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(*a*-)Topics and animacy

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The aim of this paper is twofold: first, we intend to contribute to the debate on the identification of the features to which syntactic locality expressed in terms of the featural Relativized Minimality/fRM principle appears to be sensitive (Rizzi 2004; Friedmann, Belletti & Rizzi 2009); second, we aim at providing a better characterization of the distributional and interpretive properties of the process of *a*-marking in the Topic position of the Italian left periphery identified by syntactic cartography, in relation to (in)animacy (Belletti & Manetti 2019).

To these ends, we examined the role of animacy in a production experiment eliciting left dislocated topics with 5-year-old Italian-speaking children. To the extent that *a*-marking is related to a kind of affectedness of object topics (Belletti 2018a), we examined whether an inanimate left dislocated object could constitute a felicitous *a*-Topic. Furthermore, the question is directly addressed whether complexity effects in fRM configurations can be modulated in the animacy mismatch condition, with an inanimate left dislocated object and an intervening (animate) lexical subject in ClLDs. Our results show that, in the tested animacy mismatch condition, children seldom *a*-marked the pre-posed object. Instead, they appeared to creatively explore other solutions to overcome the production of the hard intervention structure, mainly using null subjects. As children are not ready to compute the intervention configuration with a lexical preverbal subject, but could not naturally adjust it through *a*-marking of the inanimate topic, they ended up opting for different types of productions in which intervention was eliminated. If the animacy feature seems to be implicated in the process of *a*-marking to some extent, it is not a feature to which the fRM principle is sensitive in building the object A'-dependency in ClLD: we conclude, in line with previous work, that animacy is not among the features implicated in triggering syntactic movement (in Italian).

1 Background and new research questions

The research questions addressed in this paper are directly generated by two related salient results presented and discussed in Belletti & Manetti (2019), which we summarize here.

In the aim of investigating aspects of the acquisition of different left peripheral positions by Italian-speaking young children, Belletti & Manetti (2019) (B&M, henceforth) designed an experiment eliciting the production of Clitic Left Dislocation/ClLD constructions, in which the left dislocated argument corresponds to the direct object filling a Topic position in the left periphery and a resumptive accusative clitic is present in the sentence following it. The eliciting question of B&M's Experiment 1 (two-topic condition), was of the type in (1a), eliciting an answer as in (1b): [1]

(1) a. Che cosa succede ai miei amici, il coniglio e la formica?
'What is happening to my friends, the rabbit and the ant?'

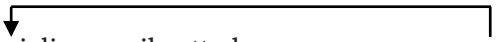
b. Il coniglio, il gatto lo accarezza e la formica, la rana la copre.
the rabbit the cat him.CL caresses and the ant the frog her.CL covers
'The rabbit, the cat is caressing it, and the ant, the frog is covering her.'

A most striking result of B&M was that young children very seldom answered as in (the expected) (1b) (7% of their ClLDs). This raised the question as to why it should be so. B&M have proposed an account in terms of the locality principle Featural Relativized Minimality/fRM (Rizzi 1990; 2004; Starke 2001), along the lines developed in Friedmann, Belletti & Rizzi (2009) and much related work (see Grillo 2008 for similar approach to aphasia; Martini et al. 2019 for further recent discussion of the approach in the domain of aphasia). Sentences like (1b) instantiate a structure that young children are known not to be able to compute: an object A'-dependency in which a lexical object is pre-posed across an intervening lexical subject, as illustrated by the arrow in (2) for the first ClLD sentence of (1b) only, for the sake of clarity. In (1b) the A'-dependency is a topicalization/ClLD structure, in which the pre-posed object is the topic, the argument the question in (1a) is about.

Let us summarize how the account goes in some detail. Following the system developed in Friedmann, Belletti & Rizzi (2009), the ClLDs in (1b) involve the inclusion of a nominal [+NP] feature shared by the pre-posed lexical object and the intervening lexical subject, which are both lexically restricted. Such relation of inclusion appears to require some time to develop. Hence, according to fRM, young children cannot build the dependency between the pre-posed

[1] The two-topic condition of B&M creates the discourse condition in which the left dislocated object topic is most likely present and overtly pronounced. Hence, the examples used here to illustrate the construction will be taken from this condition. B&M for detailed discussion. Both DPs, the lexical subject and the object, matched in number, and both were singular in Experiment 1 of B&M, as in the study to be presented here.

object and the object position in the clause due to the intervention of the lexical subject sharing the [+NP] feature with the lexical object in the left peripheral topic position. The features [+Top] and [+NP] attract the direct object in the target topic position in the left periphery; this yields inclusion of the [+NP] feature of the intervening lexical subject within the feature composition of the object topic, the target of displacement as illustrated in (2) (again for the first ClLD sentence of (1b) only). This is a hard, in fact virtually impossible, computation for young children:



(2)	Il coniglio,	il gatto lo	accarezza	__
	the rabbit,	the cat him.CL	caresses	
	[+Top +NP]	[+NP]		

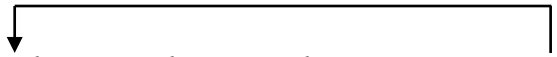
Thus, according to the described analysis, the fact that ClLD structures like (1b) are seldom present in young children's productions does not come as a surprise. In Friedmann, Belletti & Rizzi's (2009) approach assumed here, the inclusion configuration of features relevant for fRM is subject to development: it is hard/impossible to compute for young children, whereas it is accessible to adults (although it leads to slower parsing; for discussion see Gordon et al. 2001; Ortega-Santos 2011; Belletti & Rizzi 2013; Martini 2020 for recent overview).[2] As for the other set theoretic relations, disjunction of relevant features leads to a smooth computation for both adults and children, identity cannot be computed by both children and adults yielding to complete ungrammaticality, and intersection is adequately computed by children as well as adults.

