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Topics and passives in Italian-speaking children and adults

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ABSTRACT

Through two elicited production experiments we investigated how preschool Italian-speaking children access the left periphery of the clause with respect to topics in Clitic Left Dislocation (CLD) structures. Since the discourse conditions of the experiments are felicitous for the production of passives as well, we also investigated children's production of different types of passives, and how it compares to adults'. A rich and variegated array of results indicate young children's early access to the left peripheral topic positions—also in a nonadult manner through use of *a*-marked topics—and preference for CLD over passive in contrast to adults; children's early access to passive in the causative voice also emerged as well as use of CLD with null generic subject as an alternative to the (copular/*venire*) passive. Intervention locality/relativized minimality plays a crucial role in interpreting the articulated results within the system developed in Friedmann, Belletti & Rizzi (2009) and much subsequent work.

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1. Introduction

The present study investigates the acquisition of clitic left dislocations and passive structures by monolingual Italian preschoolers in the context of an elicited production task in which the object patient of a transitive verb is the topic. Introducing the patient in the discourse (e.g., Tell me about X_{patient} : What is happening to X_{patient} ?) creates a felicitous context for eliciting a sentence “about” the patient; therefore it has been adopted cross-linguistically to investigate the production of passives or alternative active structures with a pronoun (see for English: Pinker, Lebeaux & Frost 1987; Marchman et al. 1991; Meints 2003; Sesotho: Demuth, Moloi & Machobane 2010; Italian: Del Puppo & Pivi 2015, Manetti 2013, Volpato, Verin & Cardinaletti 2014, 2016, Manetti 2017; Catalan: Prat-Sala & Hahn 2007; Brazilian Portuguese: Menuzzi 2001).

As for Italian, given a question about the patient as (1a), both a passive and a CLD are felicitous answers, although in two different ways: In (1b) the patient is the subject that the following passive sentence is about;¹ in (1c) it is the left-dislocated object in a left peripheral topic position, and the following active sentence containing a resumptive accusative clitic predicates some property of it. We will further clarify throughout the close relation between the two possible answers given in (1b) and (1c):

(1) a. *Che cosa succede al bambino?*

‘What is happening to the kid?’

b. *(Il bambino) è/viene lavato dalla mamma.*

(The kid) is/comes washed by the mother.

‘The kid is being washed by the mother.’

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¹In the passive sentence, both the auxiliary *essere* ‘to be’ and *venire* ‘to come’ are felicitous in the answer; however, with actional verbs in the present tense the auxiliary *venire* ‘to come’ is preferred by adults and children (Belletti & Guasti 2015).

c. (*Il bambino*) *la mamma lo lava*.

(The kid), the mother him-Cl washes.

‘The kid, the mother is washing him.’

As indicated by the parenthesis, in both answers (1b, 1c), the repetition of the topic patient is not required since the topic referent (i.e., ‘the kid’ in 1) is unique and given in the immediately previous question: The preferred answer leaves the topic unpronounced, yielding topic continuity. As discussed in Rizzi (2005, Forthcoming), the repetition of the discourse topic, both in the passive and in the CLLD, would sound redundant. Hence, the unmarked answers would consist either of a passive sentence with a null pronominal subject, as in 2a, or a CLLD with no overt left-dislocated object, corresponding to a sentence in the form of *Subject-Clitic-Verb*, given in 2b, where the clitic is the object:

(2) a. *pro è/viene lavato dalla mamma*.

pro is/comes washed by the mother.

‘He is being washed by the mother.’

b. *La mamma lo lava*.

the mother him-Cl washes.

‘The mother is washing him.’

Previous studies investigating the use of passives or alternative active structures with a pronoun adopted a patient-oriented eliciting context and consistently showed that Italian-speaking children and adults significantly differed in their answers. While children typically choose the active structure with the clitic pronoun (e.g., *Subject-Clitic-Verb*), adults resort to the passive (Del Puppo & Pivi 2015; Manetti 2013; Volpato, Verin & Cardinaletti 2014, 2016; Manetti 2017).²

2. The present study

Stemming from the findings just mentioned in the Introduction, the present study further tackled the use of structures having a topic patient in preschool children and adults. In particular, our investigation explored, first, the production of structures with an active verb and an object clitic pronoun, either containing an overt left-dislocated object topic (CLLD, e.g., *Object-Subject-Clitic-Verb*) or no overt object topic and just an object clitic pronoun (e.g., *Subject-Clitic-Verb*); secondly, we focused on the use of (different types of) passives produced by children and adults.

2.1. Investigating the production of clitic left dislocations

As for our first aim, the present study differs from the ones mentioned in the introduction with respect to the informational context designed to elicit structures with topic patients. Previous studies adopted an eliciting question having one patient character only, and the results showed that such context elicited a structure with an active verb and the object clitic (e.g., *Subject-Clitic-Verb*), with no overt realization of the topic patient, i.e., the most felicitous answer as described in Example 2. In our design, instead, we aimed at providing a felicitous pragmatic context for the production of overt left-dislocated topics with the purpose of tapping into the acquisition of left peripheral topic positions.

²This preference remains also for school-age children, at least until age 9, as shown in Del Puppo & Pivi (2015) and Manetti (2017). In these works, the experimental question was patient oriented, but the designs differed with respect to the representation of the agent character: In Del Puppo & Pivi’s work the agent was partially covered, whereas in Manetti (2017), the agent was fully shown on the picture. This difference did not affect children’s preference for the use of an active verb with the object clitic pronoun.

We thus manipulated the discourse conditions in which participants had to talk about the patient (s): In one condition the question contained one topic patient (e.g., What is happening to my friend, $X_{\text{patient}}?$) and functioned as the baseline measure for eliciting *Subject-Clitic-Verb* structures with no overt expression of the topic patient, coherently with the results from previous studies. In the other condition, we provided a contrastive topic situation by giving a question with two topic patients (e.g., What is happening to my friends, X_{patient} and $Y_{\text{patient}}?$) undergoing two distinct actions. Under this second condition, if children resorted to a structure with the clitic pronoun instead of a passive, as expected from previous studies, they would need to produce an overt left-dislocated object to explicitly refer to one of the two patient referents, possibly resulting in a clitic left dislocated structure (DP₁-DP₂-Clitic-Verb, e.g., *Object-Subject-Clitic-Verb*). Conversely, leaving the left-dislocated topic patient unexpressed would yield an unclear and underinformative answer on the two plausible topic patients to which the answers could refer. This experimental design has been adopted in two elicited production experiments: Experiment 1 and Experiment 2. Across the two experiments, we also manipulated the featural number match versus mismatch of the arguments of each verb. In Experiment 1, each verb was depicted with one agent and one patient (cat, dog) creating a number match condition between the two DPs, as reported in 3a. In Experiment 2, each verb was depicted with two agents (two cats) and one patient (one dog) as shown in 3b, testing a number mismatch condition between the two DPs.

(3) a. Experiment 1: Number match condition (cat washing dog)

Il cane il gatto lo lava.

the dog_{obj.sing} the cat_{subj.sing} him-Cl washes

‘The dog, the cat is washing him.’

b. Experiment 2: Number mismatch condition (cats washing dog)

Il cane i gatti lo lavano.

the dog_{obj.sing} the cats_{subj.plu} him-Cl wash

‘The dog, the cats are washing him.’

The rationale for the manipulation of number match versus mismatch in this production study is based on previous results on the comprehension of CILDs, which showed above-chance performance when the topicalized DP mismatched in number with the subject (Manetti et al. 2016), as in 3b, and more generally on the results showing the role of this type of number mismatch in enhancing the comprehension of A'-dependencies (Adani et al. 2010).

Notice that in CILD structures of the form DP₁-DP₂-Cl-V, when both DPs are lexical and overt as in Example 3, the resulting CILD structure instantiates a situation of intervention that falls within the domain of locality, expressed through the principle Relativized Minimality (Rizzi 1990, 2004): The DP, corresponding to the object, encounters the intervening DP subject (Z) in the establishment of the dependency between its Target (X) position as a left-peripheral topic and its Merge object position (Y) within the clause, as shown in the following configuration (4):

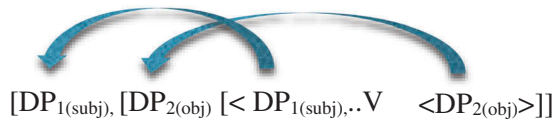
(4) [DP_{1(obj)}, [DP_{2(subj)}V <DP_{1(obj)} >]]

X Z Y

Moreover, the two DPs, DP₁ and DP₂, can be interpreted in two different orders, either DP_{subj}-DP_{obj} (5a SO; with S also in a left-peripheral topic position as Italian is a multiple topic language, Rizzi 1997) or DP_{obj}-DP_{subj} (OS; with S possibly in a left-peripheral topic position as well or in the clause internal preverbal subject position, whence the parenthesis surrounding DP_(subj), in 5b). In both cases the locality problem arises.

(5)

a.



b.



Hence, the question of how the Relativized Minimality configuration is dealt with by children arises as well. We will address the issue through the comparison between the number match and mismatch conditions couching the discussion in terms of *featural* Relativized Minimality/fRM along the lines of Friedmann, Belletti & Rizzi (2009) and much related work.

2.2. Investigating the production of passives

Our second topic of investigation taps into the production of passives: Recall that under these discourse conditions, in Italian the passive is an alternative and felicitous structure to the use of CLLDs, given that it promotes the patient and makes it the subject, which the sentence is about. In our experiments, passives can be used in both conditions (one topic patient vs. two topic patients).

