and long lasting results in formal syntactic research, briefly presented in the preceding section. Thus, the very same feature may be syntactically active for the principle in some languages but not in others. This could be precisely the case of the gender feature in Hebrew vs Italian. One important difference between the two languages is that only in the former is gender represented in the verbal agreement morphology with the subject (36a vs b). Hence, gender appears to be among the morphosyntactic features attracting the subject into the subject position of the clause from the vP-internal position where it is merged as a member of the argument structure of the verb phrase (Koopman & Sportiche 1991 for the original so called VP-internal subject hypothesis). No gender feature is expressed in the subject-agreement verbal morphology of finite verbs in Italian (36c, d):

- (36) a Yoni shar
 Yoni sings-singular-masculine
 b Miri shara
 Miri sings-singular-feminine
 c Gianni canta
 Gianni sings-singular
 d Maria canta
 Maria sings-singular

We note in conclusion that the different status of gender in the two languages may or may not be related to its hierarchical position within the noun phrase functional structure. If it does, this would imply that the position it fills in the functional structure of the noun phrase be different in the two languages. Should this be the case, one should then expect to find other differences in the internal and external syntax of the noun phrase in Italian and Hebrew involving the gender feature. This question remains open given the available evidence so far. In the lack of the required evidence, the null hypothesis is to assume that the gender feature

be located in the same position within the map of the functional structure of the noun phrase of the two languages and that the difference concerns its status as an attracting feature triggering syntactic movement in Hebrew but not in Italian. Hence, only in Hebrew, but not in Italian, is gender relevant to modulate the locality of the long distance dependency of Object relatives constrained by featural RM²⁸.

By the same rationale of the described account, one should also expect that number mismatch should have an effect in accommodating the locality of the long distance dependency of Object relatives in Italian. As indicated by the existence of verbal subject agreement in Italian illustrated in (37), number should be attributed the status of an attracting feature in the same terms as gender in Hebrew; thus number is a feature to which the RM principle is sensitive.

- (37) a La ragazza disegna
 the girl_{SG} paints_{SG}
 b Le ragazze disegnano
 the girls_{PL} paint_{PL}

The results presented in 3.1.1 obtained by Adani et al. (2010) confirm the correctness of this expectation.²⁹ The described approach in terms of featural RM is thus predictive of the developmental path and provides a first explanation for it.

²⁸ Belletti, Friedmann, Brunato, Rizzi (2012) propose that gender mismatch gives rise to a set theoretic feature intersection relation in Hebrew. Thus, the intersection relation appears to be well mastered by children in the relevant age. This suggests that the hard relation for children to compute and which is subject to development is just the feature inclusion relation, as discussed. This is a topic of current further investigation. Gender agreement on the past participle under object cliticization in Italian (e.g. L'ho vista/(I) have her_{fem, sing} seen_{fem, sing}; see Chapter 3) may indicate that gender is active in triggering this syntactic movement, i.e. cliticization, in Italian. However, gender never has this status in the higher part of the clause relevant for subject agreement in Italian. The intervention issue discussed in this chapter is concerned with subject intervention, hence with the high part of the clause.

²⁹ The idea that overttness of number agreement in Italian may play a role in facilitating the comprehension of Object relatives is also entertained by Adani et al. (2010), with number agreement interpreted as an overt cue which could be exploited by the parser. The proposal in the text, offers a formal characterization of what the status of a morphosyntactic feature should be in order for it to count as a possible cue: overttness does not suffice, the feature must be among those attracting syntactic movement, as discussed. Belletti, Friedmann, Brunato, Rizzi (2012) for further discussion.

4.2. Number feature and pronouns as relative heads or subjects: comprehension and production.

Number mismatch does not seem to help children's production of ORs in contrast with the results from comprehension just reviewed. The results presented from elicited production in sections 2.1, 2.2 (Belletti & Contemori 2010, Contemori & Belletti 2013, Guasti et al. 2012a) have indicated that, irrespective of the number match or mismatch between the relative head and the subject of the relative clause, children resort to different types of productions, with no difference based on the number feature. This could suggest that in production, at least under the experimental conditions tested, the tendency is to go for the optimal derivation/computation. As the results from Contemori & Belletti (2013) and related work show, this appears to be passive in Italian, as also shown by adults' results and by the developmental path (see Belletti 2012 for the proposal of this approach). A closer discussion phrased in terms of the locality approach presented in section 4.1. as to why resort to passive could somehow qualify as optimal is presented in the following section 4.3.

