

# Development of reasoning through arguing in young children

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The aim of this paper is to analyze how young children reason during argumentative conversations in different educational settings. According to the Vygotskian and socio-cultural perspective, we assume that the child's thought is developed through discourse, especially during learning processes involving peer interactions and adult-guided discussions. In this paper, we present and qualitatively analyze some of our empirical data collected in order to show the relevance of narrative processes during argumentative activities involving young children in educational contexts. Firstly, we refer to counter-factual reasoning as the argumentative strategy used by preschool children in disputes about narrative. We show some specific spatial-temporal features, mainly linked to a need of generalization and logical bases (i.e. authority of sources, rituality of situations, and plausibility of consequences). Secondly, we analyze how during family conversations children use practical reasoning that derive from parental discourses about norms and directives. Finally, we present a case in which reasoning through arguing is applied in school to teach history to primary school children. Implications of reasoning among children in different educational settings are discussed in order to highlight the relevance of argumentation in school and family activities.

**Keywords:** Vygotskian perspective; socio-cultural perspective; reasoning; argumentation; preschoolers' narratives; family conversations.

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## 1. Theoretical frame

For researchers who embrace socio-cultural theoretical framework – who thus acknowledge the interactional root of higher psychic functions [22; 24; 57] and conceive cognitive growth as a progressive mastering of participation in sociocultural activities [42; 43] – the exploration of cognitive processes in their spontaneous contextual occurrences [26] constitutes one of the most intriguing and challenging enterprise.

Cognitive development and learning are not seen as taking place within individual' mind rather as processes of improving contribution to interactional activities [41]. It follows that the basic unit of analysis cannot be the isolate novice. It is the whole activity, including not only all the participants but also the cultural artifacts they make use of, that becomes the focus of researchers' analysis.

Within socio-cultural perspective a special attention is devoted to the semiotic tools people use in accomplishing cognitive activities as these cultural resources not only facilitate but always *shape* the unfolding of the very same activities [59]. A crucial, powerful role is thus attributed to language [56] and it is suggested to define development itself as a progression through a complex set of culturally shared and socially supported *language-games* [18]. For instance, understanding mental states of others, false belief or deceit in children can be a matter of

learning the appropriate cultural language-games for intentional behavior in their internal logical sequence.

The role of language, when it is conceived as an historical product whose meaning is closely linked with its use [60] cannot be separated from the overall socio-cultural knowledge. Children learn progressively a complex set of relations between contexts of use and linguistic features. Linguistic knowledge is embedded in socio-cultural knowledge, and at the same time values, rules, habitus, concepts are acquired through language. This process has been called by Ochs and Schieffelin *language socialization* [31; 50] and thus it includes both *socialization through language* and *socialization to use language*. This process is never completed and never ends [27]: every interaction is potentially a socializing experience inasmuch members of a social group are socializing each other by negotiating and sharing situational meanings [38; 39].

The theoretical assumptions we have sketched so far have the implication that development and education have to be approached as social constructions, to borrow Edwards' words «as social practices, in which becoming competent, achieving understanding, being educated and so are matters of how people get *counted as that*» [8, p. 63]. Such a methodological approach can help the elaboration of a psychological perspective that aims at understanding how development-and-education, in

their social, cognitive, and linguistic features take place within a culture.

We found in conversational analysis [1; 4; 13; 44; 45; 46; 48; 55] a powerful tool for a cultural and discursive approach that is offering means adequate to the presentation and explanation of human behavior and of its development. In using conversational analysis approach and thus exploring actual talk-in-interaction we are not dismissing our psychological interest in understanding how children practice cognitive operations. Indeed our choice for studying family or school interactions is not random; rather it is driven by the fact that these are the major settings in which children's socialization and development occur.

In line with the language socialization research trends [25; 30; 49] our study explores first how young children (between four and five years of age) begin to be socialized to a particular type of *language-game* or *procedure of reasoning*, the argumentative discourse, which can be found both in preschool setting of telling and explaining a story and in the family context of dinner-table conversation and, later on, in practicing history learning within a primary school setting.

We will start with an analysis of a preschool speech event [16] describing its main features in terms of structural organization of the activity, modalities of participation, discursive devices or procedures of reasoning. We will then turn our focus on the family context of dinner conversation. Adopting a comparative look we will try to single out similarities and peculiarities of the two speech events.