This side of the study will help us shed some more light, first, on the potential preference for CLLDs versus passive structures in the acquisition of Italian under experimental conditions carefully controlled for discourse contexts; second, we will explore the potential preference for certain types of passives in the comparison between adults' and children's productions (e.g., passive in the causative voice referred to as “*si*-causative” throughout vs. periphrastic passives). Previous studies have indicated a somewhat privileged early access to *si*-causative passives of the type in 6a in young children. The evidence comes both from the production of declarative passive sentences (Manetti & Belletti 2015) and from the production of subject relatives in the (*si*-causative) passive when an object relative clause was elicited, a type of response referred to as Passive Object Relative/POR (6b) (Contemori & Belletti 2013, Belletti 2014):

(6) a. *Il bambino si fa lavare dalla mamma.*

the kid *si*-makes wash by the mother

‘The kid gets himself washed by his mother.’

b. *Il bambino che si fa lavare dalla mamma.*

the kid that *si*-makes wash by the mother

‘The kid that gets himself washed by his mother.’

It is an interesting question to ask whether some preference for the same *si*-causative passive is manifested in our new study, using different elicitation techniques than previous ones.

To sum up, the present study will allow us to investigate whether 4- and 5-year-old children distinguish between the two conditions (one topic patient vs. two topic patients) with respect to the use of overt left-peripheral topic in CLLDs. This should provide us with some evidence on the ability by young children to access topic positions in the map of the left periphery and on the way they deal with locality in the intervention configuration. In this respect, the manipulation of the number feature across the two experiments will reveal further information on the possible role of such feature in the production of

structures involving an object A'-dependency, such as DP₁-DP₂-Cl-V. Finally, the study will compare children's and adults' first global preference for passive versus CLLD, as well as possible preferences for specific types of passives.

3. Experiment 1

3.1. Participants

We tested 39 typically developing Italian-speaking children, aged from 4;01 to 5;11 years old (MA = 60 months; SD = 6.8 in months), in two kindergartens in Florence and in the province of Florence; 24 adult monolingual Italian-speaking students of the University of Siena (aged between 19 and 25; MA = 21 years old) also took part in the study. As for children, three of them did not complete the session and were excluded from the analysis (we thus included 36 children in the analysis).

3.2. Method and materials

The test consisted of an elicited production task in which participants answered questions introducing the patient of an action verb (henceforth, patient-oriented question). We used eight transitive action verbs (*lavare* 'wash,' *pettinare* 'comb,' *fotografare* 'photograph,' *vestire* 'dress,' *accarezzare* 'caress,' *spingere* 'push,' *coprire* 'cover,' *leccare* 'lick'), and characters consisting of pairs of either humans or animals; in each event, both the patient and the agent were in the singular form, giving rise to a number match condition between the two DPs.

The pictures were presented using a Power Point presentation with the prerecorded experimental questions being asked by a cartoon Smurf. The participant was told that a Smurf, named "Quattrocchi," likes to walk around his village and visit his friends, but he cannot fully see or understand what is going on around him: Specifically he cannot enter the houses where the events take place; hence he will ask the participant for some help.³ Five practice trials followed the introductory story to familiarize the children with the task and make them feel comfortable, after which the test started.

The experimental trials were organized under two experimental conditions: The one-topic condition introduced one single patient undergoing two different actions (e.g., What is happening to my friend, X_{patient}?, see Example 7, Figure 1); the two-topic condition introduced two patients receiving two different actions (What is happening to my friends, X_{patient} and Y_{patient}?, see Example 8, Figure 2).⁴ This manipulation was presented within-subjects.

(7) Experimental trial (One-topic condition having one topic patient → the elephant)

- a. The experimenter presents all characters: "In this house there is an elephant, a bear, and an ant."
- b. The experimenter explains that the Smurf is very curious about one of his friends, the elephant.
- c. The experimenter explains that the Smurf arrives at the house but cannot enter and look inside; thus he needs the child's help to answer his question. The Smurf finally asks the question: *Che cosa succede al mio amico, l'elefante?* ('What is happening to my friend, the elephant?').

³This detail has been added to the story to favor a fully informative answer: Notice that the child can well see what is happening inside the house and can thus provide all the information asked by the Smurf.

⁴In both cases, the actions were performed on the patient(s) by two distinct agents in the aim of creating two independent events. Note incidentally that in a full informative answer this should lead to the production of an overt subject (see Sections 3.6.1 and 5.2). For similar and related studies on the manipulation of the number of agent referents in the eliciting question, see Serratrice (2008) for English and De Cat (2009) for French.

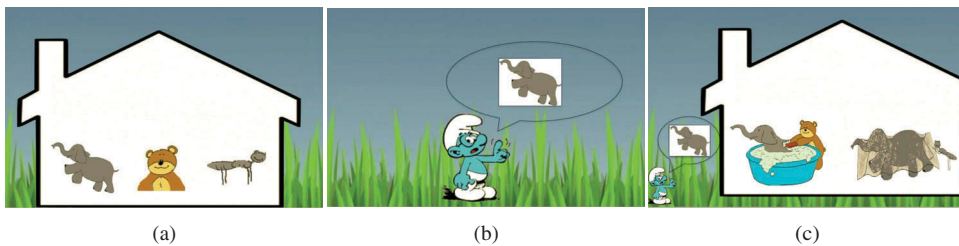


Figure 1. Experimental trial in the one-topic condition (one topic patient: the elephant).

(8) Experimental trial (Two-topic condition having two topic patients → the rabbit and the ant)

- a. The experimenter presents all characters: “In this house there is a rabbit, a cat, an ant, and a frog.”
- b. The experimenter explains that the Smurf is very curious about two of his friends, the rabbit and the ant.
- c. The experimenter explains that the Smurf arrives at the house but cannot enter and look inside; thus he needs the child’s help to answer his question. The Smurf asks the question: *Che cosa succede ai miei amici, il coniglio e la formica?* (‘What is happening to my friends, the rabbit and the ant?’).

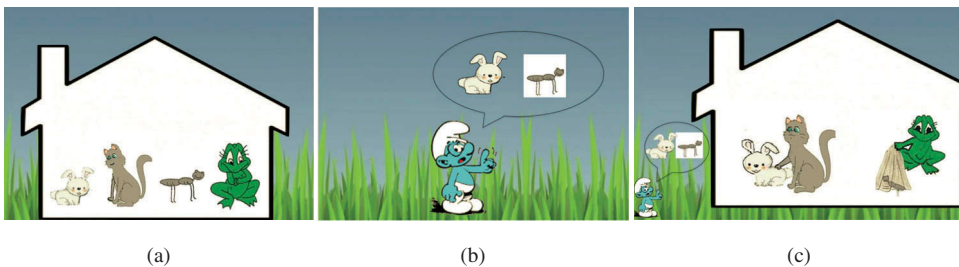


Figure 2. Experimental trial in the two-topic condition (two topic patients: the rabbit and the ant).

After the question in the one-topic condition, the answer should contain two descriptions of the actions depicted inside the house (see Figure 1c), which should consist of sentences in the form of *Subject-Clitic-Verb* with no overt expression of the topic, as in 9a, or of passive sentences (*si-causative* or *copular/venire* passive) with a null subject, as shown in 9b:

(9) a. *L’orso lo lava e la formica lo copre.*

The bear him-Cl washes and the ant him-Cl covers

‘The bear is washing him and the ant is covering him.’

b. *È/viene lavato/si fa lavare dall’orso, e è/viene coperto/si fa coprire dalla formica.*

pro is/comes washed/*si*-makes wash by the bear and *pro* is/comes covered/*si*-makes cover by the ant

‘He is being washed by the bear and he is being covered by the ant.’

The question in the two-topic condition also elicits two descriptions of the actions happening inside the house (see [Figure 2c](#)), which should contain either CLLDs with an overt left-dislocated topic patient (10a) or passives with an overt lexical subject (10b): In both cases, the patient referents should be overtly realized to unambiguously identify them:

(10) a. *Il coniglio il gatto lo accarezza, e la formica la rana la copre.*

the rabbit the cat him-Cl caresses, and the ant the frog her-Cl covers

‘The rabbit, the cat is caressing him and the ant, the frog is covering her.’

b. *Il coniglio è/viene accarezzato/si fa accarezzare dal gatto e la formica è/viene coperta/si fa coprire dalla rana.*

the rabbit is/comes caressed/si-makes caress by the cat and the ant is/comes covered/si-makes cover by the frog

‘The rabbit is being caressed by the cat, and the ant is being covered by the frog.’

Note that the eliciting questions, in both conditions (see 7c and 8c), did not directly introduce the patients in the form of a PP experiencer preceded by the preposition *al/to*’ (e.g., *Che cosa succede al coniglio e alla formica?* ‘What is happening to the rabbit and to the ant?’), as was the case in previous designs quoted in the introduction. Rather, all the questions had the patient(s) at the end of the sentence in the form of simple DPs (e.g., *Che cosa succede ai miei amici, il coniglio e la formica?* ‘What is happening to my friends, the rabbit and the ant?’). This was done in order not to prime the repetition of the *a*-experiencer in the answer.⁵

For both conditions, we created four experimental trials and, as already mentioned, each question elicited the description of two separate events (illustrated on [Figure 1c](#) and [2c](#)). Thus, we collected two answers after each patient-oriented question, for a total of eight descriptions in the one-topic condition and another eight in the two-topic condition. Moreover, the test included eight fillers, eliciting DPs (e.g., Question: *Chi c’è in casa?* ‘Who is in the house?’; Answer: *Un bambino!* ‘A kid!’); (S)V structures with intransitive verbs (e.g., Question: *Che cosa fanno i bambini?* ‘What are the kids doing?’; Answer: *Leggono!* ‘They are reading!’); and one SVO structure (e.g., Question: *Che cosa mangiano il coniglio e il topolino?* ‘What are the rabbit and the mouse eating?’; Answer: *Il coniglio mangia la carota e il topo mangia il formaggio!* ‘The rabbit is eating a carrot and the mouse is eating a piece of cheese.’). The fillers and the experimental items were presented in pseudo-randomized order. For the children, the test was run individually in a quiet room at the kindergartens and lasted around 10 minutes. As for adults, the experiment was administered individually at the University of Siena.