Guasti et al. (2012)^a reached similar conclusions. First, they also noted that manipulation of the number feature was not exploited by children in the production of the elicited headed Object relatives³⁰. Then, they interestingly noted that their youngest group (5 y.o), that is not yet able to resort to passive in a productive way (in contrast with their older group, 9 y.o.), had rather a preference for the production of Object relatives with a pronominal instead of lexical head (Reduced head response in their coding), with a lexical subject in the relative clause, as illustrated by productions like (38, repeating (14) above):

(38) Quello che i gatti lavano
The one that the cats wash

As the authors note, Reduced head responses are also found when a SR is elicited; given that the experimental conditions typically require the choice between two alternatives, a pronominal head like the demonstrative in (38) is pragmatically appropriate in both subject and object relatives. However, as the authors also note, pronominally headed relatives are found much more widely when an OR is elicited.

³⁰ In contrast with animacy by younger children only, see section 2.3 above.

Clearly, this consideration is extremely relevant for the interpretation appealing to featural RM to account for development in terms of the system in Friedmann, Belletti, Rizzi (2009) presented in 4. It combines with the complementary consideration that can be made, based on the production results presented in 2 from Belletti & Contemori (2012) according to which (even young) children do not experience difficulty in the production of Object relatives when also the subject of the relative clause is pronominal (be it overt or null, see the presentation in 2.4).³¹ Under the natural assumption that there is no +NP feature in the feature composition of pronouns, as the feature expresses the lexical nature of the nominal element carrying it, in both cases like (38) above and cases like (39) below (from Belletti & Contemori 2012 samples of children's productions) no inclusion of the NP feature is ever created between the target relative head and the intervening subject of the relative clause in these conditions.

(39) quello che ha fatto (lui)
 the one that pro has done (he)

Note that if in the case in (38) the lexical subject of the relative clause is endowed of the +NP feature since it is a lexical noun phrase, in the case of (39) neither the relative head nor the intervening subject is endowed with this feature as they are both pronominal. The fact that (39) is easily processed by (even very young) children clearly indicates that the formal locality principle is not disturbed by similarity of the feature composition of the target relative head and of the subject of the relative clause when they are both pronominal. This interestingly supports the idea that it is not a pre-theoretical notion of similarity that seems to play the crucial role, but rather the formal notion relevant for featural RM ultimately solely concerning features attracting syntactic movement.³²

As reminded above and reviewed in section 3, Arosio et al. (2009) have established that in the comprehension of Object relatives disambiguation through position of the lexical subject is

³¹ This is a result in line with the results from Hebrew presented in Friedmann, Belletti, Rizzi (2009), in which Object relatives with a (null) pronominal subject were well understood by children in contrast with Object relatives with a lexical subject in the relative clause. Together with the good comprehension of Free Object relatives in Hebrew, this was one of the two strongest pieces of support for the account in terms of inclusion of the +NP feature presented in 4. See Friedmann, Belletti, Rizzi (2009) for detailed discussion.

³² The reader is referred to Belletti & Rizzi (2013) for relevant discussion in relation to the critical assessment of Warren & Gibson's objections to Gordon et al.'s similarity approach in adult parsing. Belletti & Contemori (2012) note the also possible (marginal) role played by animacy mismatch in the good performance by the young children in the sentences tested in their experiment, suggesting however that the crucial role should be attributed to the mismatch in the [NP] feature. In Italian animacy does not generally lead to the strong amelioration found in the productions of this experiment, as pointed out in section 2.3.

more effective than disambiguation through verbal agreement. Arosio et al. interpreted the less effective disambiguation through agreement as due to the fact that morphosyntactic checking of agreement takes place once thematic roles have already been assigned, hence it requires a longer and more complex reanalysis, the idea being that the SR interpretation is always entertained first and then abandoned at the position of the complementizer. Although this interpretation might very well be on the right track, further factors should also be taken into account that presumably play a role given the shape of the data tested by the authors. Since in the test sentences the plural lexical subject was always post-verbal under the number mismatch condition (see paradigm (18)) the possible often discussed intrinsic complexity of the computation of post-verbal subjects (De Vincenzi 1991) and of the computation of agreement with the subject in the post-verbal position may also play a role in accounting for the milder effect of agreement vs position. As proposed in Adani (2011) in connection with her results on paradigm (16), assuming Guasti & Rizzi's (2002) approach to agreement checking, verbal agreement with a post-verbal subject is solely checked through the AGREE relation whereas verbal agreement with a preverbal subject is also checked in a Spec-Head configuration. This makes the first type of verbal agreement somewhat weaker as discussed in Guasti & Rizzi also through crosslinguistic evidence. Adani attributes the difficulty revealed by her results with the OOp Object relatives to the weakness of agreement obtained through AGREE in the terms of Guasti & Rizzi's system. It is not inconceivable that this factor be also involved in the weaker role of verbal agreement in comparison with position of the subject in disambiguation, ultimately in enhancing the correct interpretation. Alternatively, it is also possible that the agreement process with a post-verbal subject obtained through AGREE may be made harder by the intervening copy of the object moved into the relative head position; this copy may give rise to an intervention effect, as discussed in chapter 6 section 7 in connection to related structures in wh-questions (Guasti, Branchini, Arosio, 2012, and relevant references cited in chapter 6) . All these considerations are the topic of current investigation and are open to further research.

