The Production of Object Relative Clauses in Italian-Speaking Children: A Syntactic Priming Study

Claudia Manetti and Carla Contemori

1. Introduction

Syntactic priming occurs when the exposure to a sentence with a particular syntactic construction can affect the processing and production of the same sentence structure (e.g., Branigan, 2007). Syntactic priming has been used to test the abstractness of the sentence representations of young and older children (starting from 3-year-olds), for a number of syntactic structures (e.g., passive vs. active sentences; Shimpi Shimpi, Gamez, Huttenlocher, & Vasilyeva, 2007; Bencini & Valian, 2008; Manetti & Belletti 2015; direct object vs. prepositional object constructions; Thothathiri & Snedeker, 2008a). Most of the existing research has shown significant priming effects both in comprehension and in production, showing that even young children have a knowledge of more complex syntactic structures that is abstract (Messenger & Fisher, 2018; Messenger, Branigan, & McLean, 2012a; Messenger, Branigan, McLean, & Sorace, 2012b).

For adults, previous syntactic priming research demonstrated that although structural priming is found in the absence of lexical or semantic overlap between prime and target sentences, priming effects tend to be stronger in the case of lexical overlap, such as for example, when the verb is the same in the prime and target sentence (e.g., Rowland, Chang, Ambridge, Pine, & Lieven, 2012). This effect is also known as the lexical boost effect. Conversely, the lexical boost has not yet been found in priming studies with children, while robust abstract effects are consistently observed in this population (see Rowland et al. 2012; Peter, Chang, Pine, Blything & Rowland, 2015; but see Branigan & McLean, 2016 for a study successfully showing a lexical boost in children).

In the present study, we focus on the priming of Object relative clauses in Italian-speaking children. A large body of research in child language acquisition has shown that typically developing children produce and comprehend Subject relative clauses (SR), as in (1a), starting from the age of 2-3 (e.g., Labelle, 1990). However, Object Relative (OR) clauses with two animate noun phrases (NP), as is (1b), appear later and children comprehend them at chance level until the age of 4-5 across a number of languages (e.g., for Italian Adani, 2011; for

---

[*] Claudia Manetti, University of Siena, manetticlaudia@gmail.com. Carla Contemori, University of Texas at El Paso, ccontemori@utep.edu.

English: Contemori & Marinis, 2013; for French: Labelle, 1990; 1996; for Portuguese: Correa, 1995; for German: Kidd, Brandt, Lieven & Tomasello, 2007).

(1) a. This is the goat that is pushing the cow.

    b. This is the goat that the cow is pushing.

For ORs, it is still unclear from existing studies why this type of syntactic construction is late acquired and when/how children develop abstract representations.

    To our knowledge, only one study has looked at the priming of ORs in children (Brandt, Nitschke & Kidd, 2017). Brandt et al. examined the priming of patient-first interpretations for ambiguous relatives that in German can be interpreted as either subject or object relative clauses, as shown in the example in (2a).

(2) a. Hier ist die Frau, die das Mädchen umarmt.
      here is the-NOM/ACC woman that-NOM/ACC the-NOM/ACC girl hugs
      'Here is the woman that is hugging the girl/that the girl is hugging.'

    In the experiment, Brandt et al. tested the ambiguous relatives before and after a comprehension priming phase. In the comprehension priming phase, a prime consisted of associating an ambiguous relative or a case disambiguated OR with a patient-first object-RC interpretation, by showing two pictures. For instance, for sentence (2a) participants would see a picture of a girl hugging a woman and a picture of a girl kissing a woman. In this case, the head of the ambiguous relative clause could only be interpreted as a patient, the subject within the relative clause could only be interpreted as the agent, and the verb within the relative clause could match only one of the two actions depicted in the pictures (e.g., the hugging action). For the target items, children heard an ambiguous relative that could be interpreted as agent-first or patient-first and saw two pictures on the screen, one compatible with a SR interpretation and one compatible with an OR interpretation. For example, for sentence (2a), one picture depicted a woman hugging a girl and the other picture depicted a girl hugging a woman. In Brandt et al.'s experiment, for each prime and target children had to select the right picture as part of a sentence comprehension task. Children aged 6 and 9 were administered the comprehension test in three phases.