3.3. Coding criteria

The answers were coded under four main categories: Pronoun, CLLD, Passives, and Other.

The category Pronoun includes all sentences with no overt expression of the topic, as in Example 11. The sentences contain an active verb and an object clitic pronoun; the subject could be uttered in preverbal (11a), postverbal position (11b), or it could be null (11c):

(11) a. DP_{Subject}-Clitic-Verb:

L’orso lo lava.

the bear him-Cl washes

‘The bear is washing him.’

⁵The importance of this aspect of our design will become apparent in the discussion of children’s answers containing *a*-topics ([Section 5.2](#)) that cannot thus simply be interpreted as repetitions of the *a*-experiencer of the question.

b. Clitic-Verb-DP_{Subject}:*Lo lava l'orso.*

him-Cl washes the bear

'The bear is washing him.'

c. Clitic-Verb:

*Lo lava.**pro* him-Cl washes

'(it) is washing him.'

The category CLLD includes all sentences with an overt left-dislocated topic and a resumptive clitic pronoun; the subject again can be preverbal (12a, 12b), postverbal (12c), or null (plural or singular) (12d):

(12) a. DP_{Subject}-DP_{Object}-Clitic-Verb:*L'orso l'elefante lo lava.*

the bear the elephant him-Cl washes

'The elephant, the bear is washing him.'

b. DP_{Object}-DP_{Subject}-Clitic-Verb:*L'elefante l'orso lo lava.*

the elephant the bear him-Cl washes

'The elephant, the bear is washing him.'

c. DP_{Object}-Clitic-Verb-DP_{Subject}:*L'elefante lo lava l'orso.*

the elephant him-Cl washes the bear

'The elephant, the bear is washing him.'

d. DP_{Object}-*pro*-Clitic-Verb:*L'elefante lo lava/lo lavano.*the elephant *pro* him-Cl washes/wash

'The elephant, (it) is washing him.'

Under the category of Passives we coded copular/*venire* passives, i.e., passives with the auxiliaries *essere*/'to be' or *venire*/'to come' (13a), and *si*-causative passives (13b):

(13) a. Copular/*Venire* Passive:*(L'elefante) è/viene lavato dall'orso.*

the elephant is/comes washed by the bear

'The elephant is being washed by the bear.'

b. *Si*-causative Passive:*(L'elefante) si fa lavare dall'orso.*

(the elephant) *si*-makes wash by the bear

‘The elephant gets himself washed by the bear.’

“Other” contains any production that does not follow the criteria listed previously (e.g., SVO active sentences, intransitive verbs, right dislocations, reflexive verbs, utterances that cannot be readily interpreted).

3.4. Main results

We coded 569 utterances produced by children and 383 produced by adults. In Table 1, we report children’s and adults’ productions in the one-topic and in the two-topic conditions.

In the one-topic condition, children mostly resorted to Pronoun structures not involving the overt expression of the object topic (67%; cf. examples in 11). In contrast, the new result emerged in the two-topic condition, which yielded the production of 25% CILDs with an overt left-dislocated topic, and in turn disfavored the production of Pronoun structures with no overt expression of the object topic (8%). Children also exhibited passive structures in their responses, and these consisted exclusively of *si*-causative passive (except in one case with *venire*).

Adults consistently opted for copular/*venire* passives (one-topic condition 45%; two-topic condition 49%)⁶ and to a lesser extent for some *si*-causative passives (one-topic condition 12%; two-topic condition 19%). They also produced some Pronoun structures with no overt topics in the one-topic condition (22%), but virtually no CILDs were found in their answers (1%).

Children and adults also used sentences coded as “Other,” which included a variety of structures with SVO active sentences as the most common type (overall 47% of “Other” in children and 48% in adults).⁷

Table 1. Children’s and adults’ productions after questions in the one-topic and two-topic conditions.

	Children		Adults	
	One-topic condition	Two-topic condition	One-topic condition	Two-topic condition
Pronoun	191 67%	23 8%	42 22%	0 0%
CILD	9 3%	72 25%	1 1%	2 1%
Copular/ <i>Venire</i> Passive	1 0%	0 0%	86 45%	94 49%
<i>Si</i> -causative Passive	24 9%	32 11%	24 12%	37 19%
Other	58 21%	159 56%	39 20%	58 31%

⁶The result is robust, as it has been confirmed by a further group of adults with a low level of schooling who were later tested through the same elicitation task (data are not reported here). Hence, use of passive is not the reflex of educated Italian but rather the reflex of a productive syntactic construction.

⁷Use of SVO structures in response to patient-oriented questions has been already observed in previous studies, in children and -to a lesser extent- in adults as well (Del Puppo & Pivi 2015; Manetti 2013; Volpato, Verin & Cardinaletti 2014; Manetti 2017). SVO answers allowed children and adults to convey the information on the patient, which the question asked for, through an all-new description in which the object is not singled out as a topic. Notice that children produced SVO structures more often in the two-topic condition (18 SVO in one-topic condition vs. 84 in two-topic condition), which is the one requiring the overt expression of the topic in the CILD. Hence, use of CILD would have to comply with an intervention configuration, a notoriously hard structure for children to compute (see sections 2.1, 5.1, and 5.2 for detailed discussion). A subgroup of children (7/36 = 20%) systematically adopted the SVO answer in this condition (SVO = 48, 86% of their answers) and never produced CILDs; in contrast, the same group produced Pronoun structures with no overt expression of the topic in the one-topic condition (Pronoun = 46, 82% of their answers). This further reveals the great difficulty that the DP₁-DP₂-Cl-V structure with both DPs overt and lexical poses to children, which is the fundamental insight of the intervention account.

Table 2.. Linear mixed-effect model on the production Pronoun vs. CLD across topic conditions.

	Estimate	Std. error	z-value	Pr(> z)
(Intercept)	5.4886	0.8558	6.413	< .001***
Topic condition	-7.1747	0.9816	-7.309	< .001***

3.5. Analysis of main results

The present analysis of the data examined whether the manipulation of the experimental questions (referring to one topic patient vs. two topic patients) led to a significant difference in children's production of Pronoun (with no overt expression of the object topic) versus CLD (with an overt left-dislocated object).

In the first analysis, we included 295 answers (200 produced in one-topic condition and 95 in two-topic condition) corresponding to the utterances coded as Pronoun and CLD. By focusing on the production of Pronoun and CLD across conditions (one topic vs. two topics), a clear pattern emerged in our data: Children produced 89% of Pronoun structures in the one-topic condition (191/214) and 11% in the two-topic condition (23/214). In contrast, the CLD production predominantly emerged in the two-topic condition, 89% (72/81), and only 11% of CLDs appeared in the one-topic condition.

We ran a mixed linear effect model analysis using the statistical software R (R Development Core Team 2008) and the lme4 package (Bates et al. 2015) to check for the effect of the manipulation of the Topic condition (one patient vs. two patients) on the production of Pronoun versus CLD. We first considered topic conditions and age group (4-year-olds: 4–4;11 y.o. vs. 5-year-olds: 5–5;11 y.o.) as fixed effects, and subjects and items as random effects. The final best-fit model only included the topic conditions as the fixed factor, subjects, and items as intercepts, as shown in Table 2.

The model revealed a significant effect of Topic condition manipulation on the use of Pronoun versus CLD with overt topics. No difference emerged between 4-year-olds and 5-year-olds.

3.6. Detailed description of the results

3.6.1. Types of CLDs: Nature of the subject and types of left-dislocated objects

In this section, the CLDs produced by children are analyzed in terms of the type of subject (lexical vs. null) and the type of left-dislocated object.⁸

Children's CLDs (in total 81 structures) mainly used preverbal lexical subjects (64%), as in (14a, 14b).⁹ Only 12% presented a postverbal subject (14c), and the subject was null in 24% of CLDs (14d):¹⁰

(14) a. *Il coniglio l'orso lo veste.* (O., 5;02)

The rabbit_{subj} the bear_{obj} him-Cl dresses

b. *La formica la rana l'asciuga.* (A., 5;10)

The ant_{obj} the frog_{subj} her-Cl dries

c. *Il coniglio lo sta accarezzando il gatto.* (N., 4;08)

The rabbit_{obj} him-Cl is caressing the cat_{subj}

d. *Il re lo sta pettinando.* (A., 4;11)

The king_{obj} him-Cl is combing

⁸CLDs were practically absent in adults' answers (only three produced by one participant).

⁹When the subject was preverbal, it either preceded (S-O-cl-V: 62%) or followed the preposed left-dislocated object (O-S-cl-V: 38%): The preference for the S-O order is not replicated in Experiment 2, where the preference is reversed (O-S 71% vs. S-O 19%; see footnote 12), for this reason we do not analyze this order issue any further.

¹⁰Note that the discourse condition of the experiment did not favor the postverbal position of the subject, which was among the introduced characters in the pictures. Hence it did not count as a new information focus, the most typical interpretation of a postverbal subject in Italian (Belletti 2004). The realization of the subject as null *-pro-* in the answer is also not favored, as the question refers to two different subjects. It is then not surprising that the subject was mostly overt, lexical, and preverbal. See section 5.2 in the discussion.