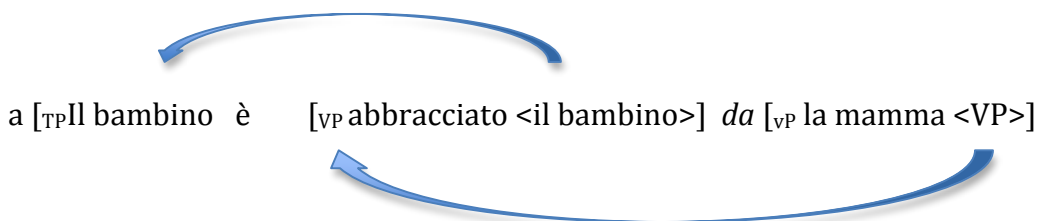
4.3. Passive and intervention: PORs in elicited production

As was presented in 2.2 PORs are the preferred answer to the various tests eliciting the production of Object relatives, overwhelmingly for adults, developmentally for children. The question then arises as to why it is so. In particular, does the intervention account proposed have anything to say on this? As proposed in a number of the references quoted (e.g. Belletti,

2012, 2014, Belletti & Rizzi 2013a, Contemori & Belletti 2013), the answer is positive under the analysis of passive in terms of the operation referred to as smuggling in Collins (2005) and related work. The operation is triggered by part of the passive morphology, illustrated by the preposition *by* in the schematic derivation in (40)a; this component of the passive morphology triggers movement of a chunk of the verb phrase, containing at least the lexical verb and the internal argument, the direct object. The effect of this displacement is that movement of the internal argument into the (EPP) subject position of the clause takes place in a way compatible with the familiar locality constraint/RM on syntactic derivations. The standard derivation of passive sentences traditionally assumed is incompatible with the otherwise general locality principle discussed, as movement of the internal argument would cross over the external argument in the vP internal position, as illustrated in (40)b (see also Chapter 4). Collins' approach provides an interesting suitable alternative. This approach to the passive has generated a research trend, which has demonstrated that smuggling type operations may indeed be quite widespread in grammar, with different triggers of the operation moving verbal chunks of the verb phrase³³. The *by/da* component of the passive morphology is one such crucial trigger. In (40)c the derivation of a POR is indicated, with movement of the relative head in the CP dedicated position: as is clear from the schema, there is no intervention of the lexical subject in this derivation, as movement of the internal argument occurs from the smuggled position filled by the moved chunk of the verb phrase:

(40)

Schematic derivation of Passive through *smuggling*:



Schematic standard derivation of Passive with no *smuggling*; intervention problem:

³³ Causatives and passive causative are crucial further cases of derivations implying smuggling. See chapter 4 for more on this in the context of acquisition of the passive in Italian. Manetti & Belletti (2014).

b Il bambino è abbracciato da [vP **la mamma** [vP <abbracciato> il bambino]]³⁴



Schematic derivation of a POR:



c [CP Il bambino che [TP *pro* è [vP abbracciato <il bambino>] da [vP la mamma <VP>]]]³⁵



The reason why passive takes priority in adults and, developmentally in children, over number feature mismatch, a condition tested in some of the material of the production experiments³⁶, has been interpreted in the references quoted as again a consequence of locality along the following lines. Clearly the optimal way to satisfy featural RM is the feature disjunction condition of the schemas in (31III) and (34III); feature disjunction amounts to lack of intervention altogether. The smuggling operation may be assumed to have a comparable effect as it is a radical operation affecting structural dependencies: through movement of the relevant portion of the verb phrase intervention is simply eliminated. Thus, a POR can count as an optimal way to satisfy locality. This may be the reason why PORs are overwhelmingly produced by adults and children tend to conform to the adults' behavior as they grow older and passive becomes productively available to their computational system. As discussed in section 3 (types of) PORs are also well comprehended by children at the ages in which they master the passive computation.

³⁴ The past participle is located in its derived position occupying some functional head where this component of the passive morphology is checked. The same operation should also occur in (37)a; it is not indicated to simplify the representation in (37)a.

