

NOT *ONLY* TASK MATTERS, POSITION *ALSO*

Francesca Panzeri
Università di Milano Bicocca

Francesca Foppolo
Università di Milano Bicocca

Abstract: *We present a study on Italian children's comprehension of the focus particles also and only, in which we show that different factors (such as age, trigger type and syntactic position) impact on children's performance. We discuss these results in relation to the fact that also is an additive operator that asserts the prejacent and presupposes its alternatives, while only is an exclusive operator that asserts the denial of the alternatives and presupposes its prejacent.*

Keywords: *focus particles, also, only, presuppositions, language acquisition*

1. Introduction

Sentences like (1) and (2) that contain the focus-sensitive operators *also* and *only* convey two propositions: that the prejacent (3) is true and, respectively, that at least one, or none, of the contextual alternatives is true, as in (4) and (5):

- (1) Also Lyn came
- (2) Only Lyn came
- (3) Lyn came
- (4) Someone else (besides Lyn) came
- (5) No one else (except for Lyn) came

These focus-sensitive operators differ in at least three respects:

- (i) *also* is an additive operator: it adds the information that at least one alternative is true (cf. (4)); *only* is an exclusive operator: it denies that other relevant alternatives hold (cf. (5));
- (ii) *also* asserts the prejacent and presupposes its alternatives (Karttunen & Peters 1979); *only* asserts the denial of its alternatives and presupposes the prejacent (Horn 1969);
- (iii) *only* encodes a lexicalized dependency on focus marking (Beaver & Clark 2003), while pragmatic factors might modulate the association with focus for other operators such as *also*.

We propose to investigate how children comprehend and interpret these particles to understand if and how these peculiarities result in a different acquisition pattern.

Despite the fact that children produce these particles quite early (Höhle et al. 2009; Müller et al. 2009, a.o.), a high number of comprehension studies indicate that children reach an adult-like interpretation at a late stage of language acquisition (cf. Berger & Höhle 2012 for an overview).

The most studied particle is the exclusive operator *only*: the kinds of errors committed by children suggest that they either do not assign it the correct scope interpretation, preferring to associate it with alternatives triggered within the verb phrase in a situation in which *only* is in a pre-subject position (Crain et al. 1994; Zhou & Crain 2010), or that they simply ignore its contribution (interpreting the sentence as if it lacked *only*), possibly because they are not able to pragmatically retrieve the set of relevant contextual alternatives needed for interpretation (Paterson et al. 2003; see Müller et al. 2011 for a criticism).

The idea that children ignore the contribution of the focus particle in the derivation of sentence meaning has also been put forth to explain children's poor performance with the additive particle *also*: Bergsma (2006) found that in Picture Selection Task more than 50% of the 5 year-olds, and 40% of the 6-year-olds, selected the picture corresponding to the prejacent, without taking into account the alternatives triggered by *also*. Hüttner et al. (2004) tested the comprehension of German *auch* and found that children's most common error is the wrong selection of the set of alternatives (i.e., children interpret the sentence with unaccented *auch*, that triggers the association with object alternatives, as if the particle were accented, associating it with subject alternatives), or they disregard the additive particle, interpreting the sentence as equivalent to the prejacent.

Few studies tested the comprehension of both particles, and all suggest that the exclusive focus particle seems to be easier to comprehend than the additive one. For example, in two different studies employing different tasks Bergsma (2002; 2006) investigated Dutch *alleen* (*only*) and *ook* (*also*) and found that *alleen* is comprehended better and earlier than *ook*, with children almost reaching an adult-like performance around the age of 5. Matsuoka et al. (2006) tested the comprehension of the Japanese additive particle *mo* (*also*) and the restrictive particle *dake* (*only*) using a Truth-Value Judgment task, and concluded that it is easier for children to take into account the meaning contribution of the exclusive particle *dake*.