A closer look at CLLDs also reveals that the left-dislocated object is often preceded by the preposition *a* ('to'); a possibility is allowed only to a very limited extent in standard Italian with preposed, left-dislocated direct objects (see Benincà 1986, Belletti & Rizzi 1988, Belletti Forthcoming for recent discussion). Moreover, Standard Italian is not a Differential Object Marking/DOM language: Direct objects are never marked through use of a preposition in their clause internal object position, as it is instead the case in many languages, including closely related ones like, e.g., standard Spanish. In our data, when the preposition *a* ('to') precedes the left-dislocated object in a CLLD, the topic will be referred to as *a*-Topic (15), which differs from the left-dislocated object without the preposition, named as Simple Topic (16), as shown in the following examples:

(15) *a*-Topic:

Al re il bambino lo pettina. (G., 5;11)

To the king the child him-Cl combs

'The king, the child is combing him.'

(16) Simple Topic:

La formica la rana l'asciuga. (A., 5;10)

the ant the frog her-Cl dries

'The ant, the frog is drying her.'

Overall, the majority of CLLDs contained an *a*-Topic (74%, as in 15); while only 26% contained a Simple Topic (as in 16). Interestingly, in the CLLDs in which the subject is preverbal (either preceding or following the left-dislocated object), the left-dislocated object clearly tended to be an *a*-Topic (46/52 = 88%), and the Simple Topic only amounts to 12% (6/52). In contrast, when the subject was null or uttered in postverbal position, the use of Simple Topics and *a*-Topics was evenly distributed (14/29 = 48% *a*-Topics; and 15/29 = 52% Simple Topics). It is worth highlighting that the DP_{obj} was preceded by the preposition *a* ('to') only when it was left-dislocated. The *a*-marking never occurred when the answer was an SVO sentence: This observation confirms that the (Tuscan) Italian variety of the children participating in the study is not a DOM language and does not allow the *a*-marking of the object when it is not preposed. This clear-cut distinction of use of *a*-marking is shown in the production in Example 17: Within the same answer, the same child used a SVO sentence in the first description, in which the direct object is not marked through any preposition and fills the direct object position, and a CLLD in the second description, where the preposed object is realized as an *a*-Topic:

(17) a. *Che cosa succede ai miei amici, il pinguino e la mucca?*

'What is happening to my friends, the penguin and the cow?'

b. *La giraffa sta leccando la mucca, e il coniglio al pinguino lo sta grattando.*

The giraffe is licking the cow and the rabbit to the penguin him-Cl is scratching

'The giraffe is licking the cow, and the rabbit the penguin is scratching him.' (O. 5;02)

3.6.2. Types of passives

Passive was the most typical answer in adults, who seldom relied on the use of CLLDs, but it was also present in some of children's productions, even though to a much lesser extent (cf. Table 1).

As for children, passive amounted to the 9% of the production in the first condition and 11% in the second condition, exclusively consisting of *si*-causative passives (98%) and only one *venire* passive (2%).

In adults' production, we found the opposite pattern since the passive was predominantly periphrastic (78%) (with a preference for the auxiliary *venire* 'to come,' 69%).

Despite this difference in the type of passive structure produced, both adults and children preferred passive sentences with null subjects in the one-topic condition (74% in adults, 92% in children, see Example 18). In contrast, in the two-topic condition, adults and children always resorted to lexical preverbal subjects (see Example 19):

(18) a. *Che cosa succede al mio amico, il bambino?*

‘What is happening to my friend, the kid?’

b. *Prima si fa vestire dal fratello e poi si fa pettinare dal nonno.*

‘First (he) gets himself dressed by his brother, and then (he) gets himself combed by his grandfather.’
(N., 5;00)

(19) a. *Che cosa succede ai miei amici, il coniglio e la formica?*

‘What is happening to my friends, the rabbit and the ant?’

b. *Allora, la formica si fa asciugare dalla rana e poi il coniglio si fa grattare dal gatto.*

‘So, the ant gets herself dried by the frog and then the rabbit gets himself scratched by the cat.’ (N., 5;00)

As this pattern equally emerged both in children and adults, it indicates that children correctly alternated between null subject and lexical subject as an effect of the discourse manipulation, in an adult-like manner. This guaranteed topic continuity in the one-topic condition and helped the identification of the two possible patient referents in the two-topic condition.

4. Experiment 2

In this second experiment, we further explored the acquisition of CLDs in the production of overt left-dislocated topics (DP₁-DP₂-Cl-Verb), in a situation of number mismatch between the two DPs (DP_{subj} plural and DP_{obj} singular), as in Example 20, adapting the design of the previous experiment:

(20) *Il cane i gatti lo lavano.*

The dog_{obj,sing} the cats_{subj,plu} him-Cl wash

‘The dog, the cats are washing him.’

By introducing the number mismatch between the subject and the object, we aimed at testing the potential role of number mismatch in the production of such structures (see Manetti et al. 2016).

4.1. Participants

We tested 37 typically developing Italian-speaking children ranging in age from 4;00 to 6;00 (MA = 60 in months; SD = 3.8 in months) recruited in a kindergarten of Florence and 20 adults (from 19 to 27 y.o.; MA = 22 y.o.), recruited at the University of Siena. One child was excluded as she did not complete the session (hence we included 36 children in the analysis).

4.2. Method and materials

In Experiment 2 we adapted the design and the material from Experiment 1 to the number mismatch condition between the two DP arguments of each verb, with a plural subject (e.g., two bears) and a singular object (e.g., one elephant). See Figures 3 and 4.

The one-topic condition presented one topic patient (Final question: *Che cosa succede al mio amico, l'elefante?* ‘What is happening to my friend, the elephant?’; see Figure 3c), and the two-topic condition presented two topic patients (Final question: *Che cosa succede ai miei amici, il coniglio e la*

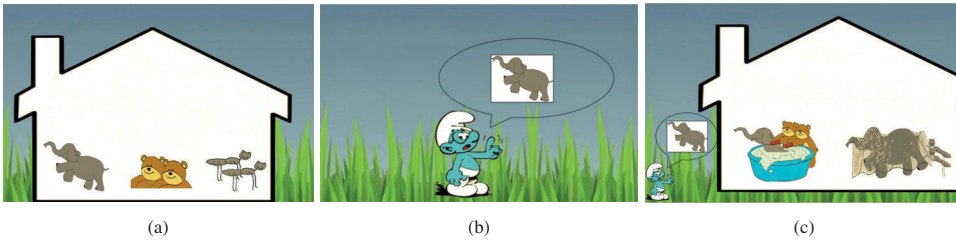


Figure 3. Experimental trial of the one-topic condition (one topic patient: the elephant).

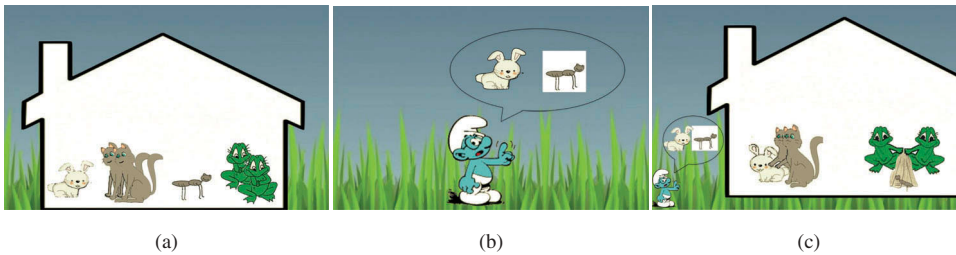


Figure 4. Experimental trial of the two-topic condition (two topic patients: the rabbit and the ant).

formica?, ‘What is happening to my friends, the rabbit and the ant?’; see Figure 4c). Recall that each question elicited an answer containing the description of two separate events, depicted on the third slide (inside the house).

Based on the results of Experiment 1, in the first condition, we expected to elicit Subject-Clitic-Verb structures (e.g., *Gli orsi lo lavano*/The bears him-Cl wash; see Figure 3c) with no explicit mention of the object topic. In the second condition, we aimed to elicit full CLDs, with an overt left-dislocated object, for instance in the form of DP_{Obj} - DP_{Sub} -Cl-V (e.g., *Il coniglio i gatti lo accarezza*/The rabbit the cats him-Cl caress; see Figure 4c). This expectation holds for children only, given that for adults we expected to observe the production of passives (see also footnote 9).

4.3. Coding criteria

We followed exactly the same coding criteria as in Experiment 1; see section 3.3 for details.

4.4. Results

Table 3 reports the results for each condition shown by groups (children vs. adults), including 570 utterances produced by children and 318 by adults.

In the present experiment, the difference between adults’ and children’s production is sharp: Children overwhelmingly answered with Pronoun structures in the one-topic condition (89%) and with CLDs in the two-topic condition (64%); virtually no passives were produced (1%). As expected, adults answered with passive sentences in both conditions (59% and 58%)¹¹ and made use of some Pronoun structures in the one-topic condition (23%). Once again they produced virtually no CLDs in the two-topic condition (3%). Both children and adults produced some ‘Other’ responses. Whereas the amount of ‘Other’ in adults was comparable to the one of Experiment 1 (see Table 1 and footnote 7), in children it decreased: a result most likely related to the concomitant increase of CLDs in Experiment 2 (see sections 4.6.1 and 5.2).

¹¹Overall, adults preferred the periphrastic passive with the auxiliary *venire* ‘to come’ (81%), as in Experiment 1 (see section 3.6.2.).

Table 3.. Children's and adults' productions after questions in the one-topic and two-topic conditions.