³⁵ Movement to the CP is assumed to occur directly from the *smuggled* position; a silent (expletive) *pro* sits in the preverbal EPP-subject position. Movement does not occur from the EPP position for principled reasons. See Rizzi & Shlonsky (2007) for detailed discussion. Nothing crucial hinges on this technical detail, which is not directly relevant to the discussion in the text. It should be noted that presence of a (null) pronominal does not create intervention with the relative lexical head anyway, as discussed in the previous section 4.2.

³⁶ In particular, the productions presented in Contemori and Belletti (2013) are for the largest part obtained in the Preference task under number mismatch between the relative head and the lexical subject of the relative clause.

The grammatical interpretation proposed for the robust results found in both production and comprehension of relative clauses may be challenged under the natural hypothesis that the privileged status of PORs be simply due to a possibly significant occurrence of the structure in the input to which children are exposed. In other words, the privileged status of PORs could just be a frequency effect: children would simply reproduce what they hear in their input. An account along these lines is immediately put into question by the observation discussed here, in particular for production, that children approach the adults' behavior gradually, with more PORs produced as they grow older. Hence, already from this developmental perspective, the frequency account would have to be supplemented by some further hypothesis. On this vein, one could say that the computation(s) involved in passive must mature in some sense, following an assumption often made more or less explicitly in the literature on passive(s): Once children are ready to form passives, they produce PORs instead of the elicited active Object relatives because PORs are frequent in the input they are exposed to. However, even this somewhat weaker frequency account does not prove to be tenable on an empirical basis. The question whether PORs may be frequent in children's primary data and more generally in standard Italian has been explicitly asked in Belletti & Chesi's (2011) study. The authors have calculated the occurrence of different types of relatives in various corpora of Italian. Results from all the corpora analysed have shown that PORs are an extremely rare type of construction in Italian in general, and in child directed speech in particular. The following Tables from Belletti & Chesi (2011) clearly show that PORs are virtually absent in all the corpora analysed (see the reference quoted for precise description of the corpora considered). In Table 8 only full PORs are considered, with an overt complementizer and the full passive verbal structure; in Table 9 reduced PORs are added as they were widely attested in adults' productions; also in this latter case passive object relatives are very poorly attested in spontaneous production:

Table 8 Raw figures and percentages of various types of relatives in different Italian corpora
(from Belletti & Chesi 2011)

Corpus	# of Rs	# SRs (%)	# ORs (%)	# PORs (%)
CIT	477	295 (62%)	117 (25%)	19 (4%)
CHI A	677	440 (65%)	228 (34%)	1 (0.1%)
SUT	174	159 (91%)	12 (7%)	3 (2%)
CHI C	94	83 (88%)	11 (11%)	-

CIT: Corpus di Italiano Televisivo (7 TV programs)

CHIA: Adults' productions from the analyzed files in CHILDES
 CHIC: Children's productions from the analyzed files in CHILDES
 (Same files considered for children and adults: 8 children, 113 files, plus 19 files from 1 child collected and transcribed at CISCL/University of Siena, Matteini 2011)
 SUT: Siena University Treebank (29 television news programs, Chesi et al. 2008)

Table 9 Raw figures and percentages of various types of relatives in different Italian corpora, including reduced relatives
 (from Belletti & Chesi 2011)

Corpus	# of Rs	# SRs (%)	# ORs (%)	# PORs (%)
CIT	477+48	295 (56%)	117 (22%)	19+48 (10%)
CHIA	677+78	440 (58%)	228 (30%)	1+78 (10%)
SUT	174+22	159 (81%)	12 (6%)	3+22 (13%)
CHIC	94	83 (88%)	11 (11%)	0+15?

This study then provides a clear answer to the question raised on the basis of the experimental production and comprehension results: PORs are not privileged because they are a frequent structure in the (children's) input data, as PORs are extremely infrequent. The study then opens up the novel questions as to why, (i) despite their infrequency PORs are resorted to so widely by young and adult Italian speakers, and (ii) why the experimental data and the spontaneous production data should diverge so significantly as to the appearance of PORs. The discussion of this section has provided a formal answer to the first question in terms of elimination of intervention; the second question remains open for the time being and is the topic of current research.

5. The acquisition of Subject and Object relatives in special circumstances: in children with SLI, with developmental dyslexia, in autistic children, in hearing impaired children, in adult L2 acquisition

The present section reviews some recent results on the acquisition of Subject and Object relatives in Italian in special circumstances.

i. Children with SLI

We start by considering the investigation conducted by Contemori & Garraffa (2010) who have utilized the same designs and material – Preference task and Picture description task – described in section 2 to elicit the production of Subject and Object relatives and the pair

picture matching task described in section 3 to test comprehension. These authors also tested the ability to repeat the sentences which were the target sentences in the elicitation experiments, i.e. (41)a for Subject relatives and (41)b for Object relatives:

- (41) a La bambina che lava la giraffa
 the girl that washes the giraffe
 b La bambina che la giraffa lava
 the girl that the giraffe washes

They tested four SLI children whose age range was 4;5-5;9 and compared their performance to that of eight children with typical development (TD), divided in two groups: four TD-I age-match, and four TD-II of a younger age (3;7-3;10). Given the relatively young age of the participants in the SLI group, children's performance was unsurprisingly rather poor overall. However, the authors found the by now familiar subject relatives vs object relatives asymmetry in a rather interesting way.