    The results revealed no priming effect in 6-year-old German-speaking children, and a robust priming effect in 9-year-olds. The 6 years-olds tested in the study demonstrated a strong agent-first interpretation for the ambiguous relatives and could not override this bias in favor of an OR interpretation. Brandt et al. explained their results as a delayed development of OR abstract representations in the younger group of German-speaking children.

To further investigate the development of underlying representations for ORs, in the present study we test a group of Italian-speaking children aged 5:6-6 by using a novel experimental design. The task aims at priming ORs in production, to observe if abstract representations for ORs emerge in a different modality than the one tested by Brandt et al. (2017).

2. The study

The present study aims at addressing the following research questions: (i) can ORs be successfully primed in production, a modality that has not yet being tested in previous syntactic priming studies for ORs? (ii) Do children younger than nine years-old have underlying representations for ORs in Italian with two animate NPs?

To address research question (i), we ran a baseline experiment to test the production of ORs in Italian-speaking children and compared the results to a novel priming task in which we manipulated the exposure to ORs in the prime.

For research question (ii), according to Brandt et al., six years-old children do not have a knowledge of ORs that is structurally-constrained, and as a result have not showed abstract priming effects in comprehension. We are going to directly test this claim by recruiting a group of Italian-speaking children aged 5;6-6.

2.1. Participants

A total of twenty-eight Italian-speaking children participated in the study. A group of eleven children was tested with a picture description task in the baseline session (age range=6:0-7:0; mean age=6:6; SD=0.26). A group of seventeen children participated in a syntactic priming task (age range=5:7-6:2; mean=5:9; SD=0.2). Children were recruited in public preschools and primary schools in Italy and had no history of language delay or impairment. Italian was the only language spoken in the family.

### 2.2. Method and Materials
2.2.1. Baseline test

We conducted a picture description task to obtain a baseline for the production of ORs in Italian-speaking children.

The task aimed at eliciting relative clauses in a context with no priming. To make the use of a relative clause felicitous, we used sets of picture pairs (e.g., Hamburger & Crain, 1982). In each picture pair, one picture showed two animals (e.g., the lambs in Figure 1) carrying out an action on the other animal (e.g., the monkey in Figure 1), and the other picture showed the same figures with the roles reversed. The position of the two pictures was counterbalanced across-items.

During the session, the experimenter pointed to one of the characters (the patient in the singular; e.g. the monkey in Figure 1) and uttered the prompt 'This is…' for the participant. The child was then asked to continue the sentence by describing the picture indicated by the experimenter. The prompt intended to elicit a relative clause, and by focusing the child's attention on the patient of the action, could potentially lead to the production of an object relative (e.g. This is the monkey that the lambs are licking; see Contemori & Belletti, 2014 for a similar elicitation task).

Notice that in Italian a match in number agreement features between the relative head and the subject (and the agreeing verb) of the relative clause may in some cases lead to ambiguity, and the relative clause may be interpreted as either a SR or an OR (e.g., Belletti & Contemori, 2010). If a relative clause was produced by children, in order to avoid the potential ambiguity, we presented pictures in which two animals are acting on another animal, and the action is reversed in the other picture. In this case, the aim is to elicit ORs with a singular head, a plural subject and a plural verb within the relative clause, avoiding altogether the possibility of ambiguous relative clauses' production.