In general, through this study we aim at showing once again the inherently discursive and cultural nature of cognitive activities. Furthermore, we aim at throwing light on how the cognitive development actually unfolds within everyday socialization activities.

## 2. General features of the preschool and the family contexts

Family and school are surely the two most prominent *loci* of young children linguistic and cognitive socialization. However, there are several differences between the two contexts. In what follows we focus our attention on some general structural and discursive characteristics that are relevant for our study:

Families included in our research are composed by two parents and at least two children (one of them between 3 and 5 years of age). In the preschool setting we observed a group of 12 children of the same age (about 5 years old) with one teacher.

It is well known that schools and kindergardens can be characterized by a typical type of *speech exchange system* [58]. Sinclair and Coulthard [51] have described it as the IRE triplet: teacher's questioning, children's answering and teacher's evaluation. However, within the preschool speech event that we examined the teacher did not enact this pattern of traditional teaching. She has been trained for undertaking a new innovative curriculum and she violates the IRE sequence as she

seldom evaluates children's turns, rather she often repeats, recycles or rephrases them.

Both parents and teachers have the common dominant aim of educating, i.e. socializing children, but they differ in the priorities and in the tools they use. If the general mechanisms of interaction do not differ too much, a difference is due to the fact that children's accountability – that is the need to give account – is in the family linked to «doing» and to the possible negative consequences of actions, while in school is more linked to knowing, and then to the cognitive contour of activities: paying attention, answering, remembering, giving cognitive explanation, and so on.

## 3. Exploring the preschool speech event

In the preschool setting we focused our attention on a narrative activity children are recurrently engaged in. It consists of two different narrative phases: in the first phase small groups of four children were read a fairy tale by the teacher (the story of «Mascia and the bear» by Lev Tolstoj, see Appendix 1). The reading was then interrupted at crucial points and the children' group were asked to predict how story would continue. It followed a discussion about the story immediately after the listening-guessing. In this second phase the teacher led the discussion by asking children: a) to explain the intentions and the motives behind the actions of the characters in the story; b) to evaluate what other actions might be plausible given those motives; c) to evaluate the cleverness of the story protagonist and her adversary. A general collective discussion, guided by the same teacher) concluded the school experience.

### Appendix 1: The story of Mascia and the bear

This is the story summary: Mascia went with her friends to the wood. She got lost and she found a small house in which a bear was living; the bear compelled her to stay with him. She would like to run away from the bear and she asked him to bring a basket full of fritters to her grandparents' house. The bear offered to do it for her. She prepared the basket and told him not to open it: «I will climb up the oak tree and I will check on you from there!». While the bear went outside to look if it was raining. Mascia hid in the basket. During the way, when the bear stopped, Mascia said to him: «I saw you. Do not stop, go on!» So they arrived at the grandparents' house. When they were near by, the dogs barked because of the bear's scent. The bear was frightened and ran away. Mascia was free!

### 3.1. The narrative activity

#### 3.1.1. Contrasting hypotheses and co-constructing reasoning

The narrative activity has from its start a strong hypothetical flavor. Children vivaciously suggest various alternative ways the story might develop. Different narrative versions emerge and a vivid discussion unfolds:

Others hypotheses are criticized and new versions are counter opposed. This clashing of perspectives triggers a collective reasoning whereby children attempt to resolve discrepancies and, eventually, sketch a meaningful storyline towards events. Furthermore, faced with the need of defending their positions and undermining others', all the participants have the opportunity for exercising their argumentative skills and for improving their capacity of handling narrative materials.

#### Appendix 2 : Transcription symbols

.	falling intonation
?	rising intonation
!	exclaiming intonation
,	continuing intonation
-	abrupt cut-off
:	prolonging of sounds
ABC	high tone (capital letters)
[	simultaneous or overlapping speech
()	non-transcribing segment of talk
(( ))	comments added by the transcriber

The following excerpt (see Appendix 2 for the transcription symbols used in the excerpt) illustrates the unfolding of narrative thinking:

##### Excerpt 1

Teacher: Come ha fatto a scappare da dentro — dalla casetta dell'orso?

**How could Mascia flee from within — from the bear's house?**

Fabiola: Stava a vedere se pioveva, allora lui, il cestino era aperto, allora lei, zacchete! se ficca dentro, però così- e in testa ce mette le frittelle. ma se e grande ((Mascia)) se rompe el cestino però!