	Children		Adults	
	One-topic condition	Two-topic condition	One-topic condition	Two-topic condition
Pronoun	253 89%	37 13%	36 23%	6 4%
CILD	11 4%	182 64%	0 0	5 3%
Copular/ <i>venire</i> passive	0 0%	0 0%	88 55%	83 52%
<i>Si</i> -causative passive	1 0%	2 1%	7 4%	10 6%
Other	19 7%	65 22%	28 18%	55 35%

4.5. Analysis of main results

Differently from Experiment 1, in Experiment 2 children only resorted to Pronoun and CILDs and no passives. Parallel to Experiment 1, the use of Pronoun with no overt topic and CILDs with overt expression of left-dislocated topics varied across conditions: Pronoun structures were more often used in the one-topic condition (253/290, 88%), whereas CILDs (with overt expression of the object topic) more frequently appeared in the two-topic condition (182/193, 94%).

We now analyze whether the use of Pronoun versus CILD significantly varied across conditions. We ran logistic mixed effect models (Jaeger 2008) using the software R (R Development Core Team 2008) and the lme4 package (Bates et al. 2015). The dependent variable was the production of clitic structures with no overt versus overt left dislocated topics (Pronoun = 0; CILD = 1); the fixed effects were Topic condition (one topic patient vs. two topic patients) and age group (4-year-olds: 4;00–4;11 vs. 5-year-olds: 5;00–6;00). We also included random effects by items and by subjects. The final best-fit model, reported in Table 4, only includes Topic condition as the fixed effect, and the age group factor was not included as it did not improve the model; by-items and by-subjects random intercepts and the random slope parameter were added for Topic condition for subjects only.

To summarize, the analysis showed a significant main effect of *Topic condition*, confirming that children were more likely to produce a CILD with an overt left-dislocated topic in the two-topic condition, when the question presented two distinct topic patients. In line with Experiment 1, 4- and 5-year-old groups did not differ in the production of such structures.

4.6. Detailed description of the results

4.6.1. Types of CILDs: Nature of the subject and types of left-dislocated objects

Children produced 193 CILDs, of which 80% were in the form of (a)DP_{Obj}-Clitic-Verb with a plural null subject, as shown in Example 21. In the remaining CILDs, the subject was either preverbal (12%, see 22a)¹² or postverbal (8%, see 22b); (cf. footnote 10). As for the left-dislocated object, as already emerged in Experiment 1, it was often introduced by the preposition *a* (*a*-Topic: 138 CILDs, 72%; the remaining 28% were Simple Topics).

Table 4.. Linear mixed-effect model on the production of *Pronoun* vs. CILD in children.

	Estimate	Std. error	z-value	Pr(> z)
(Intercept)	-4.8030	0.6776	-7.088	< .0001***
Topic condition	8.4507	1.0137	8.336	< .0001***

¹²The subject preceded the object in 29% of CILDs (7, S-O-cl-V) and followed the object in the 71% (17, O-S-cl-V). (cf. footnote 9).

- (21) a. *Il coniglio l'accarezzano.* (B. 4;07)
 the rabbit_{obj} *pro*_{plu} him-Cl caress
 'The rabbit, they are caressing him.'
- b. *Al re lo pettinano* (C., 5;03)
 To the king *pro*_{plu} him-Cl comb
 The king, they are combing him
- (22) a. *Al pinguino i conigli lo stanno grattando.* (T. 5;05)
 To the penguin the rabbits him-Cl are scratching
 'The penguin, the rabbits are caressing him.'
- b. *Il cane lo stanno lavando i gatti.* (M. 4;06)
 The dog him-Cl are washing the cats
 'The dog, the cats are washing him.'

When the subject was lexical and preverbal, the object was nearly always an *a*-Topic (88%, 21/24); whereas when the subject was null or postverbal, children still preferred the use of an *a*-Topic (117/169 = 69%), but we also found 52 sentences in which the object was uttered as a Simple Topic (52/169 = 31%): This distribution of *a*-Topics and Simple topics stands in line with the results of Experiment 1, as well as the fact that the object of a transitive verb was never preceded by the preposition *a*/'to' in children's SVO sentences.

4.7. Summary of the experiments

The main and new result in both experiments is that children made use of CILDs with overt expression of the left-dislocated topic under the appropriate discourse condition, specifically when the question presented two distinct topic patients (two-topic condition). Interestingly, the production of CILDs differed across the two experiments.

Experiment 2 (number mismatch) led to a larger number of CILDs (64% in the two-topic condition), in contrast to Experiment 1 (number match), which instead led to a more restricted production of CILDs (25% in the two-topic condition).¹³

Additionally, in Experiment 2 children mainly produced CILDs with a null plural subject (80%, e.g., *(A)l coniglio lo accarezzano*/'(To) the rabbit, they are caressing him'); whereas in Experiment 1 CILDs more often presented a preverbal lexical subject (64%, e.g., *Al coniglio l'orso lo veste*/'To the rabbit, the bear is dressing him.'). Table 5 summarizes the ratio of these types of subjects in the two experiments (the remaining subjects, not reported in the table, were either postverbal or a few singular null ones in Experiment 1, see footnote 10).

The selection of null versus lexical subjects in the CILDs and the role of the number mismatch will be discussed in detail in the discussion section (cf. 5.2).

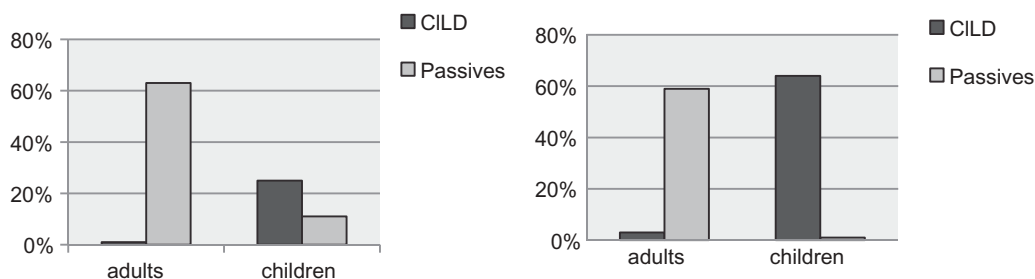
Table 5.. Types of subject in CILDs.

	Null plural subject	Preverbal lexical subject
Experiment 1	12%	64%
Experiment 2	80%	12%

¹³The larger number of CILDs in Experiment 2 also reflects the larger number of children producing the structure (89%) compared to the more restricted group of children producing CILDs in Experiment 1 (47%).

Table 6.. Percentage and number of CILD and passive produced by children in the two-topic condition (cf. Table 1, Table 3).

	CILD	Passive
Experiment 1	25% (72)	11% (32)
Experiment 2	64% (182)	1% (2)

**Figures 5 and 6.** Children's and adults' main choices in Experiment 1 and Experiment 2.

Use of passive was low in Experiment 1 (up to 11%) and virtually absent in Experiment 2 (1%), in which the most produced structures were CILDs (64%). Table 6 summarizes children's production of CILDs and passives comparing the two experiments in the two-topic condition.

Finally, in adults' answers, no relevant differences emerged between the experiments, since in both cases the preferred structure produced was the passive. Figures 5 and 6 illustrate children's and adults' main choices in Experiment 1 and Experiment 2.

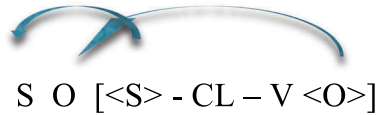
5. General Discussion

In this section we discuss what we take to be the most salient results of our experiments and their theoretical implications. We will focus on children's productions of CILD and passives, the way children realized these structures, as well as how children's results compare to adults' results.

5.1. Children's mastery of left peripheral topic positions (and other discourse-related positions)

One main result of our study is that children know how to access the left peripheral topic position (s) of the clause and use this position appropriately. Specifically, they use overt preposed object Topics in CILDs in the two-topic condition and simple Pronoun with no overt expression of the topic in the one-topic condition of both Experiments 1 and 2. Children also show that they know the new information value of the verbal constituent of the clause, as their answers are informative and the new information provided concerns the verb. As for the status of the preverbal subject in the number match condition of Experiment 1, in the order $DP_{\text{subj}}-DP_{\text{obj}}-Cl-V$ the subject is clearly also left dislocated and fills a topic position in the left periphery that is higher than the one occupied by the object:¹⁴

¹⁴On the possibility of iterating topic positions in the Italian left periphery, see the original discussion in Rizzi (1997). On the possibly different discourse value of the different topic positions, see Bianchi & Frascarelli (2010) and Frascarelli & Hinterhölzl (2007). See Manetti et al. (2016) on the possible relevance of Frascarelli & Hinterhölzl's (2007) distinction in the comprehension of these CILD by adults. In the interest of clarity, in the following discussion we will assume that both positions iterate topics of the same type in the children's grammar (see also footnote 19 and the following).



(23)

Making the subject a left peripheral topic may be appropriate in our experimental setting, since the subject is also given in the presentation of the characters. It could thus be treated as a further topic, even if it is not the argument on which the question bears (see also [section 5.4](#)). Instead, the argument the question is about is the patient. The patient is thus necessarily a topic. Since the eliciting question explicitly refers to the object patient only, it is not surprising that the subject is not always treated as a topic in the answer but rather as a regular preverbal subject filling the clause internal subject position and thus expressing a simple “aboutness” interpretation (Rizzi 2005, Forthcoming and the further discussion of this point in [Section 5.4](#)). CLDs with the order DP_{obj} DP_{subj} Clitic Verb can thus be amenable to either one of the following analyses: In Example 24 the subject is in a topic position below the proposed object; in 25 it remains clause internal:

(24)



or

(25)



Note that the exact position of the subject cannot be explicitly determined in standard Italian, as the resumptive pronoun of a left dislocated topic subject as in Example 24 would be a silent *pro* (similarly in 23), the closest analogue to complement clitics in Italian (Cardinaletti 2004).

