

Children's comprehension of *a*-Topics in Clitic Left Dislocations in Italian

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Abstract. We explore the comprehension of Clitic Left Dislocations by focusing on a particular structure in which the left dislocated direct object topic is introduced by the preposition 'a'/to (henceforth *a*-Topic). In previous work on the acquisition of CLLDs, Belletti and Manetti (2018) reported that children overwhelmingly produced this type of CLLD with *a*-Topics, despite its marginal availability in adult grammar. Following from these findings, we first aimed at investigating how the comprehension of *a*-Topics compares with the large production of *a*-Topics. We then focused on the role of *a*-marking in the comprehension of CLLDs as creating a relevant mismatch between the object topic and the DP subject, in light of previous findings investigating featural mismatch in gender and in number in the comprehension of CLLDs. The main result of this study indicates that the unexpected behavior that children showed in their production of CLLDs with *a*-Topics matched with their high comprehension of the same type of CLLD involving an *a*-marked left dislocated object topic. In line with Belletti and Manetti's (2018) proposal, the role of *a*-marking of topics will be discussed in terms of intervention locality within the featural Relativized Minimality approach, as developed in Friedmann, Belletti & Rizzi (2009) and in further elaboration (Belletti et al. 2012).

1 Introduction

In the context of the acquisition of a discourse topic-comment structure, we investigated the comprehension of Clitic Left Dislocations (henceforth CLLD) by Italian-speaking children, aged from 5- to 6-year-old. The sentences we tested were in the form of DP₁ DP₂ Cl V, with a left dislocated direct object topic marked through the preposition 'a'/to and a preverbal lexical subject.

This study follows from previous work on the acquisition of CLLDs (Belletti & Manetti 2018) which tested the production of DP₁ DP₂ Cl V structures and showed that pre-school children (aged from 4 to 6) over-

whelmingly made use of CLLDs with the left dislocated object topic introduced by the preposition *a/ 'to'* (henceforth *a*-Topic, shown in 1a), in place of pre-posed direct object topics with no preposition (Simple Topic, see 1b)¹:

(1) a. *a*-Topic:

Al re il bambino lo pettina
to.the king the child him-Cl combs
'The king, the child is combing him.'

(G., 5;11; example 15, Belletti & Manetti 2018)

b. Simple Topic:

La formica la rana l' asciuga
the ant the frog her-Cl dries
'The ant, the frog is drying her.'

(A., 5;10; example 16, Belletti & Manetti 2018)

Notice that the production of *a*-Topics was not expected since *a*-marking of direct objects is not an available option in the (standard) Tuscan variety of Italian spoken by the children who participated in the experiment. Standard Italian is not a Differential Object Marking/DOM language, in contrast with southern varieties of Italian, hence when the object fills the clause internal position it is never marked through the preposition 'a'/to. The *a*-marking of the object is allowed only to a limited extent in pre-posed left-peripheral topic position, for example with (1st and 2nd mainly) personal pronouns (2a), or with left peripheral object experiencers (2b), but not with the left dislocated object of a transitive verb (2c) (see Belletti & Rizzi 1988, fn. 27, examples from Benincà 1986; recently quoted and discussed in Belletti 2018a):

(2) a. A me/?*Me non mi si inganna.

to me/me one does not me-Cl
'Nobody cheats me.'

(Renzi 1988, Berretta 1989, Belletti 2018a: 449)

b. (?)A Gianni, questi argomenti non l'hanno convinto.

to Gianni, these arguments him-Cl have not
'Gianni, these arguments have not convinced him.'

(Benincà 1986, Belletti 2018a: 445)

c. *A Gianni, la gente non lo conosce.

to Gianni, people him-CL do not know
'Gianni, people do not know him.'

(Benincà 1986, Belletti 2018a: 446)

1. Specifically, if we only consider the CLLDs with preverbal lexical subjects, children produced 88% (= 46) *a*-Topics, as in (1a), and only 12% (= 6) simple topics, as in (1b).