Two practice trials were included at the beginning of the baseline session. Each child received a randomized list of twelve experimental items.
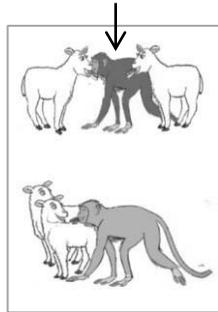
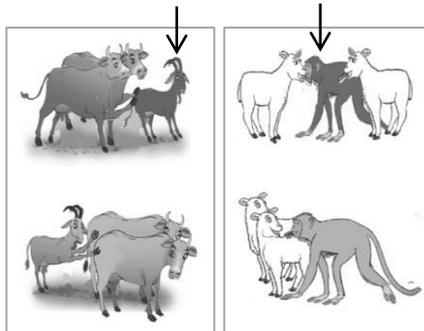**Figure 1. Example of a pair of pictures used in the baseline task.**

2.2.2. Syntactic Priming Task

A syntactic priming task was designed that consisted of twelve prime-target pairs. Prime and target cards included two pictures. As in the baseline task, in each prime and target one picture showed two animals carrying out an action on another animal, while the other picture showed the same figures with the roles reversed. The pairs of pictures used as target items were the same included in the baseline task.

In this experiment, the experimenter described the prime card by using either an OR or a passive subject relative (SR), as shown in (3a) and (3b):

(3) a. *Prime of an OR* (uttered by the experimenter):
         Questa é la capra che le mucche spingono
         'This is the goat that the cows are pushing.'

     b. *Prime of a passive SR* (uttered by the experimenter):
         Questa é la capra che viene spinta dalle mucche
         'This is the goat that is being pushed by the cows.'

Then, the experimenter pointed to the singular patient in the target card (e.g., the monkey in the left picture, as indicated by the arrow) prompting the child to describe the scene depicted by starting with: "This is…".

Figure 2. Example of a prime (on the left) and a target pair of pictures (on the right).

Children received twelve prime sentences (eight ORs and four passive SRs), presented in individually randomized order. Two practice trials were included at the beginning of the task, one including an OR prime and one including a passive SR prime.

Passive SRs are used as baseline structure because they resemble ORs in terms of functional relations and thematic roles (e.g., Vernice, Hartsuiker & Pickering 2012). As an alternative structure to ORs, SR with passives are often produced and comprehended with more ease in comparison to ORs when the head of the relative clause is animate and the verb is either Theme-experiencer or Agent-theme (e.g., Contemori & Belletti, 2014; Gennari & MacDonald, 2009).

2.3. Coding

Children's responses were recorded and transcribed by the second author. The second author coded children's responses according to two scoring criteria, a *lax coding* and a *strict coding*. The productions were then checked by the first author and disagreement was resolved by discussion until 100% agreement was reached.

Target descriptions were scored as ORs, passive SRs, and other responses. The category "other responses" included active SRs, declaratives and fragment sentences. Children produced a variety of ORs in line with previous elicited production studies on Italian (e.g., Belletti & Contemori, 2010; Contemori & Belletti, 2014). We considered the ORs produced by children according to two criteria, implementing a *lax scoring* and a *strict scoring*. We describe the two scoring criteria in detail in the following sections.

2.3.1. Lax coding

In the lax scoring, we counted as correct ORs with gap (4a), ORs with resumptive clitics (4b) and ORs with a resumptive NP (4c).

The use of a resumptive clitic is not a standard relativization strategy in Italian. However, it is common in colloquial language, with a clitic pronoun as the resumptive element (for Italian see, Contemori & Belletti, 2014; Guasti & Cardinaletti, 2003). Resumptive relatives in which the resumptive element is either a pronoun, as in (4b) or a NP, as in (4c), are attested cross-linguistically in both child and adult grammars (de Villiers et al., 1994; Labelle, 1990, 1996; Perez-Leroux, 1995).

ORs in the *lax scoring* required: (a) the patient of the action as head of the relative clause, followed by (b) a complementizer, (c) a transitive or intransitive verb, (d) an optional resumptive clitic or resumptive NP in object position. As shown in (4a-c), the subject in Italian ORs can optionally be unexpressed. When the subject within the relative clause is expressed it can be placed preverbally or postverbally.