A further salient result presented in B&M is represented by the type of ClLD that children produced in place of the expected (1b): the vast majority of their ClLDs with a preverbal lexical subject had the pre-posed lexical direct object topic marked with preposition 'a'(to) (88% of their ClLDs). Why should *a*-marking make a difference? Here the proposed analysis runs as follows. *a*-Marking has an effect on the feature composition of the pre-posed object topic, precisely due to the role of preposition 'a', which is analyzed as a marker that is possibly associated with the topic head in the Italian left periphery.[3] Specifically, 'a' adds a supplementary feature to the pre-posed

[2] According to this approach not any kind of inclusion relation should necessarily be hard for children, e.g. also outside the domain of grammar, but just the one concerning the features to which the grammatical principle is sensitive. Thus, the difficulty amounts to an ultimately computational complexity, that needs time to develop. See the reference quoted on this and, more recently, Rizzi (2018) for a thorough discussion of the developmental path that distinguishes different thresholds in children and adults in the mastery of feature inclusion. Within the latter group, different levels of difficulty are identified for the computation of the hard feature inclusion relation, depending on the nature of the grammatical features involved (i.e. criterial vs non-criterial).

[3] Belletti (2018b) for discussion as to why such marker should only be compatible with (direct) objects and not with subjects.

direct object, with the effect that it is not simply interpreted as a given topic. As for the nature of such feature, the proposal is put forth that it expresses a kind of affectedness so that the topic is interpreted as 'affected' by the event described in the clause following it. Furthermore, also an empathic point of view is possibly expressed through use of the preposition on the part of the speaker, who is the child describing the event in answering the question (Belletti 2018a; Belletti 2019a for the development of the proposal). Whatever the exact nature of the feature expressed through preposition 'a' in the left periphery, dumbed [+a] in the references quoted, within the spirit of the fRM approach described above, B&M have proposed that the feature added by 'a' has the effect of creating a different set theoretic relation between the pre-posed direct object and the intervening subject (carrying the feature +u/unaffected). The relation is one of intersection, a relation that children can compute as mentioned above, illustrated in (3).[4] (3) is the same ClLD as (2), the only difference being the presence of the marker 'a' on the pre-posed object topic ('Al coniglio'/ To the rabbit):



(3)	Al coniglio,	il gatto	lo	accarezza	__
	to the rabbit,	the cat	him.CL	caresses	
	[+Top +NP +a]	[+NP +u]			

Previous evidence has shown that intersection of relevant features is mastered well by young children (Belletti et al. 2012; Bentea & Durrleman 2018) and it is in fact a way that children can exploit to overcome the otherwise too hard intervention configuration of inclusion.

Given the empirical background summarized and the assumed interpretation of the main production results in B&M in terms of fRM along the lines just reviewed, new research questions are opened up. In what follows we indicate two that we consider the main and most significant ones, which will be addressed in the present work.

There is an overarching question implicitly raised by the material used in Experiment 1 from B&M illustrated above, which contained eliciting questions such as the one in (1a): the entire material used in the experiment contained animate characters (mainly animals). Hence, all the questions that concerned the direct object (e.g. What is happening to my friends, the rabbit and the ant? as in 1a), referred to an animate character. A fair question to ask then is whether the results would have the same overall shape if our experimental material contained inanimate objects instead. Specifically, this general question is twofold and can be divided in the two sub-questions that we formulate in detail in (4)Q1 and (5)Q2:

[4] B&M for details also taking into account the possible different order of the DPs in the left periphery, with the first DP subject and the second DP the object. See also Footnote 12.

(4) Q1: Does manipulation of the animacy of the object topic play a role in the building of the object A'-dependency across the intervening lexical subject? In particular: Does this manipulation lead to an increase in the production of answers through sentences like (1b) in which the ClLD contains a preverbal lexical subject and the lexical left dislocated object topic? From the theoretical point of view, this amounts to asking whether animacy is a feature to which the locality fRM principle is sensitive, in Italian. Since the fRM constrains movement related dependencies, the features relevant to the principle are those triggering syntactic movement, as discussed in detail in the references quoted and in much related work stemming from Friedmann, Belletti & Rizzi (2009).[5] Hence, this question amounts to asking whether animacy is a feature implicated in triggering syntactic movement. The movement investigated is movement to the Specifier of the Topic head position in the fine grained Italian left periphery designed by cartographic studies (Rizzi 1997; Rizzi & Bocci 2017 for recent overview).

(5) Q2: In order to better characterize the nature of the interpretation that *a*-marking adds to a pre-posed object topic, animacy suggests itself as a feature to put under test. In particular, this appears to be especially so if an affected and/or empathic interpretation is implicated in *a*-marking, as entertained above. Hence, the question here is: Does the inanimate nature of a pre-posed object topic decrease/eliminate the possibility of *a*-marking?