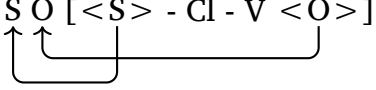
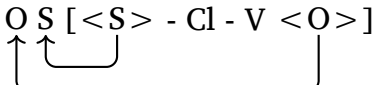
Interestingly, children used *a*-marking with left dislocated object topics only, and they never *a*-marked the object in SVO sentences. This pattern is clearly shown by the answer in (3), in which the child produced a simple object in the SVO structure (la mucca/the cow) and an *a*-Topic in the immediately following CLD (al pinguino/to the penguin):

- (3) La giraffa sta leccando la mucca, e il coniglio al
 the giraffe is licking the cow and the rabbit to.the
 pinguino lo sta grattando.
 penguin it-Cl is scratching
 ‘The giraffe is licking the cow and the penguin, the rabbit is scratching him.’
 (O., 5 y.o., example 17 from Belletti & Manetti 2018)

Hence, the absence of *a*-marking in SVO sentences, together with the use of *a*-Topics in CLDs, indicates that children adopted *a*-marking for left peripheral topics only, and they extended this option to topicalize lexical noun phrases, differently from standard Italian which only allows *a*-Topics in left peripheral position with (1st and 2nd mainly) personal pronouns (2a) or with Object Experiencers (2b).

Belletti & Manetti (2018) and Belletti (2018a) suggested that the use of *a*-marked topics could be related to an *affected* interpretation, expressed through the preposition ‘a’, that children associated with the object topic².

Another characteristic of children’s CLDs that the authors highlighted in their study was that the preference for *a*-Topics mostly emerged when the subject of the clause was preverbal and a lexical noun phrase. In that situation, CLDs, both in the S-O-Cl-V and in O-S-Cl-V orders such as (4a-b), create a long distance dependency in which the lexical preverbal subject intervenes between the left dislocated object and its clause internal position:

- (4) a. S O [<S> - Cl - V <O>]

 b. O S [<S> - Cl - V <O>]


Belletti & Manetti (2018) analyzed and discussed CLD structures and the role of *a*-marking of direct object topics within the featural Relativized Minimality (fRM) approach, as developed in Friedmann, Belletti &

2. For a detailed discussion on *a*-Topics and for a cross-linguistic and diachronic overview of *a*-marking of the object see Belletti (2018a;b), and references cited there.

Rizzi (2009) and Belletti et al. (2012). Their analysis proposed that the otherwise unexpected recourse to *a*-Topics allowed children to modulate the intervention configuration arising in this type of CLDs (DP₁ DP₂ Cl V), as illustrated in (4).

Given a configuration as in (5), under the locality principle Relativized Minimality, the dependency between X (target) and Y (origin) cannot be established if Z structurally intervenes, and Z and X are positions sharing relevant features (Rizzi 1990; 2004; Starke 2001; Minimal search, Chomsky 2001).

(5) X Z Y

Based on Friedmann et. al's (2009) approach, and on 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 enters into the computation of long distance dependencies which falls within the fRM locality principle. When both the target and the intervener are lexically restricted, sharing the [+NP] feature, the structure instantiates the hardest intervention situation for young children, who can hardly compute the inclusion relation of relevant features holding between target and intervener. This has been shown for other A-bar dependencies, such as headed object relative clauses (Friedmann, Belletti & Rizzi 2009) and Wh-(which)questions with an intervening lexical subject (Guasti, Branchini & Arosio 2012). However, the intervention configuration can be modulated depending on how much the target and the intervener differ in terms of morphosyntactic features, making the structure accessible to young children, as in cases yielding intersection or disjunction of relevant feature composition (Friedmann, Belletti & Rizzi 2009; Belletti et al. 2012; Adani et al. 2010, and much related literature).

Adopting this grammatical approach, Belletti & Manetti (2018) argued that CLDs with the two DPs matching in gender and number (see 6) were rarely produced by children since this type of structure instantiates an inclusion configuration, given that both the left dislocated object topic and the preverbal subject share the nominal feature [+NP], a configuration which is known to be hard for children:

(6) Il cane il gatto _lo morde_
 +Top +NP +NP
 the dog the cat him-Cl bites
 'The dog, the cat is biting him.'