(4) a. *OR with gap:*
  (Questa é) la capra che (le mucche) spingono (le mucche)
  (This is) the goat that (the cows) are pushing (the cows)

  b. *OR with resumptive clitic:*
  (Questa é) la capra che (le mucche) la spingono (le mucche)
  (This is) the goat that (the cows) are pushing her-CL (the cows)

  c. *OR with resumptive NP:*
  (Questa é) la capra che (le mucche) spingono la capra (le mucche)
  (This is) the goat that (the cows) are pushing the goat (the cows)

2.3.2. Strict coding

In the *strict* coding analysis, we only counted ORs with a gap. Notice that the *strict* coding is particularly conservative in the case of ORs produced by children that contain a ditransitive verb within the relative clause. Consider the production in (5a), in which the ditransitive verb "give" is used. In this case, the only possibility for 5-6 years-old children is to produce an indirect object clitic

within the OR. In standard Italian, sentence (5a) should contain a relative pronoun introduced by a preposition (i.e., in the case of (5a): La capra *a cui* le mucche danno un calcio / The goat *to whom* the cows are giving a push). However, the relative pronoun preceded by a preposition is typical of the more formal variety of Italian and is acquired through explicit teaching in school around age 10, as shown by Guasti & Cardinaletti (2003).

(5) a. *OR with resumptive clitic and indirect verb:*
         (Questa é) la capra che le mucche gli danno una spinta
         (This is) the goat that the cows give her-CL a push

In the statistical analysis, we first compare the production of OR sentences in the baseline test and in the syntactic priming task (between-subjects analysis). A second analysis will then be presented that focuses on the results of the syntactic priming task only (within-subjects).

2.4. Results
2.4.1. Baseline test vs. Syntactic priming task (between-subjects analysis)

Figure 3 shows the proportions of responses produced by children in the baseline test and in the syntactic priming task.
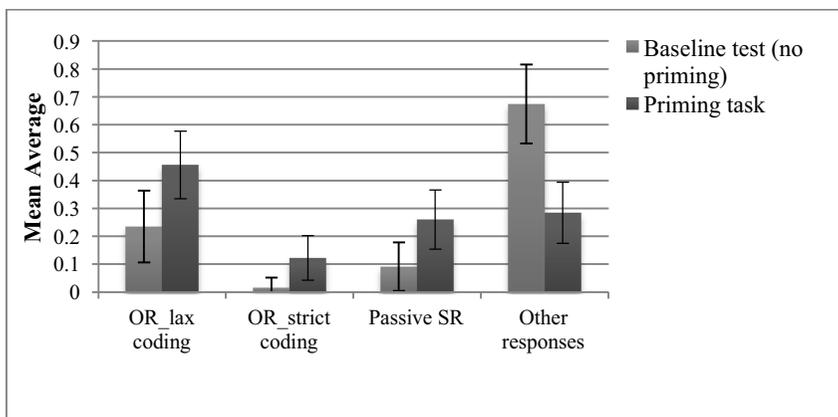
Figure 3. Proportion of responses given by children in the baseline and in the priming task.

We ran a between-subject analysis to verify if an effect of priming exposure emerged on the production of ORs. Mixed-effects logistic regression was used (Jaeger, 2008). In each model, the random effects structure was simplified until convergence was reached (Barr, Levy, Scheepers & Tily, 2013). The number of sentences produced per each subject and item was coded as 1 or 0 and analyzed using glmer (*lme4* library, Bates & Sarkar, 2007). The dependent variable was

the proportion of ORs produced (either counted according to the *lax* or *strict* scoring) and the fixed factor is Task Type, with two levels (Baseline test vs. Syntactic priming task).

In the lax scoring analysis, the dependent variable consisted of ORs with gap and resumption and the maximal random effect structure leading to convergence includes by subject and item random intercepts and by subject random slope. The model revealed a significant effect of Task Type, showing that exposure to object relatives in the prime led to significantly more ORs in the children's descriptions compared to the baseline test (ß=2.18, SE=1.10, t=1.97, p=.04; Intercept: ß=-1.34, SE=0.55, t=-2.40, p=.01).

In the strict scoring analysis, the dependent variable is ORs with gap and the maximal random effect structure leading to convergence includes by subject and by item random intercepts. The analysis showed a significant effect of Task Type, indicating that children produced significantly more ORs with gap in the syntactic priming test compared to the baseline test (ß=2.57, SE=1.09, t=2.337, p=.01; Intercept: ß=-4.00, SE=0.71, t=-5.612, p=.0001).