**he was looking whether it rained, then, the basket was open, then she zacchete! (Italian onomatopoeia) she slips in, but so- and she puts the fritters on her head. but if she is big the basket will break down!**

[...]-

Walter: Perché se Mascia era come noi o come te poteva rompe' il cestino uguale, perché il cestino sarà così o così ((piccolo))

**Because if Mascia was like us or like you she could have broken the basket because the basket was so and so ((little))**

Sabrina: Il cestino era grande, se no non ce metteva neanche le frittelle. Ce n'ha messo tre o quattro o cinque o sei!

**The basket was big, otherwise she could not even put the fritters in it. She has put three or four or five or six!**

Fabiola: O sei! Almeno dopo il cestino: ciacchete!

**Or six! At least after the basket: ciacchete ((onomatopoeia that means «crashing down»))**

Walter: See, così il sei è più grande, sei chili pesa, no? Co' le frittelle, così ce se mette Mascia che pesa almeno sette chili e quello se sfascia tutto. Sette chili, quaranta chili!

**Yee, so six is bigger, it weighs six kilos, doesn't it? With the fritters, so Mascia puts herself that weighs at least seven kilos and that ((the basket)) will all crash down. Seven kilos, forty kilos!**

The few turns just presented show the complexity of narrative activity and how it is jointly accomplished. Fabiola, who is the first in answering to the teacher's question, provides her narrative version by constructing what Bruner has defined a *dual landscape* [2] and by switching back and forth between the *landscape of action and the landscape of consciousness*. Her narrative is rather complex as it considers both the protagonists' actions and their thoughts and feelings. Furthermore, at the end of her contribution she adds her own perspective as narrator. As Bruner has pointed out [2], the landscape of consciousness illuminates protagonists' doings and offers to the audience the narrator's understanding and interpretation of events.

Also the other children's subsequent contributions wander through the dual landscape thereby deploying and enriching their collective reasoning.

It is worth noting that the narrative activity children are engaged in allows for different perspectives to be put forward and negotiated. Different plots can be followed and, insofar as they respect the criteria of internal consistency, they can all be considered equally possible and acceptable.

This is the crucial educative value of narrative activity: narrative activity not only organizes experience and imbues it with meaning. At the very same moment narrative activity illuminates experience it also reveals that a multiplicity of interpretive frames for organizing experience are possible [28; 5; 29]. Therefore, narrative activity promotes plurality and cultivates critical thinking. It encourages comparisons among different perspectives and understandings; it brings different voices into dialogue without aiming at making of them a unison chorus.

In delineating differences between family and preschool settings we are not assuming context as a well-defined, pre-existing variable that can be isolated before studying the actual conversation. Rather, we are referring to a discursive-constructed notion of context as a participants' category. Context should be empirically evoked, according to Schegloff only by attending to what the participants themselves make relevant, through the whole of their linguistic and non-linguistic actions, since «*the search for context properly begins with the talk or other conduct being analyzed*» [47, p. 197].

#### 3.1.2. Hypothetical and counterfactual reasoning

In fact, children's collaborative reasoning, rather than emerging from mutual agreement, is realized through oppositions and explanations along a counterfactual line. Going back again to Fabiola's turn in excerpt 1 it is possible to point out that the girl after having put forward her hypothesis formulates herself a possible objection: it wouldn't work if Mascia was too big. In «*grande*» (=big/grown-up) the two notions of size and age collapse and children discuss both aspects together, focusing on the combined weight of Mascia and of the fritters. In this brief sequence it is possible to observe the typical use of conditional forms from which negative effects can be derived. Fabiola and afterwards other children use them as the more compelling forms

when they want to deny an alternative hypothesis produced by another participant.

However, it must be pointed out that challenges, oppositions, counter-proposals do not prevent reasoning to unfold. Rather, it is evident that just this opposing hypotheses, the accounting activity it triggers and the seeking for consensus allow children to reach collectively an articulation of reasoning far more complex than the one each of them would achieve alone. In other words, through contrasting perspectives they are co-constructing higher level of reasoning.

After some insistence on the point of the combined weight of Mascia and of the fritters, the children shift their collective attention on the question of age, which becomes the object of another piece of articulated dispute.

*Excerpt 2*

Fabiola: Ma Mascia è piccola!