Recall that the majority of children's CLDs included *a*-Topics: Belletti & Manetti (2018) analyzed *a*-marking of topics as an added feature of the left peripheral object, [+a] (affected), which contrasts with

the simple object topic marked with the unaffected feature [+u] (unaffected). Following from this, *a*-marking of object topics creates an intersection relation between the two DPs with respect to the relevant features [+a] (affected) and [+u] (unaffected), as illustrated in (7):

- (7) a. La giraffa alla mucca __ la sta leccando__
 +Top +NP +u +Top +NP +a
 the giraffe to.the cow her-Cl is licking
 ‘The giraffe, the cow is licking her.’
- b. Al re il bambino __ lo sta pettinando__
 +Top +NP +a (+Top) +NP +u
 to.the king the boy him-Cl is combing
 ‘The king, the boy is combing him.’

The featural intersection relation modulates intervention and facilitates the production of the structure by children, who indeed preferred the use of *a*-Topics in place of simple topics.

With this background in mind, our goal was to check whether *a*-Topics would facilitate children in the comprehension of CLLDs as much as they did in production. If the CLLD structure with *a*-Topics instantiates an intersection relation that children were able to compute in production, we expect to find similar results in comprehension.

The comprehension results will also be discussed in light of previous findings reported in Manetti et al. (2016), in which the role of gender and number mismatches was investigated in the comprehension of CLLDs. Children, aged from 5 to 6, were shown to have good comprehension of (8a), in which the DPs mismatch in number, whereas gender mismatch (8b) only led to at chance performance. These results confirmed the findings from the comprehension of object relative clauses, with respect to the different impact that, in Italian, gender and number features have in the computation of an intervention configuration (see Adani et al. 2010 for results on number mismatch; Belletti et al. 2012 for the different role of gender mismatch in Italian and Hebrew).

- (8) a. Number mismatch:
 Il cane i gatti lo mordono.
 the dog the cats him-Cl bite
 ‘The dog, the cats are biting him.’
- b. Gender mismatch:
 Il principe la bambina lo fotografa.
 the prince the girl him-Cl photographs
 ‘The prince, the girl is photographing him.’

To summarize, the present work has two fundamental aims: first, it investigates how children’s comprehension of *a*-Topics compares with their large production of *a*-Topics. It then focuses on the role of *a*-marking in the comprehension of CLDs as creating a relevant mismatch between the object topic and the DP subject, to be compared with the role of other types of mismatch in morphosyntactic features such as mismatch in number and gender, studied in previous work (Manetti et al. 2016).

2 The study

2.1 Participants

The experiment was administered to 24 typically-developing Italian-speaking children, aged from 5;3 to 6;1 (Mean Age = 5;8, SD = 0.3), in two kindergartens of Florence.

2.2 Method and Materials

Adapting Manetti et al.’s (2016) study, we conducted a picture-sentence matching task to test the comprehension of CLDs with the object topic introduced by the preposition ‘a’/to.

The test sentences included sixteen CLDs, of which eight were in S-O-Cl-V order (9a) and eight in O-S-Cl-V order (9b): in both cases the object topic was always marked through the preposition ‘a’/to:

- (9) a. Subject-Object-Cl-V:
 Il cocodrillo all’ elefante lo bagna.
 the crocodile to.the elephant him-Cl washes
 ‘The elephant, the crocodile is washing him.’
- b. Object-Subject-Cl-V:
 All’ elefante il cocodrillo lo bagna.
 to.the elephant the crocodile him-Cl washes
 ‘The elephant, the crocodile is washing him.’

The pictures depicted actional verbs and both characters (the agent and the patient) were either humans or animals. The position of the target picture on the screen was counterbalanced within each list, so to appear on the top of the screen half of the items. The test also included 16 fillers which only consisted of the base form of actional verbs (infinitive verb; e.g. ‘abbracciare’/to hug): the infinitive form of the verb

was used in order to avoid that the word order of the fillers could potentially influence the interpretation of CLDs. Two main lists were created in order to counterbalance the order of DPs (subject and object) in the sentences.

2.3 Procedure

Each trial consisted of three slides, as shown in Figure 1. The characters of the event were first introduced to the child by the experimenter (e.g. ‘There is a crocodile and an elephant.’, Slide 1), then both characters were covered (Slide 2), and in the last slide the child was shown the relevant pictures and heard the test sentence, pre-recorded by a female voice. The child could listen to the sentence more than once if needed. The test was run in a quiet room at school and lasted about 10-15 minutes.