2.4.2. Syntactic priming task (within-subjects analysis)

Figure 4 illustrates children's productions in the syntactic priming task. The proportion of ORs and passive SRs produced is classified according to the prime type.
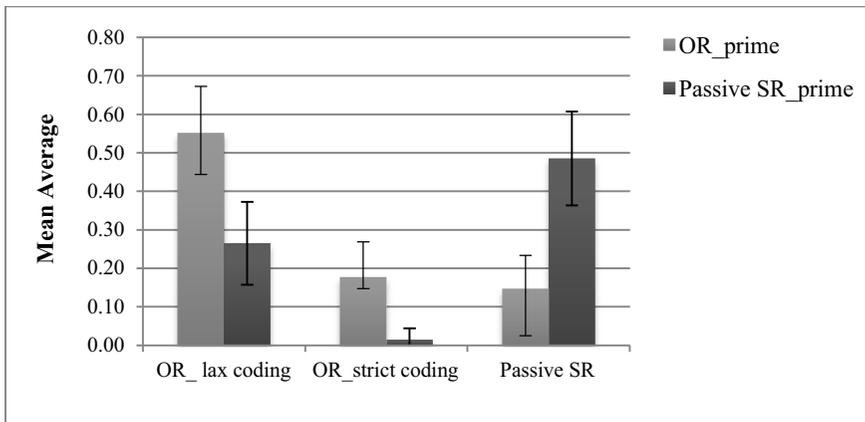
Figure 4. Proportion of ORs (lax and strict coding) and passive SRs produced by children in the syntactic priming task as a function of prime type.

We conducted two separate within-subjects analyses using mixed-effects logistic regression (Jaeger, 2008). In the models, the random effects structure was simplified until convergence was reached (Barr, Levy, Scheepers & Tily,

2013). The number of sentences produced per each subject and item was coded as 1 or 0 and analyzed using glmer (*lme4* library, Bates & Sarkar, 2007).

In the first analysis, the dependent variable consists of the amount of ORs (counted according to the *lax* scoring) vs. Passive SRs (OR=1, Passive SR=0); the fixed factor was Prime Type (OR prime vs. Passive SR prime). In the model, the maximal random effect structure leading to convergence includes by subject and by item random intercepts and by subject random slopes for the factor Prime Type. The model revealed a significant effect of Prime Type, suggesting that children were significantly more likely to produce ORs (with gap and resumption) after an OR prime than after a passive SR prime (ß=-3.56, SE=1.14, t=-3.101, p=.001; Intercept: ß=1.04, SE=0.71, t=1.45, p=.14).

In the second analysis, the dependent variable is the amount of ORs with gap only (counted according to the *strict* scoring) vs. Passive SR (OR=1, Passive SR=0). The fixed factor included in the model is Prime Type (OR prime vs. Passive SR prime), and the maximal random effect structure leading to convergence includes by subject and by item random intercepts. The model revealed a significant effect of Prime Type (ß=-5.37, SE=1.74, t=-3.074, p=.002; Intercept: ß=-2.31, SE=0.94, t=-2.44, p=.01), indicating that children produced significantly more ORs with gap after an OR prime than after a passive SR prime.

3. Discussion

In the present study, we ran two experiments investigating the production of Object relatives with two animate noun phrases in Italian-speaking children aged 5;6-6. One group of children participated in a baseline picture description task that aimed at eliciting relative clauses in a context with no priming. The results of the baseline task revealed that Italian-speaking children produced a low amount of ORs, in line with previous studies that used a similar elicitation method (e.g., Contemori & Belletti, 2014). A second group of children took part in a novel syntactic priming task. In the task, participants heard a description of a picture in the form of ORs or passive SRs (prime), and then had to describe a target picture.

In the analysis of the results, we first compared the ORs produced in the baseline and priming task (between-subjects analysis). In a second analysis, we focused on the priming task and compared the amount of ORs produced after an OR prime and a passive SR prime (within-subject analysis). The between-subjects analysis showed that exposure to ORs in the priming experiment led to a significant priming effect in children's description (both in the strict and lax coding) with respect to the baseline test. The within-subject analysis revealed a significant priming effect, indicating that more ORs were produced after an OR prime than after a passive SR prime. The effect was robust, emerging both in the lax and in the strict scoring analyses.