First of all, the comprehension of Subject relatives was significantly better than the comprehension of Object relatives and SLI children (range 85% to 95%) matched TDI, the older group of control children (range 85%-100%). Their comprehension of Object relatives instead (range 30%-60%) rather matched the also poor comprehension of TDII, the younger group of control children (40%-75%).

The production results were remarkably poorer in the SLI group compared to both groups of control, for both Subject relatives and Object relatives. As is known from previous sections, the production of Object relatives is anyway relatively poor in the age range tested also in typical development. Children produce a variety of non-target productions, such as changing the verb of the sentence to keep the relevant meaning (42a), changing the character they identify themselves with (42b), use of declarative instead of an object relative (42c); sometimes, typically developing children, especially in the younger ages, may answer with a simple noun phrase (42d): (see also Contemori & Belletti 2013 and Contemori and Garraffa 2010 for further detailed illustration); sometimes children also produce object relatives with the (clitic) resumption strategy (42e):

(42) Target: la bambina che la mamma accarezza ____

the girl that the mother hugs ___

- a la bambina che riceve una carezza dalla mamma
 the girl that gets a hug from the mother

- b la mamma che accarezza la bambina
 the mother that hugs the girl

- c la mamma accarezza la bambina
 the mother hugs the girl

- d la bambina
 the girl

- e la bambina che la mamma la accarezza
 the girl that the mother her-CL hugs

As they grow older, TD children start producing PORs, as illustrated in section 2. This happens at around age 5 or later, which is the age of the older TDI group and the age range of the SLI group in Contemori & Garraffa experiments. Hence, not surprisingly, PORs are absent in both TDI and in the SLI group in their results. The most widely adopted reaction by SLI children was however different from that of TDI and TDII: in half of the cases SLI children simply provided no response (52.5% for both Subject and Object relatives); another significant reaction was the production of a declarative sentence instead of the elicited relative clause (25.8% and 27.5% for Subject and Object relatives respectively).

The results from the repetition task also showed a very poor performance of the SLI group in the repetition of both Subject and Object relatives: in this case the widely produced structures were simple declaratives instead of relative clauses of either type. Interestingly, repetition was at ceiling (ranging from 92.5% to 80%) for both types of relative clauses in both groups of typically developing controls.

Thus, overall, these results indicate that the familiar Subject relative vs Object relative asymmetry is also found in SLI children. The comprehension results show this clearly. The

partly different shape of the production results, both in elicited production and in repetition, indicates a particular difficulty for the weak computational system of the (relatively young) SLI group in processing the complex dependency of relative clauses. Contemori and Garraffa (2010) speculate that the difference between comprehension and production that emerges in their results with subject relatives in the SLI group could reflect the fact that good comprehension of Subject relatives may be only apparent in the comprehension results, as the SLI children could in fact interpret Subject relative clauses as simple declaratives, disregarding the presence of the complementizer. This interpretation would be made plausible by the fact that in subject relatives the order of arguments without the complementizer is the canonical order of declarative sentences: *Il bambino (che) accarezza la mamma*// The child (that) hugs the mother. Hence, the difficulty of the SLI group would concern all types of relative clauses in both production and comprehension. More data and results are necessary to draw any firm conclusion on this point. The issue is left open to further research, which should also consider SLI children of older ages, hence more likely to have developed in their linguistic abilities.

ii. Children with developmental dyslexia-DD

Guasti, Branchini, Vernice, Barbieri, Arosio (in press) have tested the oral language of children with DD in their ability to produce relative clauses, both subject and object relatives, through an adaptation to Italian of the original Hamburger and Crain (1982) design (already mentioned in 2.1 and 2.4). By the elicitation technique, children were led to choose a character in a video they had been presented with, by identifying it through the production of a relative clause (e.g. “Touch the man that the dancers greet”, for an object relative). A group of 24 Italian-speaking children with DD aged 7;8-12;2, mean age 9;3, were tested and their productions were compared to those of a control group of typically developing children matching in chronological age (CA) with the same mean age of 9;3. No child of the DD group had been previously diagnosed as having SLI. The results have indicated that children with DD overall produced fewer correct relative clauses than the CA control children. Similarly to their CA matched controls they were better with subject relatives than with object relatives. More specifically, however, only half of the DD group, i.e. 12 children, scored below the means of the CA group in the production of object relatives. The hardest object relative clauses were thus harder for a subgroup of the DD children. This result is remarkably similar to those from studies on children with SLI. As the authors discuss at length, this suggests that this group of