**But Mascia is (a) little (child)!**

Sabrina: C'ha tre anni! Forse.

**She's three...maybe.**

[...]

Walter: Se c'aveva cinque anni vol di' che era poco intelligente.

Invece c'ha tre anni è tanto intelligente. Però se c'aveva,

**If she was five years old it means that she was not clever enough. Instead if she is three year old she is very clever; But if she was,...**

Teacher: Perché se c'aveva tre anni era tanto intelligente, se c'aveva cinque anni era poco intelligente? Invece se c'ha d-

**Because if she was three she was very clever, if she was five she was not clever enough? Instead if she was t-**

Walter: No, me so' sbajato. Se Mascia aveva tre anni come fa a esse intelligente se è piccola. Ancora non sa le idee, je le deve di' la nonna...

**No, I was wrong. If Mascia was three how can she be clever enough, because she is too young. She doesn't know her ideas yet, the grandmother has to tell her them...**

[...]

Teacher: Se se...?

**If..if?**

Sabrina: Te che ne sai quanti ce n'ha de anni mica c'è scritto?

**How do you know how hold she is? It's not written down.**

Walter: E che te ce lo sai? Che te lo sai quanti ce n'ha? Dai dimmelo quanti ce n'ha, dimmelo!

**And what do you know about it? How do you know how old she is? Tell me how old is she!**

Fabiola: C'ha cinque!

**She's five!**

Walter: Beh, dimmelo quanti c'ha!?

**Well tell me how old she is**

Sabrina: Se se c'era scritto ce lo leggeva la maestra.

**If it was written down, the teacher would have read it to us.**

This excerpt shows that children's reasoning deploys through casting possible negative consequences of different hypothetical conditions (e. g. Walter's turn: if Mascia is too young, she cannot be clever enough to be able to flee away) and through using counterfactual forms (e. g. Sabrina's turn: you cannot say how old she is because it was not written, given that if it was written down the teacher would have read it to us).

Hypothetical and counterfactual constructions are rather complex patterns of reasoning that can be found not only in narrative activity across contexts but in scientific practices as well. As philosophers of science [9; 19] have pointed out, scientific knowledge thrives on challenging matters of fact, on refusing certain theoretical assumptions and on replacing them with others considered more accurate and adequate. Moreover, sociologists of science [11; 21] have revealed that scientific theories, as well as stories, are narratives and, rather than being the product of the work of an isolated researcher, hidden within his/her laboratory, they are outcomes of interaction among different scientists and diverse perspectives. Thus, narrative activity socializes children not only into prototypical narrative thinking -with its meaning-making force- but also provides the rudiments of scientific reasoning and practice, as Einstein said\*.

Last but not least, it can be observed that narrative activity, insofar as it encompasses the challenging, defending and redrafting of alternative narrative versions, promotes meta-cognitive thinking and cultivates meta-linguistic ability as participants often step outside the storytelling for questioning elements of the story and then differently re-contextualizing them and as they treat others' telling as versions of the story.

### 3.1.3. Categorization as a situated rhetorical activity

Excerpt 2 reveals another crucial aspect of reasoning and arguing activities: the process of categorization. The children discuss the meaning of the categories of piccolo and grande. Not only the temporal and spatial dimensions are concurrently evoked and contrasted; within each dimension categories' boundaries (i. e. when one should be considered grown-up) are questioned and negotiated.

These aspects show that categorization rather than being an abstract cognitive process is a situated interactional activity [15]. Categorization is something *we do* in social context in order to perform social actions — persuading, blaming, accusing, etc. [7]. Approaching categorization as a social practice allows us to understand why categories are flexible, have not fixed boundaries and not unequivocal membership demarcations. Categories are rhetorically handled to accomplish very different social action and they take meaning from the context of contingent use.

In excerpt 2 it is possible to appreciate how even young children are able to strategically activate and handle category systems: they use the fact that the cat-

\* It is reported that to a mother who asked Einstein how she could train her 3-years-old child to scientific reasoning, he answered: «telling stories». And then to a repetition to same mother question, he answered «telling more stories».

egories *piccolo* and *grande* have not unique semantic contents and do not imply well defined sets of features, as a resource for justifying and sustaining their clashing positions about bear's intelligence and achieve agreement and consensus.