More recently, Berger & Höhle (2012, B&H hereafter) argued that children's poor performance with the additive particle might in fact depend on the experimental paradigms used (picture selection and Truth-Value-Judgment tasks): children would accept situations that depict the prejacent as true (i.e., the sentence without the particle *also*) because the sentences are semantically true in this situation, even if their pragmatic presuppositions (that at least one contextual alternative is true) are not satisfied. Children's "pragmatic tolerance" has in fact been attested in a number of studies involving scalar implicatures (Katsos & Bishop 2011), and since the alternatives triggered by *also* are presupposed, B&H hypothesize that children might assent to pragmatically infelicitous sentences simply because they are being tolerant, not necessarily because they ignore the contribution of the additive operator. To address this hypothesis, B&H tested children with a Reward-paradigm in which children are asked to decide whether a puppet deserves a reward or not, making their decision on the basis of the correct computation of the alternatives triggered by the focus particles. With this paradigm, German children from age 3 are shown to be competent with both the additive particle *auch* (*also*) and the exclusive particle *nur* (*only*), appearing in pre-object position.

This is a striking result, considering the high number of studies that attested children's poor performance with focus particles, especially with the additive particle. Still, a number of questions remain unanswered: first of all, B&H tested the two particles in one position only, before the Verb Phrase, and not in sentence initial position (before the subject), a position that was particularly challenging for children, as shown by Crain et al. (1994) and Zhou & Crain (2010). In the second place, children's performance in the first experiment reported by B&H is difficult to interpret: in the same reward paradigm, they compared sentences with *auch* and sentences without a focus particle and reported that children performed at ceiling when the focus particle was present. In fact, they also found that, unlike adults, children rewarded the puppet a lot even when the focus particle was absent (63% in the case of 3 year-olds and 38% in the case of the 4 year-olds). This suggests that, at least for some children, especially the youngest, the presence of the particle itself made no difference. Thirdly, even if children's poor performance with *also* could be accounted for by taking into account their pragmatic tolerance (since the alternatives are presupposed), it is not clear how to explain why children made errors with the exclusive operator *only* in previous studies, provided that this particle asserts the denial of its alternatives, and thus no pragmatic competence should be required for interpretation.

2. Our study

In this paper we present an experimental study on children's comprehension of the Italian exclusive operator *solo* (*only*) and additive particle *anche* (*also*) in sentences like (6) and (8).

- (6) [*Solo / Anche*] la zebra ha pulito il suo piatto.
 [*Only / Also*] the zebra cleaned up her dish.
- (7) [No one else except the zebra / Someone else besides the zebra] cleaned up her dish.
- (8) L'elefante ha sbucciato [*solo / anche*] la pera.
 The elephant has peeled [*only / also*] the pear.
- (9) There was [nothing else except the pear / something else besides the pear] that the elephant has peeled.

To our knowledge, there are no studies on the comprehension of these particles in Italian. And Italian constitutes an interesting testing ground provided that the association with the correct set of alternatives depends less on prosody or pragmatic factors, and more on syntactic position, compared to other languages. In fact, Italian allows these particles in different syntactic positions in which the scope of the particle itself might be determined by its position, independently of prosody. That is, when the focus particle appears before the subject, as in "[*Solo/Anche*] x VP" (cf. (6)), the particle takes scope over the subject DP and thus it evokes other individuals that performed the action denoted by VP, as in (7)); when it appears after the verb and before the object, as in "x V [*solo/anche*] DP" (cf. (8)), it takes scope over the object DP and univocally evokes other alternative DP-objects, as in (9). Since in English, German and Dutch the selection of correct set of alternatives evoked by the focus particles is sometimes dependent on accentuation, and since different studies

found that children incorrectly identify the set of alternatives in those languages (Crain et al. 1994; Hüttner et al. 2004), testing these particles in Italian enables us to set apart difficulties that might depend on incorrect prosodic recognition to those directly related to the comprehension of the focus particle contribution.

The task was modelled after B&H's Reward-paradigm. Differently from B&H, we also tested the condition in which the focus particle appeared before the subject, in order to allow for a comparison with other studies on different languages that did the same manipulation but using a different task. This would allow for a more comprehensive comparison across different paradigms, languages and triggers. In principle, we didn't expect any difference between German and Italian kids in cases like (8), since the structure of the sentences and the task were identical. Conversely, we might expect some difficulties in sentences like (6), on the basis of results on English, in which an incorrect association with the alternatives was found when the particles associated with the sentential subject. Also, we might expect a difference between triggers, with *anche* being more challenging than *solo* on the basis of previous studies, although there was no hint of this in the B&H's study.