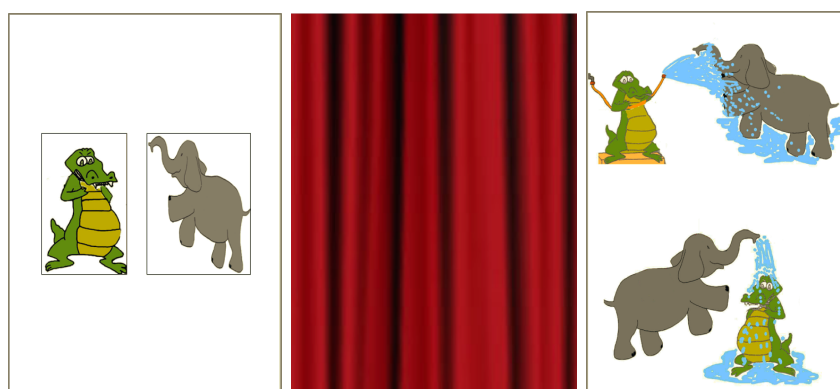


Figure 1: Experimental trial (Slide 1- Slide 2- Slide 3)

2.4 Results

Children provided 319 correct responses out of 383 (one item was excluded due to the experimenter’s error). The mean of correct responses amounts to 83% (SD = 11%): Figure 2 below shows the individual performances from the youngest child (aged 5;3) to the oldest child (aged 6;1).

Overall, the comprehension of CLDs with *a*-Topics was above chance and the individual analysis showed that 18 children (of the 24) performed above chance (according to the binomial distribution analysis above chance performance corresponds to at least 13 correct responses out of the total 16; 81%; $p < .05$).

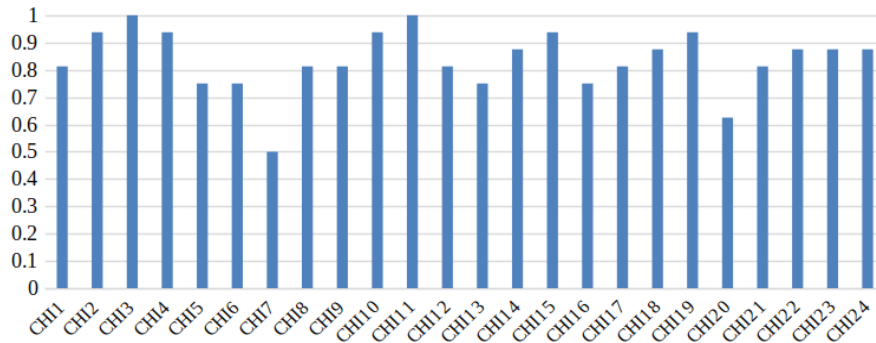


Figure 2: Proportions of correct responses by participants ordered by age

A closer look at the results showed that children performed better when the CLLDs had the order S-O-CI-V (92%) compared to O-S-CI-V order (74%), see Table 1.

	Mean of correct responses	SD
S-O-CI-V	92% (177/192)	11%
O-S-CI-V	74% (142/191)	18%

Table 1: Accuracy in OS and SO orders

To analyze the difference between SO and OS orders, we used mixed-effects logistic regression (Jaeger 2008) and *glmer* (*lme4* library, Bates et al. 2015). In each model, the random effects structure was simplified until convergence was reached (Barr et al. 2013). The dependent variable was Accuracy, coded as 1 (= correct response) or 0 (= incorrect response). The fixed factor was Word order, with two levels (*OS* vs *SO*), and it was centered prior to analysis. The final model included by subject random slope and intercept. The model revealed a significant effect of Word order ($\beta = 1.58$, $SE = 0.45$, $t = 3.51$, $p < 0.001$; Intercept: $\beta = 1.90$, $SE = 0.24$, $t = 7.74$, $p < 0.001$). Age was first included in the model as a covariate: it did not reach significance ($p > 0.5$) and was excluded from the model.

2.5 Comparing the role of features in the comprehension of CLDs

We now compare the overall comprehension from these new data with those reported in Manetti et al. (2016), which tested CLDs with the two DPs (DP₁ DP₂ Cl V) mismatching either in number or in gender (see Examples 8a-b in Section 1) with a group of 28 Italian-speaking children, aged from 5;2 to 6;2 years-old.