#### 4. Preliminary conclusions

Our analysis of the preschool activity has single out three fundamental aspects of children's reasoning:

1) It is highly co-constructed: children's narrative activity is spontaneously co-authored and multi-voiced. Children's clashing positions are never simply juxtaposed but are negotiated, transformed and often blended in new reasoning paths.

2) It unfolds through complex argumentative patterns; overwhelmingly, hypothetical format and counterfactual structure are used.

3) It is rhetorically shaped: participants make use of refined discursive strategies and rhetorical moves for achieving agreement and consensus.

These three features of children's reasoning in preschool setting are surely closely linked with the particular narrative activity of reconstructing *Mascia* and the *Bear* story tale children are engaged in. As a matter of fact, several studies have already shown that narrative activity in a wide range of human contexts is overwhelmingly co-constructed [32; 36]. Moreover, it often stimulates hypothetical thinking [34] and it constitutes a privileged tool for cognitive and linguistic socialization [23; 35; 37].

Furthermore, we would argue that these important elements of children's reasoning are also prompted and reinforced by the work the teacher performs within this collective activity: she did not follow the traditional IRE sequence but, through reformulations and repetitions of children's contributions she played the role of catalyst of children's discussion. From an educational view, thus, we would suggest that narrative activity and peer group discussions are activities to be promoted and cultivated in preschool setting. It becomes interesting now to turn our attention to the family setting to see whether, in what extent and where the features of children's reasoning in preschool setting are also present in family dinner conversations.

#### 5. Exploring family dinner talk

Do children learn to argue before they go to school and when can we say that they are learning? How are they socialized to the discursive tools and the rhetorical devices of everyday reasoning?

In trying to answer to these questions we have analyzed family dinner conversations with very young children's (from 3 years old) participation. In particular for the present study we have focused our attention on the narrative and the argumentative sequences in which children are engaged as ratified participants (regardless whether talking or just listening) [12].

#### 5.1. Joint narrating

Indeed also in family dinner conversations there is a remarkable amount of narratives. Previous research [53] has shown that narratives are spread throughout all the various speech activities participants commonly accomplish in conversing at dinnertable (i. e. remembering, planning, jokes' telling, disputes, etc.). Regardless the reasons why narratives are told they are overwhelmingly co-constructed. Remarkable studies on the activity of storytelling [14; 17] have shown that since their very beginnings narratives are interactional accomplishments: The launching of the narrative can be performed by the would-be teller, who both provides the topic of the storytelling and candidates her/himself as the teller of the story. It is however necessary a «go ahead» response from the audience for having the narrative actually unfolded.

Narratives may be also *other-solicited* and/or *other-initiated*: A speaker prompts the production of a storytelling introducing a referent for the narrative and selecting the prospective teller. However, an uptake from another participant is necessary in this case as well. Not only narratives' openings but also their actual unfolding (and the closings as well) are overwhelmingly collectively carried out. This is true not only when there is agreement and harmony between the co-tellers of the storytelling; even when speakers don't share the same view on the reported events the narrative is most of the time co-constructed through quick turn's exchanges, oppositions of descriptions, negotiation of remembering.

In sum, as well as in preschool context, in family conversation narrative activity is overwhelmingly co-constructed. Therefore, children by participating in family narratives acquire the conventions of story telling, the discursive devices for narrative constructing the reality [3] and last but not least they practice different forms of participations in collective activities.

In comparison with the preschool context, we have observed that in family narratives participation roles' are more flexible and often exchanged: within the same storytelling not only the role of narrator is shared and passed among participants, children included; also challenging moves such as problematizations, critiques, refusals are performed by all the members of the family. This observation resonates with Ochs and Taylor's [33] suggestion that *social familiarity* encourages complex reasoning. The two authors have analyzed American dinner conversations revealing that during such «*hectic, seemingly chaotic*» speech events complex cognitive processes are accomplished (ibid., p. 44): «*Where participants know one another well, they may be less hesitant to express uncertainty or perplexity over the problematic affairs in the narration and more open to invite the help of others in explaining the narrated events. Where participants know one another well they are able within limits to enter into the other's telling of events and reconfigure the other's version without dissolving the relationship*» (ibid., p. 43).