DD children were likely to be in fact undiagnosed SLI speakers. The comorbidity of SLI and DD is a central issue that studies of this type, which carefully look at the oral language of children with DD, address and contribute to clarify, also in the perspective of promoting early general screening for SLI.

iii. Hearing-impaired children

By using the same comprehension design from Adani (2011) described in section 3 based on Adani (2008), Volpato & Adani (2009) have tested the comprehension of subject and object relatives in a group of 8 hearing-impaired children (HI, age range 6;10-9;3) with cochlear implant (implanted before age between age 2;1 and 4;4). Their results reproduced those found in Adani (2011) with typically developing hearing children in the youngest ages (cf. Section 3, (16)), with Subject relatives comprehended well (89%) and Object relatives poorly understood (55%), and particularly so in the OOp condition (22%), i.e. an object relative with a post-verbal subject. Overall, however, the HI comprehension results have indicated a less accurate comprehension than that of Adani's (2011) original experimental group with typically developing children (section 3 (16)), and of the (three) control groups (matching for morphosyntactic abilities, vocabulary and age) of their own study. Volpato & Adani also report the data on the number of HI children who performed above chance: whereas for Subject relative (OS) 8 out of 8 children performed above chance (same value as for all TD control children), in Object relatives in the OO condition only 3 out of 8 children did (against 6/8/7 out of 8 TD children of the three control groups) and in the OOp condition only 1 out of 8 was above chance (against 4/3/4 out of 8 TD children of the three control groups). This clearly indicates that in the HI group the complexity of the hardest Object relative structures is amplified.

A related result is discussed in Volpato (2012), in which 13 HI children (age range 7;9.10;8) with cochlear implant have been tested manipulating the number feature of the head of the object relative clause and the subject of the relative clause. In contrast with the results from Adani et al. (2010) with typically developing children presented in section 3 and from the control group(s) in this study, HI children showed no amelioration in their comprehension of Object relatives under the relevant number mismatch condition. This suggests that their impairment limits resort to morphosyntactic cues.

The ability to produce Subject and Object relatives by HI children with cochlear implant has been tested by Volpato & Vernice (2014). 13 HI children (age range 7;9.10;8) with cochlear implant were tested through an adaptation of the Preference task described in section 2.1 also using pictures. HI children were tested orally; they had to produce Subject and Object relatives corresponding to their preferred choice, e.g. SR: *Mi piacciono i bambini che accarezzano/colpiscono il gatto*//I like the children that are hugging/hitting the cat; OR: *Mi piacciono i bambini che la maestra premia/sgrida*// I like the children that the teacher is praising/punishing. The productions of the CI children have been compared with those of normally hearing (NH) children matching in chronological age (CA), in language age (LA) (5;0-7;9) determined through standardized morphosyntactic tests, and in so called auditory age (AA) (7;5-9;4), namely with corresponding length of cochlear implant. Overall, as is the case with the different groups of NH children tested with the same test and as in all of the experiments reviewed for Italian and also for other languages, CI children have shown a better performance in the production of Subject relatives than of Object relatives. The different groups of NH children had a higher percentage of accuracy than the CI group for both types of relatives. A correlation has also been found in the production scores by CI children with the age of implantation and duration of the cochlear implant, but this only for Subject relatives; this is so since the production of Object relatives was extremely limited anyway, as in the familiar case. As for the types of structures produced when an Object relative was elicited, the most salient result of this study is that CI children appeared to have an intermediate behavior between the younger aged group LA and the matching age group CA: whereas the CA group resorted to the characteristic production of PORs in 42% of the cases, and the LA group did so in 14% of the cases, CI children reacted with PORs in 26% of their answers. Correspondingly, Object relatives were produced in 15% of the cases by CA children, in 33% of the cases by the LA group and in 23% of the cases by the CI group. Hence, CI children appear to have a more delayed development than CA children in this domain, but they tend to get to the same pattern. Overall, CI children have been less accurate and they have produced more ungrammatical non-target sentences than NH children of the different groups, especially so when the target sentence was an Object relative. For instance, sometimes the complementizer *che* was replaced by a different *wh*-word corresponding to the *wh*-word *where* as in: *Mi piace il bambino quello dove il papà lava*//I like the child the one where the father washes. Notice that this type of answer may be influenced by presence of the picture where the corresponding sentence was depicted; however, use of the *wh*-word corresponding to *where* has also been documented for younger children (Guasti & Cardinaletti