Questions (4) and (5) are independent but they are also interrelated: If the answer to (4)Q1 turns out to be negative, with manipulation of the animacy of the topic not leading to an increase in the production of the expected answers as in (1b), in which the pre-posed object is realized with no marker (Simple Topic from now on), this would mean that animacy is not a relevant feature for fRM, i.e. it is not among the features triggering syntactic movement (to Spec/Top) in Italian. If the answer to (5)Q2 is instead positive, the number of *a*-marked inanimate left dislocated topics should turn out to be significantly lower than in the animacy condition with animate left dislocated topics as in (3), thus implying that animacy is in fact a property to which *a*-marking is sensitive. To the extent that affectedness and empathy are components of the interpretation added to the pre-posed object topic through *a*-marking, this would be a fairly natural conclusion. However, such conclusion in combination with the negative answer just foreseen for question (4) Q1 would imply that, when the pre-posed topic is inanimate, the intervention configuration of the ClLDs elicited cannot be overcome through *a*-marking of the topic, yielding the intersection relation of relevant features illustrated in (3). This is why our two main research questions are potentially strictly interrelated. Indeed, our results to be presented here indicate that the answers to these questions are strictly interrelated in precisely the way just described.

[5] See Belletti & Chesi (2014), Martini (2018) and Martini (2020) for raising the same question concerning animacy in the production of object relative clauses. Differently from Belletti & Chesi (2014) and Martini (2020), we do not test here the four possible combinations of match and mismatch between the two DPs and in particular not the opposite combination animate object-inanimate subject. This is because we are interested here in testing the possible role of the animacy feature in the pre-posed object topic, the target of the dependency. Our aim is also to minimally compare the obtained new results with the previous findings of B&M, in which the subject was always animate.

A further possible answer to the eliciting questions of the experiment is a passive sentence, in which the topic is the subject, most likely a left dislocated subject resumed by a silent null subject *pro* (see Belletti & Manetti 2019: 24). In B&M, the passive answer was seldom selected by children, who instead preferred to clitic left dislocate the object in the active sentence. The 5-year-old group, however, did sometimes produce some passives, which were all realized in the form of *si*-causative passives.[6] A question that is then potentially raised by the new manipulation in the experiment presented here is whether inanimacy of the topic has an effect on the possible use of *si*-causative passives by children.

The paper is organized as follows. Section 2 describes the experimental design, which used exactly the same experimental conditions as in B&M, the one-topic and the two-topic conditions. In Section 2, we also present the results, which will be compared to the previous findings from B&M. Section 3 provides an overall discussion of the results, devoting special attention to both the way they answer our research questions in (4)Q1 and (5)Q2 and to the new questions they raise and the possible interpretations that we submit for them.

2 The study

2.1 Participants

A group of 18 monolingual children aged from 5;1 to 6;3 (MA = 5;7 y.o.; SD = 0.32) participated in the study.[7] Children were tested in a kindergarten in the area of Florence, Italy, and no developmental delay was reported on them. 15 adults (20 to 30 y.o., all monolingual Italian speakers from different regions) were also tested as controls.[8]

2.2 Method and Materials

The test consisted of an elicited production task adapted from B&M's design. The experimental conditions were two: in the one-topic condition the eliciting question was about one object

[6] In B&M, a passive answer was indeed the most typical answer by adults, up to 68%, and virtually no ClLDs were produced (n = 3; 1%). Adults typically produced *venire* or *essere* passives (49%) and only 19% were *si*-causatives. Children, instead, produced very few passives (up to 11%) and they were all, but one, *si*-causative passives in the 5-year-old group (e.g. Il coniglio si fa accarezzare dal gatto/ the rabbit *si*-makes hug by the cat). See Footnote 7 in B&M on the residual SVO answers that both children and adults produced.

[7] Both the number of participants and their mean age correspond to those of the 5-year-old group tested in B&M (19 children, MA = 5;6 y.o.). We concentrate here on this age as it allows us to check for the effect of animacy in the production of both clitic left dislocations and *si*-causative passives.

[8] Adults were tested both in presence (3 of them) and in an interview (12 of them) administered through an online platform (Gmeet), showing exactly the same Power Point presentation to be presented in the following section, and adopting exactly the same procedure in both cases. The online platform was adopted since, due to the COVID pandemic, it was not possible to meet people in person anymore.

topic (Che cosa succede a questa cosa, e.g. la torta?/What is happening to this thing, e.g. the cake?); in the two-topic condition the eliciting question concerned two object topics (Che cosa succede a queste due cose, e.g. la rosa e la sedia?/What is happening to these two things, e.g. the rose and the chair?). The verbs were all transitive verbs and featuring an animate (human) character acting as the agent and an inanimate object being the theme/patient. All characters and objects of the events were introduced by the experimenter before the eliciting questions.

All prompting questions were asked by a curious Smurf, who could not access the events happening inside the house and for this reason he needed the child's help to answer the questions.

Below, in Examples (6) and (7), we report the exact procedure adopted in each experimental condition.

(6) Experimental trial (One-topic condition having one topic patient → the cake)

a) The experimenter presents all characters: "In this house there is a mum, a girl and a cake."

b) The experimenter explains that the Smurf is very curious about one thing, the cake.