This aspect has a remarkable educative implication: familiarity among children and between teachers and

children is not only to be pursued as it offers to all the participants a positive emotive milieu for their everyday experience but also because it encourages complex cognitive processes. Often, unfortunately, arenas of formal education neglects to cultivate this very quality. On the contrary, we would suggest that educators, and preschool teachers in particular, should assume social familiarity as one of their primary aims. Familiarity grows through practices of social interaction and dialogue, namely through group activities of different kinds, such as the one we have examined in previous paragraph.

## 5.2. Rules' violation and negative consequences

Family narratives and preschool storytelling have in common their collaborative accomplishment but they present relevant distinctive features. In fact, we did not find in family narratives the kind of articulated hypothetical and counterfactual procedures we found in the pre-school narrative activity.

This might lead to the conclusion that hypothetical and counterfactual reasoning are peculiar of school setting (or at least are not significantly present in family talk). However, if we do not limit our analysis to narrative sequences but we turn the attention on argumentative sequences that as well frequently occur in family dinner conversation this conclusion is immediately contradicted.

We have noticed that in some kinds of argumentative sequences – e. g. when parents address to children explanations on *life rules* or when they justify their prescriptions or proscriptions, in general when an account for violations of the normal is either requested or provided, etc. – a similar procedure of reasoning/discursive device of the one we have documented in children's pre-school narrative activity frequently occurs:

*If you do not do X the negative event Y will occur*

*If you do non-X the negative event Z will occur*

In what follows we present example of such a procedure:

### Excerpt 3

Nacchi family. Participants: DAD: Giancarlo, 45 years; MUM: Gaia, 44 years; Daughters: Ludovica, 14 years; Irma, 10 years; Antonia, 3 years 6 months (Antonia looks tired and is not eating)

Mum: senti. ma hai ancora tanto sonno? poi ti faccio dormire in braccio a me. Va bene?

**listen are you still very sleepy then I'll let you sleep in my arms. All right?**

Antonia: no:: [dormo nel letto].

**no:: [I'm going to bed]**

Mum: [eh si amore] eh si però devi dormire presto non facciamo come l'altra volta che ti sei addormentata a mezzanotte e poi ti senti male d'accordo?

**[eh yes my love] eh yes but you must sleep soon let's not do what we did last time when you fell asleep at midnight and then you feel sick all right**

In this excerpt the 3 and half years old girl disdains mother's offer to start sleeping in her arms. Antonia's refusal is both accepted and counter-claimed by the

mother with a *si però* (*yes but*) and then with an articulated warning: Antonia has to sleep soon without waiting until late as she did another time, when at the end she felt sick. So sleeping late is constructed by the mother as the cause for Antonia's sickness. The warning has the typical form of showing the negative consequences of a possible misbehavior.

The informative relevance of negative assertions brings us directly in the core of the narrative activity. Indeed negative episodes have a crucial role in narrative as they have very often the function of initiating events from which the main plot of the narrative develops [20]: Problematic events interrupt the normal situation described in the setting [52]. Without a negative or problematic event we would not have any type of narrative. Indeed the normal flow of events is not reported, it is not the object of a narrative, not even in the ordinary family conversation.

We would like to suggest here that the conditional structure and negative format we found in family discourse resemble the hypothetical and counterfactual pattern we found in children preschool discourse. Therefore, when children enter school they could have already been exposed to some complex patterns of reasoning. Within a domain of *practical reasoning* they experience the discursive devices that will recur within other speech activities in other contexts (i.e. the kindergarten classroom).

However, there is more to say: in family conversation children not only listen and assimilate certain patterns of reasoning and discursive devices but they are given or win the chance to actively perform and practice these very same devices. In the following excerpt, rather astonishingly the complex strategy of enunciating the negative consequences of something that the other has done or wants to do in order to let him or her understand the underlying rule to be followed, is performed even by a four-year-old girl, Luisa:

### Excerpt 4

Minelli family. Members: DAD: Matteo, 38 years; MUM: Paola, 37 years; Son: Luca, 10 years 9 months; Daughter: Luisa, 3 years 10 months (Luca has just tried to serve himself the water from the bottle by handling up with one finger. The bottle risks to fall on the table)

Mum: **((she addresses a critical frown at Luca))**

Luca: che ho fatto?

**what have I done**

Mum: non lo sai che hai fatto Luca?

**don't you know what you've done Luca?**

Luca: no.

**no**

Mum: va bene la prossima volta te lo facciamo capire meglio con uno schiaffone.