Putting the question of the precise status and position of the preverbal subject on the side for now in the order DP_{obj} DP_{subj}, one crucial aspect of our results is that, taken together, they allow us to conclude that at age 4 children have developed an appropriate use of the topic position(s) in the left periphery and of the syntax of CLD, including the obligatory presence of the accusative resumptive clitic in the clause following the left dislocated object topic (Cinque 1977, 1990).

On the discourse/information structure side, as already noted, children overtly express the object topic in CLDs when it is appropriate to do so, as in the two-topic condition (of both experiments). This is a first clear result of the acquisition of the cartography of discourse-related left peripheral positions, such as topic positions.

As mentioned, Pronoun structures (with no overt expression of the topic) and CLD structures involve a new information focus verbal constituent in the clause. To the extent that new information focus is represented in a dedicated position in the low periphery of the clause (Belletti 2004 and reference cited there), these results also clearly indicate that children at age 4 properly master the

discourse value of this low area of the clause and its syntax (Belletti & Guasti 2015, chapter 7). Clearly, children's CLDs are informative answers both as far as the interpretation of the topic is concerned and as for the new informative status of the verbal constituent.

5.2. How children deal with the intervention configuration: The role of fRM in discourse-appropriate CLDs

As discussed in the introduction, CLDs of the type DP₁-DP₂-Cl-V give rise to an intervention configuration, no matter to what interpretation the order of the two DPs may correspond, i.e., DP_{subj}-DP_{obj}-Cl-V or DP_{obj}-DP_{subj}-Cl-V. The main result of our study differs across the two experiments: In Experiment 1 (number match of the two DPs) in their CLDs, in the two-topic condition, children mostly used an *a*-Topic to express the preposed direct object (cf. Example 15), and the preposing of the direct object as a Simple Topic was extremely limited. In these structures children produced a preverbal lexical subject, as was appropriate in the discourse conditions of the experiment in order for their answers to be fully informative.¹⁵ In Experiment 2 (number mismatch of the two DPs) the overwhelming majority of children's CLDs had the subject realized as a null plural subject (80%, 154/193; cf. Examples 21 and 27c), with the preposed object realized either as an *a*-Topic or as a Simple Topic. At the age of the experiments children are known to properly master use of lexical versus null referential subjects (Belletti & Guasti 2015; Manetti 2017), depending on discourse conditions: Our results of Experiment 1 confirm this ability: Children mainly used overt lexical subjects as this allowed for the answer to be completely informative as to what character performed a given action on the object topic patient. This in turn clearly suggests that the most natural interpretation of the null pronominal subject present in several children's productions in the CLDs of Experiment 2 should not be a referential interpretation. It should rather count as a generic one.

That a null plural pronominal has access to a generic interpretation is a possibility allowed in several languages, including standard Italian. A plural generic null subject is compatible both with a singular and with a plural referent. So, a sentence like 26a in Italian can be felicitously continued either as in 26b or as in 26c:

- (26) a. *pro_{pl} Hanno bussato*
 (they) have knocked at the door
- b. *Deve essere Gianni*
 (it) must be Gianni
- c. *Devono essere gli invitati*
 (they) must be the guests

In their answers using a null plural pronominal subject in the given experimental conditions, children adopt a discourse strategy similar to the one illustrated in 26a: They use a plural null subject in its generic interpretation, i.e., they are not specific about the referent of the subject, which in all of the relevant stimuli happened to also be plural. Hence, with this type of answer, children have been completely informative about the topic of the question, the preposed object, and have remained vague about the subject of the following sentence. These answers were anyway felicitous, as the

¹⁵In few of their CLDs children used a postverbal lexical subject or a null subject. In both cases the answer is not completely appropriate: in the former case because the subject should not count as new information in the answer as it is one of the introduced characters; in the latter because it should be overt as it cannot be distinguished from the other subject if it is not pronounced. The fact that the only inappropriate children's answers concern the position (postverbal) and nature (null) of the subject suggests that the presence of the lexical preverbal subject is particularly hard to handle by children in the CLD configuration. This conclusion is consistent with the account in the text and does not run into conflict with the general early mastery of position and nature of subjects by young children previously mentioned in the text and in the following.

question was specifically about the object. So, once again, children display a discourse felicitous behavior. One can speculate that, possibly, the presence in Experiment 2 of a plurality of subjects (two characters performing the action in each stimulus) has somehow primed resorting to the plural generic null subject for children. Indeed, this option was only seldom used in Experiment 1 (cf. section 3.6.1, footnote 10), where the referent of the subject was always a singular character in the stimuli and the subject was mostly overt in children's CLDs answers, as discussed. Be that as it may, one interesting question to ask is why children have so overwhelmingly relied on the generic plural null subject, the clearly preferred option in their CLDs in Experiment 2.

Before proposing an account for this and more generally for the articulated children's behavior, let us remember a further critical result of our experiments, i.e., the frequent realization of the preposed object in the form of an *a*-Topic. Recall, first of all, that *a* + DP (DP = patient) in the answer was not primed by the eliciting question, which was formulated as, i.e., 'What is happening to my friends, the rabbit and the ant?' precisely to avoid a repetition effect in the answer: Hence, the *a*-Topic does not constitute a simple repetition of the PP just heard by the child.

For reasons of space and in order not to divert too much the main focus of our discussion, we do not develop here a detailed analysis of the syntax and interpretation of *a*-Topics in child Italian nor of their marginal possibility in adult Italian (see Belletti Forthcoming and references cited therein for further elaboration). We only point out here that *a*-marking of object Topics is a property of the Italian left periphery, which correlates with a peculiar interpretation of the preposed object Topic itself, which we characterize as an affected interpretation. This left peripheral marking is not an isolated property of Italian but is shared by other languages as well, a close one being Spanish, which makes use of the same preposition and in which *a*-marking has been shown to correlate with topicality: *A*-marking is obligatory with all direct objects when they are clitic left dislocated, even in those cases in which it is not obligatory in clause internal direct object position (Spanish being a DOM language in which direct objects are generally marked with *-a-* also clause internally; see Leonetti 2004 for discussion.¹⁶) As noted, *a*-Topics were mainly overtly realized in Experiment 1 when the subject of the following clause was generally overt, lexical, and preverbal. In other words: the presence of an *a*-Topic correlates with the preverbal position and with the lexical nature of the subject (see section 3.6.1).¹⁷ Recall that in these configurations, the subject counts as an intervener in the establishment of the dependency between the preposed object in the left peripheral topic position and its merge position within the clause (cf. Section 2). We want to propose that both the significant presence of *a*-Topics in the described structural conditions of Experiment 1 and the overwhelming recourse of null plural subjects in Experiment 2 can find an account within the fRM approach, as developed in Friedmann, Belletti & Rizzi (2009) and Belletti et al. (2012).

Example 27 summarizes the main results of Experiments 1 and 2, relevant to the present discussion. For Experiment 1 it puts together both orders DP_{obj}-DP_{subj}-Cl-Verb and DP_{subj}-DP_{obj}-Cl-Verb present in children's productions, as the different order does not change the intervention configuration as discussed (in both conditions; see also footnote 19). For Experiment 2, both *a*-Topics and Simple Topics are grouped together, as there is no difference in children's realization of the topic depending on the nature of the subject since the subject is overwhelmingly the generic plural null subject in Experiment 2:

(27) Children's CLDs

Experiment 1 (Number match condition)

a. O_{lex} S_{lex} Cl V <_>//S_{lex}O_{lex}Cl V <_>

(6/81, 7%) O = Simple Topic-S/lexical

¹⁶See also Escandell-Vidal (2009) on Balearic Catalan in which *a*-marking only concerns left-dislocated objects in a way that closely corresponds to the distribution found in the Italian developing children, who are thus adopting a possible grammatical option as is typically the case in stages of acquisition (see Belletti Forthcoming and references cited therein for some speculation on the possible innovation that this type of children's productions may lead to in Standard Italian, as happened in previous stages of, e.g., Spanish and Japanese).

¹⁷*a*-Topics are evenly distributed in the few cases in which the subject was either a null referential third person singular pronominal or a postverbal one (cf. section 3.6.1).

Il cane il gatto lo morde.

The dog the cat bites him-Cl

b. $aO_{lex} S_{lex} Cl V <_>/S_{lex} aO_{lex} Cl V <_>$ (46/81, 57%) O= *a-Topic-S/lexical*

Il gatto al coniglio lo tocca

the cat (to) the rabbit touches him-Cl

Experiment 2 (Number mismatch condition)

c. (a) $O_{lex} [pro_{pl} Cl V_{pl} <_>]$ (154/193, 80%) O= (a) *Topic-S/pro_{pl}*

(Al)l'orso lo lavano

(to) the bear (they) wash him-Cl

According to Friedmann, Belletti & Rizzi's (2009) approach and its further elaboration in Belletti et al. (2012), a nominal feature [+NP] is present in the feature composition of a lexically restricted DP, and such nominal feature is relevant for the computation of long-distance dependencies, which are constrained by the fRM locality principle. Thus, given a fRM configuration as in Example 28:

(28) X Z Y

The features shared by X (target) and Z (intervener) can give rise to different types of relations expressed in set theoretic terms: Identity, Inclusion, Intersection, Disjunction. The establishment of the dependency between X (the target) and Y (the origin) is modulated according to the chart in Example 29. Whereas Identity in relevant features is excluded by both children and adults and Disjunction is available for both, there is development in the proper computation of the intermediate relation of Inclusion, which is excluded by young children but is possible for adults (Starke 2001, Rizzi 2004). As for Intersection, this relation appears to be properly mastered by young children (and also by adults).¹⁸

(29) fRM in children and adults:

	X	Z	Y	Children	Adults
Identity	+A	+A	<+A>	*	*
Inclusion	+A +B	+B	<+A+B>	*	ok
Intersection	+A+B+C	+B+D	<+A+B,+C>	ok	ok
Disjunction	+A	+B	<+A>	ok	ok

(A, B, C, D abstract features relevant for the principle)

With this background in mind, we can now directly interpret the results reviewed in this section and summarized in Example 27 along the following lines. The CLDs structures that are seldom

¹⁸The conclusion is based on Belletti et al.'s (2012) results on the effect of gender mismatch in enhancing the comprehension of Object relative clauses in Hebrew. The main result of that work is that gender is a feature relevant for the computation of fRM in Hebrew but not in Italian. An Intersection relation of relevant features is created in Hebrew Object relatives in a gender mismatch condition but not in Italian, enhancing the comprehension of Object relatives in the former language but not in latter. For further details on the implementation of fRM in these terms and its relevance to interpret development, see Friedmann, Belletti & Rizzi (2009), Belletti et al. (2012), Bentea (2016), and Guasti, Branchini & Arosio (2012). For an original related approach in terms of the grammatical principle fRM to account for impaired computations of object long-distance dependencies in aphasic patients, see Grillo (2008); Friedmann, Yachini & Szterman (2015) on the relevance of the approach in the production of Object relatives in the SLI population; Belletti & Rizzi (2013) on the relevance of the principle in adult processing; Friedmann, Rizzi & Belletti (2017) for recent further illustration on the (lack of) role of Case. On the role of the feature number in creating an intersection relation enhancing the comprehension of CLDs in Italian, see Manetti et al. (2016).

present in children's productions (7%) are those where the intervention configuration gives rise to the Inclusion of the nominal feature [+NP] as both the left dislocated object and the preverbal subject share the [+NP] feature, as illustrated in Example 30:¹⁹

- (30) (7% of CLDs) **Inclusion**
- Il cane il gatto lo morde
 +Top +NP +NP
 The dog the cat bites him-Cl

Children's CLDs use an *a*-Topic modulate intervention by adding a feature to the preposed object Topic, which is realized through *a*. For concreteness, let us call this feature an affected feature, following the brief previous discussion (and the reference quoted there). Let us dub it [+a]; a Simple Topic or a nontopic noun phrase will be [+u], i.e., it will be marked as being unaffected.²⁰ As illustrated in Example 31, in CLDs in which the intervention configuration is created between the left peripheral object in Topic and the intervening lexical subject, both [+NP], use of an *a*-Topic changes the Inclusion relation to one of Intersection, the type of relation that children have been shown to master well (cf. footnote 18). These structures are mastered rather well by children, as indicated in 27b of the summary chart (57%), clearly significantly better than those involving Inclusion (7%), see (27a/30):

- (31) (57% of CLDs).. **Intersection**
- a. *La giraffa alla mucca* __ *la sta leccando*__
 +Top +NP +u +Top+NP +a
 the giraffe to the cow her-Cl is licking
- b. *Al re il bambino* __ *lo sta pettinando*__
 +Top +NP +a (+Top)²¹ +NP +u
 to the king the boy him-Cl is combing

The summary chart in Example 27 indicates that the overwhelmingly preferred CLD structure for children in their CLDs is the one in which the left-dislocated object may or may not be introduced by *a*, but the subject is systematically a null plural pronominal subject with the generic interpretation associated to it. The fact that the topic may or may not be an *a*-Topic suggests that children may or may not interpret it as affected in the relevant sense, both interpretations being allowed in the experimental conditions. The crucial property of these frequent children's productions is then the presence of the null generic subject in the clause following the left dislocated Topic. Let us assume that this null subject is a silent *pro*_{pl} with the generic interpretation. Since it is pronominal, it is not, by definition, lexically restricted, as there is no lexical description associated with a pronominal

¹⁹The subject can also be left dislocated in DP₁-DP₂-Cl-V, as discussed in 5.1 and illustrated in Examples 23 and 24. If the two topic positions are treated as different (see footnote 14), with the highest one endowed with a further feature, the structure would still instantiate the Inclusion relation, the hard relation for children. See Manetti et al. (2016) for discussion along these lines, in the spirit of Frascarelli & Hinterhölzl (2007) and Bianchi & Frascarelli (2010). Alternatively, children may not differentiate the two topic positions as assumed here for the sake of simplicity (see footnote 14; see also the following structure in Example 31). If this were the case, the structures would reduce to a case of Identity (with both DPs endowed with the same Top and NP features).

²⁰As shown in Costa et al. (2014) on PP relatives in EP and Hebrew, the categorical distinction DP vs. PP cannot be considered the relevant distinctive factor, as PP relatives are as hard for children as (direct) Object relatives, despite presence of the Preposition in the former case.

²¹The feature +Top is indicated in parenthesis since, as discussed, with this word order the subject could be either left dislocated or fill the subject position within the clause (cf. section 5.1). The fact that the relevant feature for fRM is lexicalized through the preposition *a* may make the intersection relation more readily available to children. Thanks to one reviewer for suggesting this possible supplementary factor.

element in general and *a fortiori* with a null pronominal. Hence, it does not contain the feature [+NP] in its feature composition. We take this to be the crucial property accounting for the much-preferred use by children of CLDs with an overt Topic and the silent *pro*_{pl} as the subject of the following clause. Since there is no [+NP] feature associated with *pro*_{pl}, even if the [+NP] feature is associated with the left-dislocated lexically restricted object, no relation of Inclusion is ever created, hence the preposed object and the subject remain in a relation of Disjunction as far as this critical feature is concerned. Disjunction is the relation that is mastered best, by both children and adults. The relevant configuration is given in Example 32:

(32) (80% of CLDs) **Disjunction**

(al) *La giraffa [pro_{pl} la lavano <_>]*

+Top +NP

(to) the giraffe (they) wash it

As the subject is not lexically restricted, the structure is fully mastered by children: 80% of children's CLDs has this form, thus further confirming the crucial role of the [+NP] feature for fRM.²²

Finally, we also point out that the number mismatch condition of our Experiment 2 led to the widespread production of CLD structures of the form $O_{lex} [pro_{pl} Cl V_{pl} <_>]$ just discussed, with the plural null generic pronominal subject. As the lack of the [+NP] feature on the pronominal subject shown in Example 32 plays the described crucial role, we cannot determine whether the null nature and the plural number of *pro* also play any role in the mismatch condition of Experiment 2. As for the feature number, the mismatch in both number and lexical restriction in children's productions in the experimental conditions may play a cumulative role in facilitating children's performance in the straightforward way that the production results indicate. We leave this as an open question in need of further investigation together with the possible role played by the non-overtness of null generic *pro*.²³

5.3. Different types of passives in children and adults; Plural (generic) null subjects as an alternative to passive in children

Overall, children produced relatively few sentences in which the topic patient of the question formulated in the active voice is the subject of their answer formulated in the passive voice (up to 11% in Experiment 1). In contrast, this was the preferred answer produced by adults (about 60% in both experiments). We delay until the following section a closer discussion of how much (and possibly why) children's and adults' CLD responses differ. We first consider here how children's and adults' answers compare when they are formulated in the passive. Two aspects of our results should be highlighted:

- (i) All passive answers produced by children were passives in the causative voice, i.e., *si*-causative passives like *il pinguino si fa lavare dal gatto* 'the penguin makes himself-CL wash by the cat.' Some *si*-causative passives have also been produced by adults, but the

²²These children's data on the production of CLDs in Italian share close resemblance with data on children's comprehension and production of Object relative clauses in Hebrew presented and discussed along similar lines in Friedmann, Belletti & Rizzi (2009). Hebrew, similarly to Italian, has a generic plural null subject, and use of such a generic plural null subject significantly enhanced children's comprehension and production of the otherwise hard-headed object relatives.

²³The likelihood of a cumulative role played by the feature number comes from the consideration of previous comprehension results (see Manetti et al. 2016, footnote 18), which reported that the number mismatch condition did significantly enhance children's comprehension of the CLD structures, which had both the left-dislocated direct object and the subject in the following clause realized as lexical noun phrases, hence both [+NP] (of the type: *Il pinguino, i gatti lo lavano* 'the penguin the cats him-CL wash'), in line with the fRM approach.

majority of adults' passives were copular passives or passives using the auxiliary *venire* 'come,' a possible option in Italian in our experimental conditions.

- (ii) In Experiment 2 adults' passive answers contrast with children's use of CLLDs with a null pronominal subject with the generic interpretation. As the latter production is very robust since it reaches 80% of children's CLLDs, a closer comparison with the adults' passive answers is called for.

As for point (i), our new results confirm those of previous studies whereby *si*-causative passive appears to be the type of passive that Italian-speaking children access first in their development and that they seem to privilege somewhat despite its relative rarity in the input (see Belletti 2017 for closer discussion of this poverty of the stimulus issue).²⁴ Our results are particularly striking in this respect, as the only passives that children have produced are *si*-causative passives. A detailed elaboration of the possible reason(s) as to why *si*-causative passive should have this privileged status in development would take our discussion too far afield. Here we just list three of the factors discussed in the relevant literature that may converge in making this type of passive early mastered by children:

- (a) Overtness of the causative morpheme (Manetti & Belletti 2015), the verb *fare*, may provide a clearly visible head attracting movement of a chunk of the verb phrase, thus triggering the *smuggling* operation along the lines of Collins (2005), which is a crucial step in the passive computation. This step is probably somewhat costly for children otherwise (Snyder & Hyams 2015 for a related generalized freezing approach).
- (b) Next to the overtness of *fare*, its causative value may constitute a further clear indication that a complex event leading to a change of state is at play in the described situation; the causative voice may thus provide a crucial interpretive ingredient yielding to the passive computation along the lines proposed in Gehrke & Grillo (2009).
- (c) The presence of the reflexive *si* morpheme may also contribute to triggering the necessary computation (Belletti forthcoming). Whatever the precise characterization of the crucially relevant properties of the *si*-causative passive turn out to be, the interesting conclusion that we want to highlight here is that our new experimental results are completely consistent with previous findings in confirming early access to *si*-causative passive in young children.