2003), and in other languages as well in HI children (e.g. use of *ouí* in French Delage & Tuller 2007; Guasti et al. 2014). The individual results indicated that not all of the CI children behaved in the same way: some did actually produce some target Object relatives and no POR at all, thus showing once again, a pattern resembling more the one of younger NH typically developing children (see also the discussion in 2.1).

iv. Adult L2 speakers of Italian

A first pilot production study has been conducted with the same elicitation Preference task discussed in 2.1 on a population of 30 L2 speakers of Italian.³⁷ The general results indicated the L2 speakers did produce the elicited relative structures, with slightly better performance in the case of Subject relatives compared to Object relatives (93% vs 89%; the Object relative case is slightly less accurate, but the overall performance is almost at ceiling). The most revealing result, however, concerns the structures, which were produced when an Object relative was elicited, summarized in the following Table 10:

Table 10. Percentages of relatives produced when an Object relative was elicited

Type of relative	Beginners	Advanced
Object relative (active)	60%	15%
POR	22%	77%
*	18%	8%

The table reveals a sharp contrast, almost a reversed curve, between the group of beginners and the group of advanced L2 speakers: in the beginners case the somehow hardest structure, the active Object relative (in the majority of cases produced with a preverbal lexically realized subject), is accessed with a relatively high rate (60%), whereas PORs are produced at a much lower rate (22%). In contrast, PORs are produced at a very high percentage (77%) at the advanced level, approaching L1-Italian adults; at this level, Object relatives are fairly rarely produced (15%), again approaching the performance of L1-Italian adults. In both groups, there are also non-target productions, generally absent in the production of L1 speakers,

³⁷ 15 L1 English, 3 L1 Mandarin Chinese, 2 L1 Spanish, 2 L1 French (of which one also speaks Kabiyè), 2 L1 Polish, 1 L1 German, 1 L1 Norwegian, 1 L1 Albanian, 1 L1 Magyar, 1 L1 Greek. Despite different L1, results and development are uniform across all of the L2 speakers. The L2 speakers have been divided in two main groups, Beginners and Advanced, according to their level of Italian as determined in language classes, which were attended up to 12 months by the first group and for more than 12 months by the second group. We thank very much Antonio Migliore for collecting and analyzing these results in his MA thesis, University of Siena, 2011.

which decrease as the level of the L2 develops further. These results suggest that passives may be relatively hard for the L2 population at the early stages of acquisition of Italian; it can be speculated that this is due to the general difficulty that L2 speakers typically encounter with the proper mastery of inflectional morphology. Thus, in these beginning conditions the adult L2 speakers rather access the complex Object relative computation more readily than PORs. However, as their level of Italian increases and passive morphology becomes more accessible, PORs become the clearly preferred computation, much as for L1-Italian adults and also for older children acquiring Italian, as discussed in 2.2. We can also note that children's early development illustrated by Figure 1 of section 2.2, is almost matched by the development of the L2 population. It seems reasonable to speculate that this similarity may be due to (partly) different reasons: proper mastery of passive morphology in the adult L2 population vs overall availability of the computations implicated in passive in children. We leave this speculation at this tentative level. More L2 data are necessary to draw any reasonably firm conclusion and also to confirm the pilot findings.

6. Summary and questions for future research

The chapter has reported on the fairly rich set of results on the acquisition in Italian of a notably cross-linguistically hard domain: the acquisition of relative clauses. The results reported have all coherently indicated, as one would expect, that Italian is no exception to this general crosslinguistic finding. Relative clauses are a complex structure to acquire, however, there is a crucial distinction to make: the really hard structure to acquire is Object relatives, since subject relatives are properly processed by young children acquiring Italian already at the earliest ages, between 3 and 4 years. This holds in both production and comprehension. The proper mastery of Object relatives takes much longer, and it may still not be at ceiling around age 9. However, not all object relatives are hard to be properly acquired; the really hard ones are lexically headed Object relatives with a (preverbal) lexical subject within the relative clause. This robust finding, which is the one holding cross-linguistically, has been traced back to a principled explanation under the proposal that the crucial locality principle constraining syntactic computations be responsible of the children's developmental difficulty. A residue of this difficulty can also be found in (slower) adult processing, as results in research from the psycholinguistic literature have repeatedly indicated. The relevant principle has been identified with featural Relativized Minimality, the principle ruling out structures in which intervention of an element similar in relevant features to the target

structurally intervenes in the construction of a long distance dependency. Following Friedmann, Belletti, Rizzi (2009), in the hard lexically headed object relatives a feature labeled [+NP] has been assumed to be shared by the lexical head and the intervening subject of the relative clause, which is at the origin of children's difficulty. Indeed, other types of Object relatives in which the hard intervention configuration does not hold are not difficult, and even young children do not have any problem in their proper mastery. This has been shown to be the case in the production of lexically headed object relatives with a pronominal subject in the relative clause.