**ok the next time we'll make you understand it better with a big slap**

Dad: visto che continui a fare lo stupido.

as you continue to act stupidly

Luisa: guarda non si fa non si ri non si dice così al fratellino me lo ha spiegato la nonna.

**look you don't do i, you cannot do it, you cannot speak so to the nice little brother, grandma explained it to me ((sighing excitedly))**

(3.5)

Mum: fratellino perché ci fa disperare versa l'acqua con un dito.

**nice little brother because he drives us to despair he pours out the water with one finger**

Luisa: non è vero. adesso glielo spiego io:

**it's not true now let me explain it to him**

Mum: eh spiegaglielo.

**eh explain to him**

Luisa: Luca così non si fa perché la bottiglia se la versi con un dito=non si fa perché si può cadere il bicchiere con tutta la bottiglia. Capito?

**Luca you don't do it so because if you pour it out the bottle with one finger you can't do it because the glass with all the bottle can fall down. Did you get it?**

Luca: ((vertical headshakes))

In this excerpt the four-year-old Luisa performs effectively the language-game of education: she (i) uses a conditional form («if you pour...»), (ii) displays possible negative consequences («the glass with all the bottle can fall down»), (iii) ends with a tag question («did you get it?»). Her intervention is surely courageous as she reproaches her parents for the rough linguistic expressions they used in scolding her brother. However, her explanatory and rhetorical abilities are so sharp that parents remain wordless and Luca has to give his consent to her!

### 5.3. Categorization and other rhetorical devices

Within the discursive context of rules' violation and rules' statement children are often requested to account for their acts. In accounts, rules are negotiated and differently interpreted; exceptions are invoked and denied [10]. In order to perform effectively this activity rhetorical skills and persuasive ability are necessary. Therefore, in family dinner conversation children can learn and practice the rhetorical devices with the patterns of reasoning that they will be usefully using in other social contexts, i. e. in the classroom discussions.

As an example we present here a brief excerpt of family conversation in which the same categories of *piccolo* and *grande* we commented on before (see excerpt 4) are activated and differently used by participants:

#### Excerpt 5

Traverso family. Members: Dad; Mum; Daughters: Carla, 7 years; Federica, 4 years.

Carla: dovremmo eliminare tutti i pupazzi. darli ai poveri. regalarli. Pupazzi che sono in buona salute, li regaliamo.

**We should eliminate all the puppets. Give them to the poor people. Give them away. We had to give them away the Puppets that are in good health**

[...]

Federica: ma io ci voglio giocare

**But I want to play with them**

Carla. Eh Federica ma ora tu sei grande. Hai cinque anni mo.

**Eh Federica but you're grown-up now. You're five years old.**

Federica: ma io ci gioco lo stesso. Vero mamma?

**But I play with them all the same. Isn't it true mum?**

In this excerpt the older daughter Carla, in order to obtain her younger sister's agreement in giving away all the puppets, cunningly tells her that she is grown-up now. Carla knows that Federica wants to be considered *grande* and she attempts to take advantage from the implication of this attribution (when one is grown-up one doesn't play anymore with puppets). As a matter of fact, Federica does not agree with her sister as regards the puppets' destiny but she does not refuse the attribution she has been addressed: even though she is grown-up now she nevertheless wants to continue to play with puppets!

In sum, in this excerpt, the two daughters give different meanings and implications to the same category of *grande* for achieving their opposite goals.

Another profoundly rhetorical speech activity is the description of events. In everyday conversation the way events are reported does not depend only on one's own knowledge and experience but also on other elements such as the reasons why the episode is told, the recipients of the storytelling, etc.

## 6. Developing arguing competencies in primary school context and in subject matter learning

Since argumentative discourse is a language game [60] of collective reasoning that can be used in various speech activities across a variety of contexts, we add a fast exposition about learning historical reasoning in classroom collective discourse.

### 6.1 The study: historical events

Thirty children (mean age: 9 years, 5 months) attending the 4th grade of primary school (Rome, Italy) were involved in group discussions (5 children each) considering historical problems.