2.1 Method

Participants.

Forty-five monolingual Italian-speaking children participated in the study, 22 aged 4 (age range: 3;11-4;11; MA=4;5), and 23 aged 5 (age range: 5;0-5;8; MA=5;4).

Materials and procedure

A total of 16 sentences were presented to each child, in which the type of particle and its sentential position were varied within subjects. The experiment comprised 2 blocks, corresponding to two experimental conditions, each consisting of 8 experimental trials, 4 with the exclusive particle *solo* and 4 with the additive particle *anche* presented in a pseudo-randomized order. The blocks were tested consecutively to each child, and their order was counterbalanced across participants. In Condition 1 (C1) the focus particles appeared in pre-subject position (*Solo/Anche* x V DP, C1); in Condition 2 (C2) they appeared in pre-object position (x V *solo/anche* DP - this being the only condition tested by B&H). Two different versions of the experiment were created in order to control for possible effects of order of presentation: in version A the focus particles appeared in pre-subject condition in the first block, and in pre-object condition in the second block (C1 first; C2 second), in version B the order was reversed (C2 first; C1 second). This was necessary to avoid the confusion that a random presentation of the items might have provoked, provided that each block had a different setting (two characters/one character) and needed a preliminary explanation tailored on that specific setting. Also, the question posed to the child was different in the two cases¹. First the experimenter explained the child

¹ As one of the reviewers pointed out, the form of the question posed in the two conditions were different: in C1 two characters were present and a wh-question about who deserved the reward was asked. In this case, children might have responded by simply mentioning one of the two characters, in line with other studies that show that children do not always provide exhaustive answers (a.o. Horobin & Acredolo 1989). This might explain the lower performance with *anche*, that required mentioning two characters. We are pursuing this idea further in a follow up to this study, in which we vary the form of the question posed in this condition. Similarly, the lower accuracy in case of *solo* in

that they were going to play a game in which she was asked to help a puppet to decide whether some animals deserved a reward or not. Then children were shown a video with 16 short stories in which four (an elephant, a frog, a zebra and a giraffe in C1) or three (an elephant, a frog, and a lion in C2) puppet animals were acting. Each story began with the elephant that assigned a job to the zebra and the giraffe (in C1), or to the lion (in C2). Then these went behind a curtain to do their job, and the frog always peeped behind the curtain to check. At the end of each scene, the two animals came back and the child had to decide whether they deserved a reward, on the basis of an indirect statement containing *solo/anche* that was made by the frog (who has seen what happened behind the curtain) and was repeated by the elephant, that finally posed the question to the child. The following examples illustrates the two conditions:

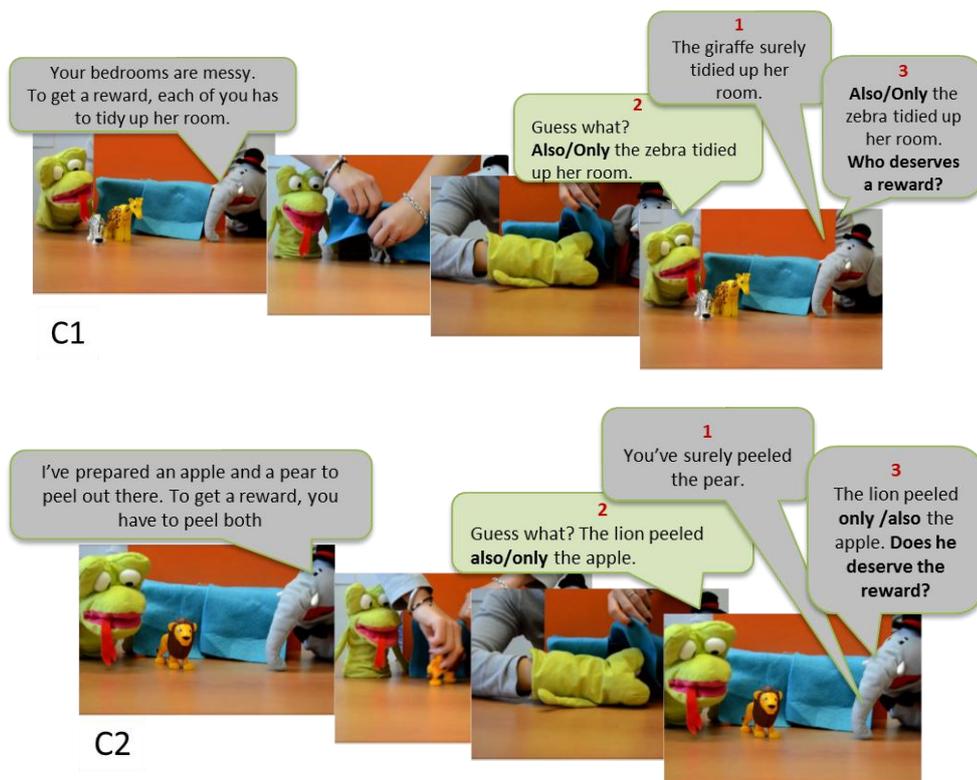


Fig. 1 Example of the stories presented in the two conditions:
C1 (pre-subject position); C2 (pre-object position)

C2, when no reward was expected for the character, might depend on a general children's preference to reward the character. We acknowledge the fact that this might be a possibility. Nonetheless, this was not the case for the study in German, in which exactly the same condition was tested and children performed at ceiling.

In particular, in C1, children had to reward both animals when *also* was used, and to give the reward to one of the animals when *only* was used. This factor was counterbalanced across trials. In C2, they had to reward the lion when *also* was used, and not to do so when *only* was used. Note that this condition is parallel to that used by B&H in German.

2.2. Results

Children’s overall accuracy was 65%: 5-year-olds performed better than 4-years-old (70% vs. 59%); overall, children made more errors with *anche* than with *solo* (60% vs. 70%), especially when *anche* modified the sentential subject (overall accuracy: 55% in C1 and 74% in C2). Children’s distribution by age and conditions is plotted in Fig. 2:

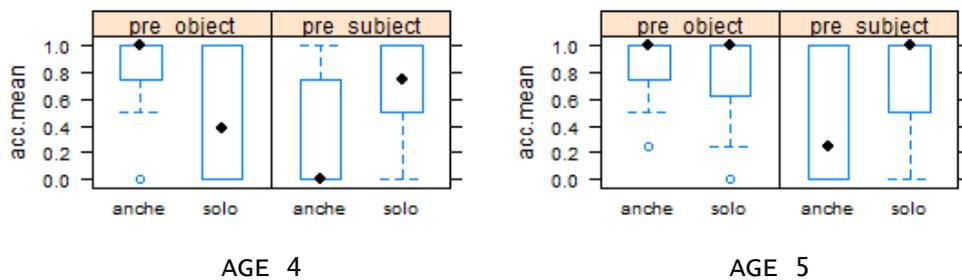


Fig. 2. Children’s mean accuracy (and median) as a function of Age (4-left, 5-right), trigger type (*anche*-left, *solo*-right) and position (pre-object-left, pre-subject-right).

Data were analyzed by means of a Generalized linear mixed model performed in R (Baayen, Davidson & Bates 2008). We tested the effects of the four variables on children’s accuracy: ORDER of presentation (A/B), AGE (4/5), TRIGGER (*anche/solo*) and POSITION (pre-subject/pre-object), treated as fixed factors; subjects and items were included as random factors in the model. The reference level for each condition corresponds to the first element of the pair reported in brackets above. Different models were performed, and compared. A summary of the model that best fits the data is reported in Table 1. The analyses revealed a significant effect of Position (triggers in pre-subject position were more difficult for children), but only a marginal significant effect of trigger type was found (*anche* was marginally more difficult than *solo*). The effect of Age and Order of presentation were not significant. A significant interaction of trigger and position was found (children made more errors in pre-subject *anche*, but in pre-object *solo*) and this is especially evident in the younger kids, as the significant three-way interaction of trigger, position and age demonstrates.