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 a questa cosa, la torta?" ('What is happening to this thing, the cake?').

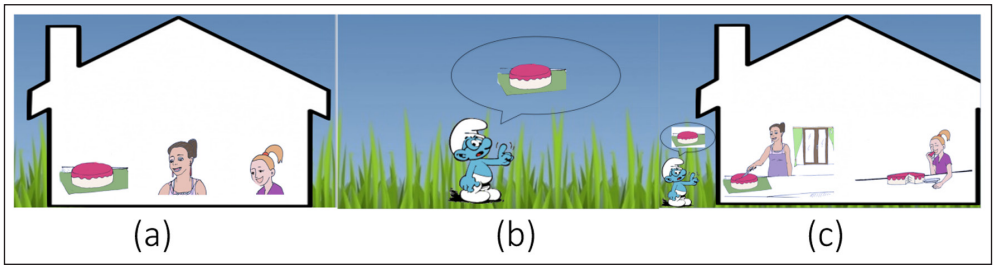


Figure 1: One-topic condition (the cake).

(7) Experimental trial (Two-topic condition having two topic patients → the rose and the chair)

a) The experimenter presents all characters: "In this house there is a rose, a chair, a grandmother, and a girl."

b) The experimenter explains that the Smurf is very curious about two things, the rose and the chair.

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 a queste due cose, la rosa e la sedia?" (What is happening to these two things, the rose and the chair?).

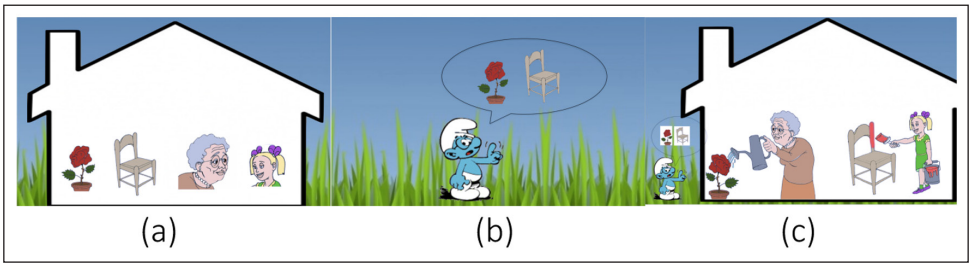


Figure 2: Two-topic condition (the rose and the chair).

In both conditions, the question should elicit an answer in which two events would be described, shown in **Figure (1c)** and **Figure (2c)**. The results in B&M have indicated that in the latter condition the left dislocated object topics were most likely overtly expressed given the discourse condition requiring the disambiguation of the object topic in the prompting question.

In the one-topic condition, for which the question is reported in (8a), the appropriate answer would consist of sentences with an object clitic referring to the object topic and an active verb (and a lexical subject), i.e. Subject-Clitic-Verb (8b); alternatively, the passive (with by-phrase) could also be a felicitous answer (8c):

(8) a. Che cosa succede a questa cosa, la torta?
'What is happening to this thing, the cake?'

b. La mamma la taglia e la bambina la mangia.
the mum it.CL cuts and the girl it.CL eats
'The mum is cutting it, and the girl is eating it.'

c. Viene tagliata dalla mamma e viene mangiata dalla bambina.
comes cut by the mum and comes eaten by the girl.
'(It) is being cut by the mum and is being eaten by the girl.'

In the two-topic condition, instead, after the question in (9a), the object topics should be explicitly produced in the answers, thus yielding either a ClLD with the object overtly realized in the left periphery (and a lexical subject), in (9b), or a passive with an overtly expressed derived lexical subject (corresponding to the object topic in the active answer and a by-phrase corresponding to the subject of the active answer), (9c):

(9) a. Che cosa succede a queste due cose, la rosa e la sedia?
'What is happening to these two things, the rose and the chair?'

b. La rosa, la nonna l'annaffia, e la sedia la bambina la dipinge.
the rose the grandmother it.CL waters, and the chair the girl it.CL paints.
'The rose, the grandmother is watering it, and the chair, the girl is painting it.'

c. La rosa viene annaffiata dalla nonna e la sedia viene dipinta dalla bambina.
the rose comes watered by the grandmother and the chair comes painted by the girl
'The rose is being watered by the grandmother and the chair is being painted by the girl.'

For each condition, the test included four experimental items eliciting, in total, eight answers. As mentioned earlier, the answers contained two descriptions which were coded separately, leading to sixteen sentences for each child (eight in the one-topic condition and eight in the two-topic condition). See Section 2.3 for the coding criteria. The test also provided five practice trials at the beginning of the test and eight fillers. The filler questions elicited DPs (e.g., Question: Chi c'è in casa?/'Who is in the house?'; Answer: Un bambino/'A kid'); (S)V with intransitive verbs (e.g., Question: Che cosa fanno i gatti?/'What are the cats doing?'; Answer: Suonano/'They are playing music'); 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.').

Fillers and experimental items were presented in pseudo-randomized order so that a filler follows each experimental trial. The child was tested in a quiet room of the kindergarten and the session lasted about ten minutes. The productions were audio recorded and transcribed.