As shown in Figure 3, the overall comprehension of CLDs in the gender mismatch condition (53%) is much lower with respect to the comprehension in the *a*-Topic and in the number mismatch conditions, both leading to above chance results (*a*-Topic, 83%; Number Mismatch 88%).

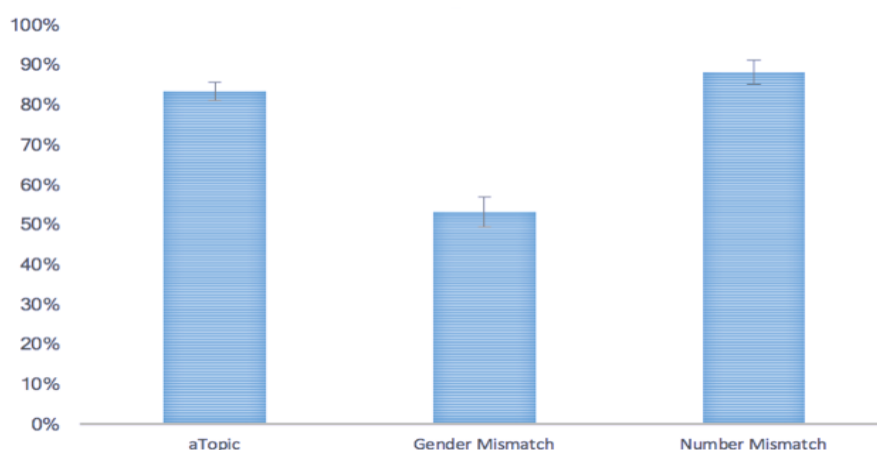


Figure 3: Proportions of correct responses across Mismatch conditions (Error bars refer to the standard error of the mean)

The analysis compared the three types of Mismatch (*a*-Topic, Gender, Number) to verify whether the comprehension of CLDs with *a*-Topics would differ from the comprehension in gender and in number mismatch conditions (data taken from Manetti et al. 2016). We used mixed-effects logistic regression (Jaeger 2008), and in each model, the random effects structure was simplified until convergence was reached (Barr et al. 2013). The dependent variable was Accuracy, coded as 1 (= correct response) or 0 (= incorrect response) and was analyzed using glmer (*lme4* library, Bates et al. 2015). The fixed factor was Mismatch, with three levels (*a*-Topics vs. Gender Mismatch vs. Number Mismatch). The final model included by subject random slope and intercept, and by item intercept. The model revealed that Accuracy in the *a*-Topic condition significantly differed from Gender mismatch ($\beta = -1.57$, $SE = 0.21$, $t = -7.20$, $p < .001$; Intercept: $\beta = 1.66$, $SE = 0.17$, $t = 9.64$, $p < .001$); whereas the compre-

hension in Number and *a*-Topic conditions did not differ ($\beta = 0.62$; $SE = 0.38$; $t = 1.62$; $p > .10$; Intercept: $\beta = 1.66$, $SE = 0.17$, $t = 9.64$, $p < .001$).

3 Discussion

This study first aimed at testing the comprehension of DP₁ DP₂ Cl V structure with *a*-Topics and the results revealed that children at age 5-6 correctly comprehended this type of CLDs, in line with the production results summarized and discussed in Section 1.

The analysis also showed that the S-O-Cl-V order was comprehended better than the O-S-Cl-V order. Manetti et al. (2016) reported the same tendency in the comprehension of CLDs in the number and in the gender mismatch conditions, but no significant difference emerged between the two word orders.³ We leave this issue open here, as further research is needed in order to determine the possible reasons as to why the *a*-Topic condition could favor a given order over the other more than the number and gender mismatch conditions⁴.

The second aim of the study was to compare the role of different featural mismatch conditions (between the DPs) in the comprehension of CLDs. To draw this comparison we ran a second analysis in which the comprehension of CLDs with *a*-Topics (10a) was compared to the data from Manetti et al. (2016), which investigated number and gender mismatch conditions⁵, as illustrated in (10b-c).

- (10) a. Il cocodrillo all'elefante lo bagna.
 the crocodile to.the elephant him-Cl washes
 'The crocodile, the elephant is washing him.'