The results of the two tasks suggest that Italian-speaking children have underlying representations for ORs at age six. Our data are in line with previous

studies suggesting that children have abstract representations for several types of syntactic structures (e.g., passive vs. active sentences; in Shimpi et al., 2007; Bencini & Valian, 2008; Manetti & Belletti 2015; direct object vs. prepositional object constructions; Thothathiri & Snedeker, 2008a). In the child language acquisition literature there is a debate as to whether syntactic abstract knowledge develops from lexically-specific schemas (e.g., Rowland et al., 2012; Peter et al., 2015). As we did not test lexically-based priming, our results cannot address this theoretical debate.

Overall, our results are not in line with the study by Brandt et al. (2017) that did not show a comprehension priming effect in in 6-years-old children. However, several differences between our study and Brandt et al.'s study may have contributed to the discrepancy in the priming effect, including: (i) testing two different languages, (ii) examining priming in different language modalities and (iii) using different priming tasks.

In the present study, we recruited Italian-speaking children, while Brandt et al. tested German-speaking children. Notice that there are substantial differences between German and Italian in the formation of ORs, such as the absence of case marking in Italian. No study to date has directly compared the comprehension of ORs in the two languages using similar materials, therefore we cannot exclude that German-speaking children may acquire ORs with two animate NPs at a later stage than Italian-speaking children, which may explain the lack of a priming effect in 6-year-olds in Brandt et al. (2017).

Recent studies conducted with German-speaking children on the comprehension of ORs with two animate noun phrases indicate that 5-year-olds comprehend the type of ORs tested in the present experiment above chance (ORs with a singular noun phrase as head of the OR and plural subject within the relative clause; e.g., Adani, Stegenwallner-Schütz & Niesel, 2017). However, German-speaking children at age 5 are at chance or below chance level comprehending case-disambiguated ORs with two singular noun phrases (Adani et al., 2017; Haendler, Kliegl & Adani, 2015). On the other hand, Italian-speaking children aged 6 can perform above chance on ORs with a singular noun phrase as head and a plural subject within the relative clause (e.g., Adani, 2011; Contemori & Belletti, 2014).

Based on our results, we cannot exclude that abstract representations for ORs may emerge earlier in Italian-speaking children compared to German-speaking children. More research is needed that directly compares the two languages to clarify the differences in the results.

With respect to testing priming in two different modalities, in our study we examined production priming, while Brandt et al. tested priming in comprehension. Earlier priming studies on adults have showed differences between priming in production and comprehension (e.g., Tooley & Traxler, 2010 for a review). In particular, while priming in production has been shown even in the absence of lexical overlap, priming in comprehension seemed to be dependent on the presence of lexical overlap between the prime and target. While more research is needed comparing priming in comprehension and

production, recent studies on adults and children have demonstrated similar priming effects in the two modalities (e.g., Thothathiri & Snedeker, 2008a; 2008b; Tooley & Traxler, 2018), and have suggested that the processing of complex syntactic structures involves representations that are common to both production and comprehension (e.g., Branigan, Pickering & Cleland, 2000).

With respect to the type of task used, Brandt et al. (2017) choose a task that consisted of associating a (dis-preferred) OR interpretation to a potentially ambiguous relative clause construction, that is usually interpreted as a SR clause in German. Brandt et al.'s method may have tapped into the strength of 6-years-olds agent-first interpretation for the potentially ambiguous structure and their inability to override this bias (see Contemori, Carlson & Marinis, 2017 for related discussion), rather than explore the abstract representations for ORs in this population. Additionally, in the prime items presented in Brandt et al. an unambiguous relative clause was associated with an OR interpretation. Notice that successful comprehension of the prime sentence did not require full parsing of the prime sentence. As mentioned in the introduction section, one of the two pictures shown in the prime items depicted an action that corresponded to the verb presented in the ORs that participants heard. The other picture shown in the prime items depicted an action that was not consistent with the verb included in the OR. Thus, children may have focused on the verb within the relative clauses to successfully choose the right picture in prime items, without fully analyzing the syntactic structure of the sentence. Thus, an explanation for the lack of priming effect in 6 year-olds found in Brandt et al. could be a potential failure in parsing the prime sentence as an OR in this age group.