2.3 Coding Criteria

The coding focused on the production of active structures containing object clitics, coded as *Pronoun* (10) and as *ClLD* (11), containing both *a*-Topics and Simple Topics (i.e. not *a*-marked), and on the production of passive sentences, coded as '*Passive'* (12). '*Other'* contains utterances which did not fall under the previous categories.

The *Pronoun* category includes any production with an object clitic pronoun and an active verb; the subject could be preverbal (10a), postverbal (10b) or null (10c) (in the singular or plural form). Importantly, in this category the object topic is never overtly realized as a lexical left dislocated object:

(10) a. La mamma la taglia
the mum.SBJ it.CL cuts
'The mum is cutting it.'

b. La taglia la mamma.
it.CL cuts the mum.SBJ
'The mum is cutting it.'

c. La taglia.
pro it.CL cuts
'(She) is cutting it.'

ClLD refers to those structures in which the object is overtly expressed as a left-dislocated lexical DP and resumed by the object clitic pronoun. The subject could appear in preverbal (11a,b) or post verbal position (11c), or it could be null (in the singular or plural form, 11d).

(11) a. La rosa, la nonna l'annaffia.
the rose.OBJ the grandmother.SBJ it.CL waters
'The rose, the grandmother is watering it.'

b. La nonna, la rosa, l'annaffia.
the grandmother.SBJ the rose.OBJ it.CL waters
'The rose, the grandmother is watering it.'

c. La rosa, l'annaffia la nonna.
the rose.OBJ it.CL waters the grandmother.SBJ
'The rose, the grandmother is watering it.'

d. La rosa, *pro* l'annaffia/annaffiano.
the rose.OBJ *pro* it.CL waters/water
'The rose, (she/they) is/are watering it.'

'*Passive'* includes long and short passive sentences with the auxiliary *venire*/to come or *essere*/to be:

(12) La rosa viene/è innaffiata (dalla nonna).
the rose comes/is watered (by the grandmother)
'The rose is being watered (by the grandmother).'

Finally, in the '*Other'* category we coded all utterances that did not follow the criteria listed above, such as e.g., SVO active sentences, intransitive verbs, right dislocations, *si* + V (/Reflexive passives), utterances that cannot be readily interpreted.

2.4 Results

Children produced 288 utterances of which 285 were coded,[9] adults' data included 240 sentences. **Table 1** summarizes the production in the one-topic and two-topic conditions.

[9] Three answers were discarded because they were either incomplete or irrelevant answers missing the point of the questions.

	CHILDREN		ADULTS	
	One-topic condition	Two-topic condition	One-topic condition	Two-topic condition
Pronoun	77% (109)	15% (21)	19% (23)	– (0)
ClLD	7% (10)	55% (78)	– (0)	– (0)
Passive	1% (2)	1% (2)	64% (77)	65% (78)
Other	15% (21)	29% (42)	17% (20)	35% (42)

Table 1: Overall children's and adults' production by topic condition.

Children's answers mainly consisted of *Pronoun* structures in the one-topic condition, and of *ClLDs* in the two-topic condition, thus replicating one of the main finding of B&M.

Through a within-subject analysis we examined whether the use of left dislocated object topics differed between topic conditions. We used mixed-effects logistic regression (Jaeger 2008) and *glmer* to run the analysis (*lme4* library, Bates et al. 2015) in the statistical programming environment R (R Development Core Team, 2008). The dependent variable was the production of *Pronoun* vs. *ClLDs* (coded as 0 vs.1); the fixed factor was *Topic condition* (One-topic vs. Two-topic). In the model, the random effects structure was simplified until convergence was reached (Barr et al. 2013). The maximal random effect structure leading to convergence includes by subject random intercepts and by subject random slopes for the factor *Topic condition*. The model revealed a significant effect of *Topic condition*, showing that children were significantly more likely to produce ClLDs (with an overtly expressed left-dislocated object) in the two-topic condition (ß = 6.13, SE = 1.87, t = 3.27, p = 0.001; Intercept: ß = –2.051, SE = 0.73, t = 2.78, p = .005), compared to the one-topic condition.

Passive was rarely used and the only type of passive was *venire* passive; no *si*-causatives were produced by children.

Children also produced some '*Other'* responses which included SVO sentences, *si* + V structure and intransitive verbs.

Adults mainly resorted to passive in both conditions (respectively 64% and 65%): only *venire* and *essere* passives were produced. Adults also used some *Pronoun* structures, and some SVO sentences coded under the category *Other*. More importantly they did never use ClLDs. These results are in line with those from B&M, confirming that adults' preferred answer, under the experimental discourse conditions tested, is the passive.

Given the absence of ClLDs in adults' data, in the next sections we abandon the comparison between children and adults. The type of passive used by adults will be briefly taken up in the Discussion (see Section 3).

To address our first research question (Q1: Does manipulation of the animacy of the object topic play a role in the building of the object A'-dependency across the intervening lexical subject? Specifically: Does this manipulation lead to an increase in the production of answers through sentences like (1b) in which the ClLD contains a preverbal lexical subject and the left dislocated object topic?), we analyzed whether children produced ClLDs in the form of DP_1 DP_2 Cl V with the lexical subject in the preverbal position, in both conditions.[10] Children's production of such ClLDs only amounted to 3% (n = 3 out of 88), of which only one had the pre-posed object topic realized as a Simple Topic (i.e. not *a*-marked) (see 13) and two had it introduced by the preposition 'a' as *a*-Topics.[11]

(13) Il giornale, il nonno lo legge (S.,6;1)
the paper the grandfather it.CL reads
'The paper, the grandfather is reading it.'