The interpretation of the delayed development of object relatives in terms of the syntactic principle featural Relativized Minimality opens up the idea that the features relevant to modulate intervention should be those triggering syntactic movement. Hence, this has generated subtle research questions in a number of studies, which have investigated the role played by morphosyntactic features such as gender and number. Results have shown that number mismatch between the lexical relative head and the intervening (preverbal) lexical subject does have an amelioration effect in the proper comprehension of object relatives at age 4; and even more so at age 5. In contrast, gender mismatch does not have the same effect in Italian: for children around age 5, comprehension remains low, often below chance, also in the gender mismatch condition.

Robust production results have indicated that children often resort to the production of a POR instead of the elicited active lexically headed Object relative; since Italian speaking adults have been shown to do so overwhelmingly, children's behavior appears to tend to conform to the adult's one, with increasing use of PORs as children grow older, clearly so after age 5. PORs of different types have been shown to be better comprehended than lexically headed Object relatives, also those containing a resumptive clitic, a structure present in children's spontaneous production. It has been shown that resort to POR is not an input effect, as these structures are very rare in spontaneous productions. Lack of intervention brought about by passive should then be at the origin of the systematic resort to this type of computation in elicited production and to the preference shown in comprehension.

Given the general difficulty with object relatives in typical development, it is not surprising that these structures are virtually impossible to master in the different forms of atypical development considered, for which data and experimental results are available. Rather, given the generally good performance of even young typically developing children with Subject relatives, difficulty in the proper mastery of (the easier) Subject relatives may be taken as an indication of atypical development.

The results presented in this chapter open up a number of new research questions, some of which have been mentioned in the course of the discussion, inspired both by the data collected so far and by the account proposed which capitalizes on the principle ruling the intervention configuration under featural Relativized Minimality as hard or even impossible to master. Future work is needed on the crucial research question of which features are those relevant for the principle and how exactly they can express the observed developmental path. The number and types of features to investigate should be enriched and their study should be carried out in a cross-linguistic perspective; results from the comparative study between Italian and Hebrew has shown a different role of the very same feature, gender, in modulating intervention and thus in ameliorating children's comprehension of Object relative clauses. Hence, there must always be some caution in drawing general conclusions on the status of some morphosyntactic features with respect to the principle and cross-linguistic evidence must be gathered. A case in point is the animacy feature. The results presented for Italian suggested that manipulation of this feature may have a mild amelioration effect (especially at younger ages), but it does not lead to any significant improvement in both production and comprehension. However, cross-linguistic evidence is needed, since it could be the case that the same animacy feature may have a different status with respect to featural Relativized Minimality in different languages. Results gathered from Italian development indicate the baseline in this language. More cross-linguistic evidence would also have an effect on the purely theoretical side of the issue, as it could shed light on the proper functioning of the locality principle responsible for adults' grammar and, as we have suggested, crucial to express development. A possible outcome of the newly foreseen cross-linguistic research could be that this feature in some other language be grammaticalized (as is known to be the case) and as such plays the morphosyntactic role of being a feature attracting syntactic movement (yet to be determined). If this were the case, the mild role played by the animacy feature in Italian development could be interpreted as the reflex of the status of this feature in some other language; an option that young children may explore to some extent and which might give to this feature a somewhat privileged status also in the Italian adults' grammar, still not assuming the decisive status of morphosyntactic feature triggering syntactic movement in this language. But all of this and much more has to be determined by new studies. In the same comparative vein, new studies should also verify whether also other features, e.g. abstract-concrete and many conceivable other ones may play a role in

modulating intervention. The agenda is opened and waits for new results from acquisition, which will contribute to answer the family of questions raised.

The complexity of relative clauses in interaction with various properties of Italian has had the consequence that some of the described results presented in this chapter have some confound intrinsic to them. One case in point is the amelioration brought about by presence of a pronominal subject as the subject of a headed object relative and its post-verbal location when the pronoun is overt hence focalized. As already mentioned in the presentation of the relevant results, it would be most welcome if this confound could be eliminated and the different conditions – overt vs null, pre- vs post- verbal – on the pronominal subject could be better teased apart. Again, this would directly contribute to the better understanding of the relevant principle(s) at play, which shape development in the way we have presented in the domain of the acquisition of Italian relative clauses.