	Estimate	Std. Err	z-value	p
Intercept	4.2192	3.7085	-0.138	0.25523
Order	-0.1014	0.6985	-0.145	0.884589
Age	0.7145	0.8013	0.892	0.372542
Trigger	5.9352	3.0786	1.928	0.053871
Position	6.7572	3.3715	2.004	0.045048
Age*Trigger	-0.6255	0.6702	-0.933	0.350674
Age*Position	-0.6171	0.7368	-0.838	0.402269
Trigger*Position	-14.8517	4.4408	-3.344	0.000825
Age*Trigger*Position	2.2011	0.9697	2.270	0.023217

Table 1. Summary of fixed effects.

3. Discussion

Our results show that the use of a certain paradigm does not suffice to make children competent in all conditions. In our study, we used the same paradigm used by B&H, but Italian children's performance was less than optimal in some condition, and it was affected by the interaction of different factors, such as age of the child, type of trigger and its position in the sentence. To interpret these results, one should acknowledge the fact that an explanation of children's poor performance in previous studies cannot rely solely on considerations about the type of task used. Our data reveal that the difference between *only* and *also* is tightly linked to the phrasal position in which the particle appears, and that this difficulty increases for younger children. When the particle modifies the subject (a condition that was missing in B&H) *also* is found to be harder than *only* (less than 30% correct answers at age 4); when the particle comes after the predicate, *also* becomes the easiest one. A similar pattern was revealed by Paterson et al. (2006) in which they evaluated *only* in pre-subject and pre-verbal position in English speaking children and found that they had more problems in the latter. Paterson and colleagues explained children's behaviour in terms of difficulty in retrieving/evaluating the contrast set.

We might explain the difference between *anche* and *solo* found in our study by considering the dichotomy between additive and exclusive particles and the different paths required for the identification of the alternatives and, also, the different status of the alternatives retrieved.

First of all, children need to identify the (relevant) alternative in case of the additive *anche*; this is not required in case of the exclusive *solo*, in which, in fact, all alternatives are denied, with no need to explicitly retrieve them. Secondly, while (the denial of) the alternatives is part of the assertion in case of *solo*, the identification of the alternatives is part of the presupposed content in case of *anche*. This might be another source of difficulty for children, especially the youngest ones, that need to access the presupposed (implicit) vs. asserted (explicit) content, and might explain why *solo* is, in general, easier.

As for the influence of syntactic position on children's performance, we suggest to interpret our result as the following: when the particles appear after the verb, as in "The lion peeled *also/only* the pear" the retrieval of the alternatives might be easier in case of *also* because, in this case, the predicate explicitly restricts the set of alternatives to the two objects that had to be peeled; in case of *only*, instead, this restriction ends up in the negation of one of the alternatives that has been generated by the focus particle (i.e. the lion did not

peeled the apple), something that might be more costly for younger kids to integrate and thus more susceptible to error.

Finally, the significant interaction of age, type of particle and its position in modelling children's performance might be accounted for along the lines suggested by Partee (1999) and Beaver & Clark (2003), namely: the association between *also* and its focus alternatives might be more pragmatic, or context-dependent, in nature (and thus more susceptible to age effects), while this association is (more) grammaticized in case of *only*.

We are currently extending our research to older children in the elementary school testing similar material with a different paradigm. Preliminary findings seem to corroborate the results discussed here.