3. In Manetti et al. (2016), the comprehension of S-O-Cl-V was numerically higher than the comprehension of O-S-Cl-V, in both conditions (Number: SO 90% vs. OS 86%; Gender: SO 56% vs. 49%). However, the analysis showed no significant difference between the two orders. It is worth mentioning that in the production data reported in Belletti & Manetti (2018), children produced both SO and OS orders, but they showed no significant preference.

4. See Belletti (2019) for a proposal on the possible role played by different derivations involved in the S-O-Cl-V and O-S-Cl-V structures concerning the *a*-Topic condition.

5. Notice that we could not directly compare the comprehension of CLDs with *a*-Topics with the comprehension of CLDs with simple topics in the gender and number match condition (e.g. Il cocodrillo l'elefante lo lava/The crocodile the elephant him-Cl washes) given that this match condition would yield an ambiguous sentence, compatible both with the OS and SO interpretations (OS: elephant washing crocodile, SO: crocodile washing elephant). Therefore, the comprehension of such sentences could not be measured in a design such as the picture-sentence matching task.

- b. Il cane i gatti lo mordono.
 the dog the cats him-Cl bite
 ‘The dog, the cats are biting him.’
- c. Il principe la bambina lo fotografa.
 the girl the prince him-Cl photographs
 ‘The prince, the girl is photographing her.’

The comparison showed that at the age of 5-6, comprehension of CLLDs with *a*-Topics significantly differed from gender mismatch only, whereas *a*-Topic and number conditions led to similar performance.

These results provided us with further insights into the different role that morphosyntactic features play in computing structures involving A-bar dependencies.

The good comprehension of *a*-Topics suggests that the feature expressed by the *a*-marker, dubbed [+a] (/affected) is among those to which the fRM principle is sensitive (see Belletti & Manetti 2018 for a more detailed discussion on this point).

Under the fRM approach, *a*-Topics allowed children to modulate the intervention configuration arising in this type of structures in which both DPs are lexically restricted [+NP]: as explained in Section 1, *a*-Topics create an intersection relation in relevant features, in the same way assumed for the parallel results from production.

In this respect, *a*-Topics have the same status as the number feature in contrast to the gender feature: children comprehended CLLDs with *a*-Topics (11a) and CLLDs with DPs mismatching in number (11b), both yielding an intersection relation of the relevant features which enables children to access the computation of the long distance dependency. In contrast gender mismatch (11c) did not help children in the comprehension of CLLDs: this feature is not taken into account in the computation, as proposed by Belletti et al. (2012) for object relative clauses, leading to an inclusion relation which is known to be problematic for young children⁶

6. Recall that the number and gender features play the same role in CLLDs as they do in different A'-dependencies in Italian, such as e.g. Object Relative Clauses: number mismatch has been shown to enhance the comprehension of headed ORs, as in (ia) (Adani et al. 2010) in sharp contrast with gender mismatch as in (ii) (Belletti et al. 2012).

- (i) L'orso che i conigli vestono.
 The bear that the rabbits are.dressing
 +R +NP +sing +NP +plu
- (ii) Il dottore che la bambina disegna.
 the doctor (masc) that the girl (fem) draws
 +R, +NP +NP

- (11) a. Il coniglio all'orso lo veste.
 The rabbit to.the bear him-Cl dresses
 +Top +NP +u +Top +NP +a
- b. I conigli l'orso lo vestono.
 The rabbits the bear him-Cl dress
 +Top +NP +plu +Top +NP +sing
- c. La bambina il principe lo fotografa.
 The girl the prince him-Cl photographs
 +Top +NP +Top +NP

In conclusion, the main result of this study clearly indicates that the unexpected behavior that children have shown in their production of *a*-Topics in CLDs matched with their high comprehension of the same CLLD structures involving an *a*-marked direct object topic.

Overall, the new results on the comprehension of CLDs together with previous findings found an explanation within the grammatically based approach assumed in terms of featural Relativized Minimality. *a*-Topics increased children's comprehension of CLDs significantly as an intersection relation in relevant features is created, in the same way assumed for number mismatch in previous findings. Hence in Italian the feature expressed by 'a' and the number feature are relevant features for the fRM principle, in sharp contrast with gender.

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