As for our second research question (Q2: Does the inanimate nature of a pre-posed object topic decrease/eliminate the possibility of *a*-marking?), we considered the type of pre-posed object topics, distinguishing between *a*-Topics (=*a*-marked) and Simple Topics (=not *a*-marked): we found that the left-dislocated object topic was *a*-marked in 12.5% of ClLDs overall (n = 11 out of 88), as e.g. in (14):

(14) Alla macchina, la lava. (M., 5;8)
to the car *pro* it.CL wash
'The car, (she) is washing it.'

This result indicates that inanimacy of the object topic did not completely exclude the possibility of *a*-marking it.

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[10] As expected, the two-topic condition was the one in which the production of overt left dislocated object topics was mostly attested (n = 78), in compliance with the discourse condition. Some overt topics were nevertheless produced in the one-topic condition as well (n = 10), so in the following analyses we consider the overall production of overt left dislocated object topics irrespective of the conditions in which they were produced.

[11] The two examples, with *a*-Topics, are reported in (i) and (ii):

(i) La principessa alla valigia gli sta facendo una foto (M., 5;11)
the princess to the suitcase it.CL is making a picture
'To the suitcase, the princess is taking a picture to it.'

(ii) Al gelato un bambino se lo sta mangiando (P., 6;3)
to the ice cream the kid it.CL is eating
'The ice cream, the kid is eating it.'

2.4.1 Comparing results on animate vs. inanimate a-Topic and types of subject

The comparison with the production of *a*-Topics in the animate condition of B&M (data from Experiment 1, see Footnote 1) shows that *a*-marking significantly diminished with inanimate object topics. As illustrated in **Table 2**, the vast majority of topics (87.5%, n = 77) was realized as Simple Topics, as in the production in (15).

(15) La sedia, la colora (C., 5;6)
the chair *pro* it.CL paints
'The chair, (she) is painting it.'

We now compare the production of *a*-marking between experiments, considering all ClLDs produced by children in the current study and in Experiment 1 from B&M, to check for any significant effect of animacy vs. inanimacy in the *a*-marking of object topics, yielding either *a*-Topics or Simple Topics.

We used mixed-effects logistic regression (Jaeger 2008) and *glmer* to run the analysis (*lme4* library, Bates et al. 2015). We carried out a between-subject analysis in which the dependent variable was the production of ClLDs with *Simple Topics vs. a-Topics* (coded as 0 vs.1); the fixed factor was *Animacy of the object* (Animate vs. Inanimate). In the model, the random effects structure was simplified until convergence was reached (Barr et al. 2013). The maximal random effect structure leading to convergence includes by subject and by item random intercepts. The model revealed a significant effect of *animacy*: *a*-marking of the pre-posed object topic occurred significantly less often with inanimate objects (ß = 5.07, SE = 1.41, t = 3.57, p = .0003; Intercept: ß = –3.35, SE = 1.01, t = –3.31, p < .001).

A further robust result of our study concerns precisely the nature of the subject in the ClLDs that children produced, thus suggesting that they solved the intervention issue differently, manipulating the nature of the intervening subject. We have seen that the subject was rarely realized as preverbal and lexical in ClLDs (this happened in only 3 cases).[12]

	***a*-Topics**	**Simple Topics**
Inanimate object topics (Current study)	12.5% (11)	87.5% (77)
Animate object topics (Exp. 1, B&M)	74% (60)	26% (21)

Table 2: Overall production of left-dislocated object topics across experiments.

[12] Since the respective order between the pre-posed object and the lexical subject is not relevant for the questions raised in this study we consider both orders in the same category. The order issue is addressed in Belletti (2019a).

Interestingly, children produced other types of ClLDs, and a closer look at the subject reveals the overwhelming use of null subjects (80%), which were singular in 56 sentences (80%) and plural in the remaining 14 (20%), see (16a,b), and of some post-verbal ones (17%), (see 16c).

(16) a. Il foglio, lo sta tagliando (M., 5;4)
the paper it.CL is cutting
'The paper, (he) is cutting it.'

b. Il libro, lo guardano. (C., 5;6)
the book pro it.CL watch
'The book, (they) are watching it.'

c. La sedia, la sta dipingendo la bambina. (E., 5;5)
the chair it.CL is painting the girl
'The chair, the girl is painting it.'

Table 3 summarizes the nature of the subjects in children's ClLDs.