References

- Baayen, R. Harald, Douglas J. Davidson and Douglas M. Bates. 2008. "Mixed-effects modeling with crossed random effects for subjects and items". *Journal of memory and language* 59.4: 390-412.
- Beaver, David, and Brady Clark. 2003. "Always and only: Why not all focus-sensitive operators are alike". *Natural language semantics* 11.4: 323-362.
- Bergsma, Wenda. 2002. "Children's interpretations of Dutch sentences with the focus particle *alleen* ('only')". In *The process of language acquisition: Proceedings of the 1999 GALA Conference*, ed. by Ingeborg Lasser, 263-290. Frankfurt (Main): Peter Lang.
- Bergsma, Wenda. 2006. "(Un)stressed *ook* in Dutch". In *Semantics in acquisition*, ed. by Veerle van Geenhoven, 329-48. Dordrecht: Springer.
- Berger, Frauke, and Barbara Höhle. 2012. "Restrictions on addition: children's interpretation of the focus particles *auch* 'also' and *nur* 'only' in German". *Journal of child language* 39.2: 383-410.
- Crain, Stephen, Weijia Ni and Laura Conway. 1994, "Learning, parsing and modularity". In *Perspectives on sentence processing*, ed. by Charles Clifton, Lyn Frazier & Keith Rayner, 443-467. Hillsdale, NJ: Lawrence Erlbaum.
- Höhle, Barbara, Frauke Berger, Anja Müller, Michaela Schmitz and Jürgen Weissenborn. 2009. "Focus Particles in Children's Language: Production and Comprehension of *Auch* 'Also' in German Learners from 1 Year to 4 Years of Age". *Language Acquisition* 16.1: 36-66.
- Horobin, Karen, and Curt Acredolo. 1989. "The Impact of Probability Judgments on Reasoning about Multiple Possibilities". *Child Development*, 60.1: 183-200.
- Horn, Laurence R. 1969. "A Presuppositional Analysis of Only and Even". In *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*, ed. by Robert I. Binnick, 97-107. Chicago: University of Chicago. Available at: http://ling.yale.edu/sites/default/files/files/horn/Horn1969_CLS5.pdf
- Hüttner, Tanja, Heiner Drenhaus, Ruben van de Vijver and Jürgen Weissenborn. 2004. "The acquisition of the German focus particle *auch* 'too': Comprehension does not always precede production". In *Proceedings of the 28th Annual Boston University Conference on Language Development, online supplement*, ed. by Alejna Brugos, Linnea Micciulla, and Christine E. Smith. Available at: <http://www.bu.edu/buclid/files/2011/05/28-huettner.pdf>

- Karttunen, Lauri, and Stanley Peters. 1979. "Conventional implicature". In *Syntax & Semantics Volume 11: Presupposition*, ed. by Choon-Kyu Oh and David A. Dinneen, 1–56. New York, San Francisco, London: Academic Press.
- Katsos, Napoleon, and Dorothy VM Bishop. 2012. "Pragmatic tolerance: Implications for the acquisition of informativeness and implicature". *Cognition* 120.1: 67-81.
- Matsuoka, Kazumi, Nobuhiro Miyoshi, Koji Hoshi, Masanobu Ueda, Izumi Yabu and Miki Hirata. 2006. "The acquisition of Japanese focus particles : *dake* 'only' and *mo* 'also'". In *Proceedings of the 30th Annual Boston Conference in Language Development, online supplement*, ed. by David Bamman, Tatiana Magnitskaia, and Colleen Zaller. Somerville, MA: Cascadilla Press. Available at: <http://www.bu.edu/buclid/files/2011/05/30-MatsuokaBUCLD2005.pdf>
- Müller, Anja, Barbara Höhle, Michaela Schmitz and Jürgen Weissenborn. 2009. "Information structural constraints on children's early language production: The acquisition of the focus particle *auch* ('also') in German-learning 12- to 36-month-olds". *First Language* 29(4): 373–99.
- Müller, Anja, Petra Schulz and Barbara Höhle. 2011. "Pragmatic children: How German children interpret sentences with and without the focus particle *only*". In *Experimental pragmatics/semantics*, ed. by Jörg Meibauer and Markus Steinbach, 79-100. Amsterdam: Benjamins.
- Partee, Barbara H. (1999). "Focus, Quantification, and Semantics-Pragmatics Issues". In *Focus: Linguistic, cognitive, and computational perspectives*, ed. by Peter Bosch and Rob van der Sandt, 213–231. Cambridge: Cambridge University Press.
- Paterson, Kevin B., Simon P. Livsledge, Caroline Rowland and Ruth Filik. 2003. "Children's comprehension of sentences with focus particles". *Cognition* 89: 263–94.
- Paterson, Kevin B., Simon P. Livsledge, Diane White, Ruth Filik and Kristina Jaz. 2006. "Children's interpretation of ambiguous focus in sentences with 'only'". *Language Acquisition* 13 (3): 253–84.
- Zhou, Peng, and Stephen Crain. 2010. "Focus identification in child Mandarin". *Journal of child language* 37.5: 965-1005.