To conclude, in the present study a novel methodology was employed that successfully primed ORs in 5;6-6 Italian-speaking children. Future research should test the production and comprehension of ORs cross-linguistically and in younger children, to uncover inconsistencies between our study and previous priming research on ORs.

References

Adani, Flavia. (2011). Re-thinking the acquisition of relative clauses: Towards a grammatically-based account. *Journal of Child Language, 38(1),* 141-65.

Adani, Flavia, Stegenwallner-Schütz, Maja, & Niesel, Talea. (2017). The peaceful co-existence of input frequency and structural intervention effects on the comprehension of complex sentences in German-speaking children. *Frontiers in Psychology, 8,* 1590.

Barr, Dale J., Levy, Roger, Scheepers, Christoph, & Tily Harry J. (2013). Random-effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language*, 68 (3), 255-278.

Belletti, Adriana, & Contemori, Carla. (2010). Intervention and attraction: On the production of subject and object relatives by Italian (young) children and adults. In João Costa, Ana Castro, Maria Lobo & Fernanda Pratas (Eds.), *Language acquisition and development, 3. Proceedings of Gala 2009* (pp. 39-52). Cambridge: Cambridge Scholars Press.

Bencini, Giulia M.L., & Valian, Virginia V. (2008). Abstract sentence representations in 3-year-olds: Evidence from language production and comprehension. *Journal of Memory and Language*, *59*, 97–113.

Brandt, Silke, Nitschke, Sanjo, & Kidd, Evan. (2017). Priming the Comprehension of German Object Relative Clauses, *Language Learning and Development*, *13*(3), 241-261.

Branigan, Holly P. (2007). Syntactic priming. *Language and Linguistics Compass*, *1*, 1-16.

Branigan, Holly P., & McLean, Janet F. (2016). What children learn from adults' utterances: An ephemeral lexical boost and persistent syntactic priming in adult–child dialogue. *Journal of Memory and Language*, *91*, 141–157.

Branigan, Holly P., Pickering, Martin J., & Cleland, Alexandra A. (2000). Syntactic co-ordination in dialogue. *Cognition*, *75*, 13–25.

Contemori, Carla, Carlson, Matthew, Marinis, Theodoros. (2017). Online processing of English Which-questions by children and adults: a visual world study. *Journal of Child Language, 45(2),* 415-441.

Contemori, Carla, Marinis, Theodoros. (2014). The impact of number mismatch and passives on the real-time processing of relative clauses. *Journal of Child Language, 41(3),* 658-689.

Contemori Carla, Belletti, Adriana. (2014). Relatives and Passive Object Relatives in Italian speaking children and adults: Intervention in production and comprehension. *Applied Psycholinguistics*, *35(6),* 1021-1053.

Correa, Letícia M. Sicuro (1995). An alternative assessment of children's comprehension of relative clauses. *Journal of Psycholinguistic Research, 24*, 183–203.

Gennari, Silvia P. & MacDonald, Maryellen C. (2009). Linking production and comprehension processes: The case of relative clauses. *Cognition*, *111*, 1-23.

Guasti, Maria Teresa, Cardinaletti, Anna (2003). Relative clause formation in Romance child production. *Probus*, *15*, 47- 89.

Hamburger, Henry & Crain, Stephen. (1982). Relative acquisition. In S. Kuczaj (ed.), *Language development*. Vol. 1: syntax and semantics. Hillsdale, NY: Erlbaum.

Haendler, Yair, Kliegl, Reinhold, & Adani, Flavia. (2015). Discourse accessibility constraints in children's processing of object relative clauses. *Frontiers in Psychology*, *6*.