This analysis confirms that children mainly avoided the use of an intervening lexical subject, relying on alternative structures such as DPOBJ-*pro*-CL-Verb and, to a lesser extent, DPOBJ-CL-V-DPSBJ sentences.[13]

The comparison with B&M's study gives us further insights into the relation between the production of a preverbal lexical subject and the availability of *a*-Topics. In B&M (Experiment 1), children used null subjects to a lesser extent (24%) than in the current experiment (80%); reversely, the subject was uttered as preverbal and lexical in a higher amount of their ClLDs, 64%, which sharply differs from the residual 3% of the current study. However, it is important to underscore that in B&M, when the lexical subject was preverbal, children mainly relied on the

[13] The possibility of producing (plural) null subjects has already emerged in Experiment 2 of B&M, as a possible strategy to overcome the difficulty created by a lexically restricted intervening subject (for further detailed discussion see also Manetti & Belletti 2021). The null subject was mostly plural in B&M Experiment 2, where it was interpreted as a generic plural. In Italian, as in many other languages, the generic plural allows for the association with a singular referent, as in the case of the experimental situation of our study here. Use of a singular null subject with a referential interpretation was more frequent in the present study than in the results of B&M. We attribute this wider use of a singular referential *pro* to the fact that all verbs used in the present study were irreversible as a consequence of the manipulation of animacy. Hence, all children's answers containing a singular null subject were not ambiguous as to the referent of the (animate agent) subject performing the action (on the inanimate theme). These answers remained not completely informative though, as they would have been if a lexical subject was fully expressed in preverbal position. However, the price for such expression was too high for children, as it implied the computation of the feature inclusion relation in fRM, which is still impossible for them, as discussed in the text. The postverbal location of the lexical subject also allows to overcome the intervention problem (see section 3); however, it typically goes with the new information status of the subject, which is not required in the discourse conditions of the experiment. Indeed, this option was significantly less widely adopted by children. This in turn further indicates that children in this age range tend to be discourse appropriate.

Type of Subject	ClLDs	n =	%
Null	DPOBJ-*pro*-CL-V	70	80
Post-verbal	DPOBJ-CL-V-DPSBJ	15	17
Preverbal	DPOBJ-DPSBJ-CL-V/DPSBJ-DPOBJ-CL-V	3	3

Table 3: Types of subject in ClLDs.

use of *a*-marking of the object topic, which made the structure available to them, thus producing *a*-Topics in 88% of ClLDs. The following section is dedicated to a detailed discussion of these findings.

3 Discussion

Our study has answered the two research questions raised at the outset in a clear way: mismatch in animacy between the pre-posed object topic and the intervening subject does not enhance the children's production of ClLD structures when the two DPs are both lexically restricted. Under the assumed fRM approach, this result leads us to the conclusion that the animacy feature is not among the features to which the fRM locality principle is sensitive; i.e. it is not among the features which, in the grammar of Italian, participate in the triggering of syntactic movement into the (Spec-Topic position of the) left periphery (see Belletti & Chesi 2014; Martini 2018; Martini 2020 for converging results in the domain of relative clauses).[14] Our results have also shown that children did not resort to *a*-marking of the topic in the animacy mismatch condition investigated here, contrasting with one of the most salient results in B&M. *a*-Marking of the pre-posed object topic across the intervening lexical subject could have been a way to overcome the intervention configuration by changing the hard feature inclusion relation into a feature intersection one, as illustrated in the comparison between (2) and (3) in the introduction. The occurrence of *a*-marking was extremely limited instead in the animacy mismatch condition of our study, suggesting an answer to our second question, namely that animacy[15] appears to play some role in the process of *a*-marking with a clear preference for animate topics. An animate DP is significantly more prone to become an *a*-Topic, as seen in the results from B&M (74%), than

[14] Sometimes mismatch in animacy seems to play some role in the processing of A'-dependencies such as in the comprehension of object relative clauses (Arosio et al. 2011 for Italian, where all stimuli also contained a postverbal subject), however this role appears to be mild as the feature is not exploited in production as shown in our results from ClLDs (see also resort to passive in the answer to questions eliciting active object relatives in an intervention configuration with a preverbal subject, widely discussed in the literature, Belletti & Chesi 2014 and references cited there; see also Guasti et al. 2012).

[15] Or what the precise characterization of the feature exactly is.

an inanimate one (12.5%). Thus, whereas animacy is not a relevant feature for locality and fRM in a movement related dependency, it is a feature that may be computed in other grammatical domains: to a considerable extent *a*-marking appears to be one such domain.

Before discussing what appears to be the most robust and remarkable result of our study concerning the nature and position of the subject in the ClLDs, we first focus on one more marginal yet interesting result in the context of the discussion of the possible grammatical role of animacy. We pointed out that passive was essentially absent in children's answers (1%). Surprisingly, at least at first sight, none of the few passives (n = 4) produced by children in the present study was a *si*-causative passive (all 4 were *venire* passives). In B&M children's passive answers were not numerous either, as children preferred ClLDs or pronoun answers. However, they were present to a much larger extent (up to 11%) and they were all *si*-causative passives (in the same age group of the present study). Whence the surprise, at first sight. However, upon closer consideration, we think that the lack of *si*-causative passive in the new results is not surprising at all, as it is precisely related to the manipulation of animacy of our present study. Animacy appears to play a role in licensing the *si*-causative passive. In particular, following Belletti (2019), we submit that animacy is among the features that compose the (subject) clitic 'si' in this construction, as it is the case in other constructions containing it as well (such as the impersonal). Hence, since the *si*-causative passive was the preferred type of passive for children in B&M experiments (17b; consistently with previous findings quoted there), its lack comes as no surprise in the present new experiment in which it should carry an inanimate feature, an impossible option for 'si' in this construction.[16] This is shown by the sharp impossibility of (17a) in Italian, contrasting with (17b), the latter a typical child production in the animacy match condition of B&M:

(17) a. *Il foglio si fa tagliare dalla mamma.
the paper si.CL makes cut by the mum
'The paper makes itself cut by the mum.'

b. Il cane si fa lavare dal gatto.
the dog si.CL makes wash by the cat
'The dog makes himself wash by the cat.'