As for point (ii), we point out the existence of a very tight relation between sentences in the passive voice and active sentences containing a null plural subject interpreted as generic. Specifically, Italian speakers rate sentences like Example 33 as being equally felicitous in the discourse conditions of our Experiment 2:

- (33) a. *Il cane viene lavato (dal gatto).*
 the dog comes washed (by the cat)
 'The dog is being washed (by the cat).'
- b. *Il cane lo lavano.*
 the dog_{obj} *pro* him-Cl wash
 'The dog, (they) are washing him.'

Moreover, there are languages in which passive is not a very productive structure. In such languages, the equivalent of sentences like 33b is preferred to the equivalent of sentence like 33a

²⁴See Manetti & Belletti (2015) using the priming technique adapted from Messenger et al. (2008). See also Contemori & Belletti (2013) indicating use of *si*-causative passive structures in Passive Object Relatives/PORs (cf. section 2.2.).

by adult speakers and used as a readily available alternative to sentences in the passive voice.²⁵ Thus, it is natural to conclude that productions of sentences like 33b in our Experiment 2 can be seen as a way for children to produce a felicitous answer without implementing a passive computation. Thus, on the one side these productions indicate a dispreference for passive by the young children investigated (at age 4 to 6); on the other, they also indicate an appropriate felicitous type of answer in Italian that corresponds to passive in relevant respects.

5.4. *CILDs vs. passives: Children's and adults' answers may not differ in their discourse properties as much as they differ in their morphosyntax*

Let us concentrate once more on the comparison between children's CILD answers with adults' passive answers. The sentences produced by the two groups look very different. However, we want to submit here the proposal that they may in fact be closer than meets the eye.

Recall that the object patient is the main discourse topic of our experimental conditions: The prompting question concerns the object. In the two-topic condition of both experiments, which elicited a higher number of CILDs with the overt realization of the topic, it concerns two topics (i.e., What happens to my friends, the rabbit and the ant?). In children's CILD answers, these topics are properly preposed in the topic position of the left periphery in all of the produced CILDs, with a resumptive clitic in the following clause. In the CILD answers of Experiment 1, children also typically produced an overt lexical subject (27a, 27b), thus being completely informative. In Experiment 2, they left the subject vague through the much-preferred production of a null generic plural subject in the clause following the topic (27c), which we have considered close to a passive type answer in the previous section.

Thus, children are completely felicitous as for the way in which they deal with the left-dislocated object Topic: They put it in the left peripheral topic position. The question that arises then is: Are they more discourse appropriate than adults, who do not seem to make the patient also a Topic in their passive answers, since they realize it as the subject which the sentence is about? A possible suggestion is that adults do in fact topicalize the patient of the question in their answer, the difference with respect to children being that they left-dislocate a subject and not an object. If this is the case, the resumptive pronoun in the following left clause corresponds to a silent null subject *pro* (the closest analogue to a resumptive clitic in a null subject language like standard Italian; see Cardinaletti 2004 and cf. section 5.1). Thus, both children's and adults' answers may, in fact, correspond to CILD structures as indicated in 34a, 34b and 34c respectively:

Children

(34) a. [Force ... [TOP *Al cane*]_i ... [Fin[TP *il gatto lo_i lava*.....

to-the dog the cat him-Cl washes

b. [Force ... [TOP *Il cane*]_i ... [Fin[TP *pro_{pl} lo_i lavano*.....

the dog (they) him-Cl wash

Adults

c. [Force ... [TOP *Il cane*]_i ... [Fin[TP *pro_i viene lavato <__>* dal gatto....

the dog - is/comes washed by the cat

If an analysis along these lines is on the right track, then children's and adults' answers are, in fact, rather close, in that the patient of the question is treated as the topic by both. This is a welcome

²⁵For instance, Hebrew appears to be a language with this type of distribution (Ur Shlonsky personal communication), as well as Greek (as one reviewer has pointed out).

The results obtained from the experiments are rich and varied. Thus we explored and discussed in some detail those aspects that we believe to be the main and most significant ones, which are the following:

- (i) Children made use of the left-peripheral topic positions already at age 4, under the appropriate discourse conditions.
- (ii) Whenever children relied on passive, they opted for the *si*-causative passive.
- (iii) As for the use of CLD, we observed that, first, children mostly expressed the left-dislocated object topic as an *a*-Topic (introduced by the preposition *a* 'to') when the subject of the sentence was lexical and preverbal; second, the majority of children's CLDs had plural null subject as the subject of the following sentence.
- (iv) Children's answers sharply contrasted with adults' in two fundamental ways: Adults uniformly answered to the patient-oriented question with a passive, and CLDs were virtually absent in their descriptions; moreover, the passive chosen by adults (mainly *venire* 'come' passive) differed from children's passive (exclusively *si*-causative).

We have analyzed the production of CLD in children in terms of fRM, and in particular we have focused on how children dealt with the intervention configuration arising in the CLD structure DP₁ DP₂ Cl V by resorting to featural relations between the two DPs that they are known to be able to handle well, such as intersection (in the case of recourse to object *a*-Topics) and disjunction (in the case of recourse to a null *pro*_{pl} subject interpreted as generic).

Toward the end of the article, we highlighted that, although children were fully discourse appropriate in their answers, they sharply differed from adults, and this divergence between adults and children may be due to children's avoidance of the passive computation at this particular age. We finally suggested that this apparent and sharp difference between adults and children may be less strong than it seems at first sight. By using a generic *pro*_{pl}, as they did overwhelmingly in the second experiment, children made the subject in their CLDs somewhat lighter in the relevant sense: This allowed them to deal with the intervention configuration, due to presence of an intervening lexical subject, in a drastic way by creating a featural disjunction situation. Moreover, by somehow demoting the subject, children's resulting sentences (DP_{obj} *pro*_{pl} Cl V) were mainly "about" only one topic referent, the topic patient, since the subject referent was left as generic and unpronounced. Our tentative suggestion is that children's reliance on the generic *pro*_{pl} strategy goes in the same direction as adults' use of passive, in which the answer to the patient-oriented question is about one single referent—the topic patient, which, given our proposed analysis, in the passive happens to be both the topic and the subject of the sentence.

A fairly complex and variegated array of results found a rational and a relatively simple interpretation in terms of the formal grammatical constraints and computational mechanisms assumed, combined with the fine characterization of relevant discourse conditions, for both Italian-speaking children and adults.

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Appendix

Eliciting questions in Experiment 1, corresponding to Figure 1 and Figure 2

Eliciting question (one-topic condition)	Event 1	Event 2
<i>Che cosa succede alla mia amica, la gatta?</i> 'What happens to my friend, the cat?'	cow licking cat	hedgehog caressing cat
'What happens to my friend, the elephant?'	bear washing the elephant	ant covering elephant
<i>Che cosa succede al mio amico, l'elefante?</i>		
<i>Che cosa succede al mio amico, il bambino?</i> 'What happens to my friend, the kid?'	grandfather dressing kid	grandmother photographing kid
<i>Che cosa succede al mio amico, il bambino?</i> 'What happens to my friend, the kid?'	brother pushing kid	grandfather combing kid
Eliciting question (two-topic condition)	Event 1	Event 2
<i>Che cosa succede ai miei amici, il cane e l'orso?</i> 'What happens to my friends, the dog and the bear?'	cat washing dog	rabbit dressing bear
<i>Che cosa succede ai miei amici, il re e il principe?</i> 'What happens to my friends, the king and the prince?'	kid combing king	dwarf photographing prince
<i>Che cosa succede ai miei amici, il pinguino e la mucca?</i> 'What happens to my friends, the penguin and the cow?'	rabbit pushing penguin	giraffe licking cow
<i>Che cosa succede ai miei amici, il coniglio e la formica?</i> 'What happens to my friends, the rabbit and the ant?'	cat caressing rabbit	frog covering ant

Eliciting questions in Experiment 2, corresponding to Figure 3 and Figure 4:

Eliciting question (one topic condition)	Event 1	Event 2
<i>Che cosa succede alla mia amica, la gatta?</i> 'What happens to my friend, the cat?'	cows licking cat	hedgehogs caressing cat
<i>Che cosa succede al mio amico, l'elefante?</i> 'What happens to my friend, the elephant?'	bears washing the elephant	ants covering elephant
<i>Che cosa succede al mio amico, il bambino?</i> 'What happens to my friend, the kid?'	painters dressing kid	grandfathers photographing kid
<i>Che cosa succede al mio amico, il bambino?</i> 'What happens to my friend, the kid?'	brothers pushing kid	grandfathers combing kid
Eliciting question (two-topic condition)	Event 1	Event 2
<i>Che cosa succede ai miei amici, il cane e l'orso?</i> 'What happens to my friends, the dog and the bear?'	cats washing dog	rabbits dressing bear
<i>Che cosa succede ai miei amici, il re e il principe?</i> 'What happens to my friends, the king and the prince?'	kids combing king	dwarfs photographing prince
<i>Che cosa succede ai miei amici, il pinguino e la mucca?</i> 'What happens to my friends, the penguin and the cow?'	rabbits pushing penguin	giraffes licking cow
<i>Che cosa succede ai miei amici, il coniglio e la formica?</i> 'What happens to my friends, the rabbit and the ant?'	cats caressing rabbit	frogs covering ant