Jaeger, T. Florian. (2008). Categorical data analysis: Away from ANOVAs 1476 (transformation or not) and towards logit mixed models. *Journal of Memory and Language*, *59*, 434–446.

Kempe, Vera, & MacWhinney, Brian. (1999). Processing of morphological and semantic cues in Russian and German. *Language and Cognitive Processes*, *14*(2), 129–171.

Kidd, Evan, Brandt, Silke, Lieven Elena, & Tomasello Michael. (2007). Object relatives made easy: a crosslinguistic comparison of the constraints influencing young children's processing of relative clauses. *Language and Cognitive Processes, 22*, 860–97.

Labelle, Marie. (1990). Predication, WH-movement and the development of relative clauses. *Language Acquisition, 1*, 95–119.

Labelle, Marie. (1996). The acquisition of relative clauses: movement or no movement? *Language Acquisition 5*, 65–82.

MacWhinney, Brian, Bates, Elizabeth, & Kliegl, Reinhold. (1984). Cue validity and sentence interpretation in English, German, and Italian. *Journal of Verbal Learning & Verbal Behavior*, *23*(2), 127–150.

Manetti, Claudia, & Belletti, Adriana. (2015). Causatives and the acquisition of the Italian passive. In Cornelia Hamann & Esther Ruigendijk (Eds.), *Language*

Acquisition and Development Proceedings of GALA 2013 (pp. 282-298). Newcastle: Cambridge Scholars Publishing.

Messenger, Katherine, Branigan, Holly P., & McLean, Janet F. (2012a). Is children's acquisition of the passive a staged process? Evidence from six- and nine-year-olds' production of passives. *Journal of Child Language, 39*, 991–1016.

Messenger, Katherine, Branigan, Holly P., McLean, Janet F., & Sorace, Antonella. (2012b). Is young children's passive syntax semantically constrained? Evidence from syntactic priming. *Journal   of Memory and Language*, *66*, 568–587.

Messenger, Katherine, & Fisher, Cynthia. (2018). Mistakes weren't made: Three-year-olds' comprehension of novel-verb passives provides evidence for early abstract syntax. *Cognition*, *178*, 118-132.

Peter, Michelle, Chang, Franklin, Pine, Julian M., Blything, Ryan, & Rowland, Caroline F. (2015). When and how do children develop knowledge of verb argument structure? Evidence from verb bias effects in a structural priming task. *Journal of Memory and Language*, *81*, 1-15.

Shimpi, Priya, Gamez, Perla, Huttenlocher, Janellen, & Vasilyeva, Marina. (2007). Syntactic priming in 3- and 4-year-old children: Evidence for abstract representations of transitive and   dative forms. *Developmental Psychology*, *43*, 1334–1346.

Rowland, Caroline F., Chang, Franklin, Ambridge, Ben, Pine, Julian M., & Lieven, Elena V. M. (2012). The development of abstract syntax: Evidence from structural priming and the lexical   boost. *Cognition*, *125*, 49–63.

Thothathiri, Malathi, & Snedeker, Jesse. (2008a). Give and take: Syntactic priming during spoken language comprehension. *Cognition*, *108*(1), 51–68.

Thothathiri, Malathi, & Snedeker, Jesse. (2008b). Syntactic priming during language comprehension in three- and four-year-old children. *Journal of Memory and Language, 58*, 188–213

Tooley, Kristen M., & Traxler, Matthew J. (2010). Syntactic priming effects in comprehension: A critical review. Language and Linguistics Compass, *4*(10), 925–937.

Tooley, Kristen M., & Traxler, Matthew J. (2018). Implicit learning of structure occurs in parallel   with   lexically-mediated   syntactic   priming   effects   in   sentence comprehension. *Journal of Memory and Language*. 98, 59-76.

Vernice, Mirta, Hartsuiker, Robert J., & Pickering, Martin J. (2012). Thematic emphasis in language production. *Language and Cognitive Processes*, *27*, 631-664.

Proceedings of the 43rd annual Boston University Conference on Language Development

edited by Megan M. Brown
and Brady Dailey

Cascadilla Press   Somerville, MA   2019