[16] Instances of inanimate 'si' are only possible with reflexive 'si', inherent as in i. (ergative 'si' of Burzio 1986) or as in ii., an instance of a reflexive passive (Belletti 2019a for discussion, and references cited there).

(i) La luce si è spenta.
the light si.CL is turned off

(ii) Il foglio si taglia.
the paper si.CL cuts

Sentence ii. corresponds to a kind of answer given by some children, who, in our study, produced some reflexive passives (27 out of 285 overall answers, 9%). Presence of reflexive passive rather than *si*-causative passive in our results may precisely be due to the unavailability of the latter, due to the manipulation of animacy discussed in the text.

Adults, consistently with the results in B&M, produced mainly passive answers, the optimal structure eliminating the intervention configuration altogether. However, a converging result with the children's productions in this respect is also provided by the complete lack of *si*-causative passives in the adults' productions. Although this type of passive was not the preferred option also in the adults' production in B&M, yet some *si*-causative passives were produced there by adults as well (19%). Hence, the complete lack of *si*-causative passives in the inanimacy condition manipulated here is a further clear indication of the relevance of the animacy feature in the construction involving *si*.

Hence, we conclude that our results have indicated two domains in which a feature related to animacy plays a grammatical role: *a*-marking and *si*-causative passive. Such feature instead does not enter in the computation of fRM in the movement related dependency involving a pre-posed object Topic in the ClLD structure.

The most robust and striking result of our study is that in the vast majority of cases children used a pronominal null subject and, to a lesser extent a postverbal lexical subject (80% and 17% respectively). These productions can be interpreted as two different ways to overcome the intervention configuration, due to the low availability of *a*-marking. In both cases, intervention is overcome as the position of the preverbal intervening subject is occupied by a pronominal element not carrying the [+NP] feature: a pronominal (null) subject is not lexically restricted by definition. As for the use of a null pronominal subject in the plural, it is worth noticing that this may also constitute a suitable alternative to use of an answer in the passive, which, as noted, would be a possible option in the discourse condition of the experiment (B&M, Section 5.3).

In the structure with a postverbal subject, we assume with much literature (stemming from Rizzi 1982 on), that the intervening preverbal subject position is filled with a null expletive *pro*: hence in both structures produced by children, there is no inclusion relation between the target position of the pre-posed object topic and the intervening position of the preverbal subject. This is schematically illustrated in (18a) and (18b). In the derivation (18b) the assumption is made that the postverbal subject is located in a low position of the clause structure (Belletti 2004), and that the pre-posed object topic does not cross over it in its movement into the left periphery, due to the operation of *smuggling* moving a chunk of the verb phrase containing it (Collins 2005; Belletti & Collins 2021).[17] The direct object thus moves into the Spec-Topic position in the left periphery from the smuggled position, which is higher than the position of the postverbal subject,

[17] Postverbal subjects were used only in 17% of cases, whereas null subjects in 80%. Despite the fact both structures do not display an intervention configuration, we attribute this significant difference to the fact that postverbal position of the subject correlates with its interpretation as the focus of new information. Such interpretation is not felicitous in the discourse condition of the experiment in which the subject is presented by the experimenter together with the object and all the characters in the first step of each trial. Hence, the postverbal position is not fully appropriate for the subject.

which thus does not act as an intervener in the low area of the clause (Belletti & Contemori 2010; Belletti & Chesi 2014; Bentea 2016; Martini 2020 for related derivations):

(18) a. La rosa *pro* l'annaffia (S., 6;1)
[+Top +NP] –
DP.OBJ *pro* CL V __

b. La rosa *pro*.EXPL la sta piantando la nonna (E., 5;0)
[+Top +NP] –
DP.OBJ *pro*.EXPL CL V __ DP.SBJ

Thus, the overwhelming majority of our children's productions does not display the intervention configuration.

4 Conclusion

Given sentences of the type of (1b) as an answer to the eliciting question in (1a), from which our investigation started, the overall shape of our results has shown that, in the tested animacy mismatch condition in which the pre-posed object topic is inanimate and the intervening subject is animate, children did not produce ClLDs as (1b); they also seldom *a*-marked the pre-posed inanimate object. Instead, they appeared to creatively explore other solutions to overcome the production of the hard intervention structure, compatible with the discourse situation of the experiment and in compliance with fRM. As children were not ready to compute the intervention configuration (of inclusion) but could not naturally adjust it through *a*-marking of the inanimate topic (creating an intersection relation), they ended up opting for different types of productions in which intervention was eliminated. Most typically they produced Clitic Left Dislocation structures with a (inanimate) Simple Topic in which the subject in the sentence following it was a (null) pronominal subject. They did not produce instead any *si*-causative passives.

Our results lead us to conclude that animacy is not a feature computed in movement dependencies regulated by fRM. It is however, a feature that may determine some grammatical behaviors, as emerged in its role excluding *si*-causative passive and also, to a large extent, *a*-marking of object topics in the Italian left periphery.

Abbreviations

CL	clitic pronoun
EXPL	Expletive
OBJ	Object
pro	pronominal null subject
SBJ	Subject

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