The task proposed to children was the following text by Ammiano Marcellino: *A. M. is a Roman writer of the 4th century. In his description he says that the Huns had habits similar to beasts. First question: What do you think he meant? Was he right or wrong? Discuss it with your classmates and write down the reasons that could cause him to think in this way and whether you agree with him or not.*

The aim was to show if and how children in a social situation can practice peculiar epistemic procedures characteristic of historical reasoning. Three levels were considered: a) frame of discourse; b) reasoning

sequences; and c) idea units. The systems of categorization involved a) argumentative operations: means of constructing and supporting the reasoning [54]; claim, justification, concession, opposition, counter-opposition; b) epistemic operations: particular historical con-

tent means of definition, categorization, predication, evaluation, appeal to (analogy, authority, etc.).

Excerpt 6

Locating a document in its historical context: challenging the authenticity of the source

Talk sequence	Argumentative operation	Epistemic operation
Filippo 18.1 now I would like to say 'we do not agree' why?	Claim	(recycle the task)
Paolo 19.1 I do not much agree because A.M.,	Claim	Predication. On one's own claim
19.2 I've changed my idea from what I said before	Claim	Predication. On one's own claim
19.3 I don't think A.M. lived at that time	Claim	Appeal to a necessary condition of the source's authenticity
19.3a <i>to write history you must have lived at the same time as the event</i>	<i>Implicit justification</i>	
19.4 it seems difficult he can have written this document	Justification	Predication on the implausibility of a necessary condition
19.5 because there were not many pens and paper	Justification	Appeal to material conditions
19.6 or, I mean, I don't think A.M. is right	Claim	Evaluation of author's claim
19.6a <i>he cannot have written this text</i>	<i>Implicit claim</i>	
19.7 these are my impressions	Claim	Predication on own claim
19.8 and even if A.M. had written this document in ancient times	Claim Counterfactual strategy initiating	Predication on the source authenticity
19.9 but it must be seen how he succeeded in looking at them	Claim	Appeal to a necessary condition (eyewitness)
19.10 since they had very bestial habits	Justification	Appeal to data from the source
19.11 so they could even kill him	Justification	Appeal to a consequence of source's data
19.11a <i>thus either it is false that they were bestial or it is false that he had lived at that time and had seen them</i>	<i>Implicit claim Counterfactual strategy initiating</i>	
Nicola 20.1 right! what Paolo said is right	Claim	Predication on 19.1
20.2 because he could not have lived at that time	Claim	Appeal to a necessary condition
20.3 also because I think that if he had lived in those times, in the Middle Ages	Claim Counterfactual strategy initiating	Predication on time contemporaneity
20.4 not everyone could have, let's say, in the Roman times and so not everyone could write	Justification	Appeal to socio-cultural context (scarce diffusion of writing)
20.5 and they could not produce a description of people with such anomalous laws	Justification	Appeal to socio-cultural context
20.6 I think that no one could have done this description then	Claim Counterfactual strategy ending	Predication on cultural impossibility
Filippo 21.1 instead, I think something that perhaps does not fit in	Claim	Predication on own claim
21.2 that is, I mean partly agree and partly I don't agree	Claim	Predication on own claim
21.3 because when A.M., well, he could easily have been killed	Justification	Appeal to a consequence for the author of data from the source
21.4 or he could have had some problems in seeing, in getting in touch with the Alans or Huns	Concession	Categorization of the author as member of the people of the source
21.5 because either he was an Alan or a Hun	Claim	Predication on the source's untruth
21.6 or what he has written is somewhat false	claim	
Paolo 22.1 I think at that time they could not read and write	Justification	Appeal to a necessary condition (lack of instrumental abilities)
22.2 thus it was very hard for A.M. to have written that document	Claim	Predication on the improbability of attribution of the source
Nicola 23.1 because, if he had written on these sheets of paper, on sheets of paper	Claim Counterfactual strategy initiating	Predication on the possibility of the material production

Talk sequence	Argumentative operation	Epistemic operation
23.2 I think that, at this time, the sheets would already have turned to dust	Justification	Appeal to time as reason for the source's material deterioration
23.3 in short, as time goes by, the sheets turn to dust	Justification	Appeal to time as reason for the source's material deterioration
23.4 two or three thousand years have passed, I believe	Justification	Appeal to the amount of time
23.4a <i>source is not authentic</i>	<i>Implicit claim</i>	
23.5 so the sheets wouldn't have been found any more, they would have been turned to dust	Claim Counterfactual strategy ending	Appeal to the consequences of time passing on the source
Filippo 24.1 it could easily have been written on a stone, for instance	claim	Predication on alternative procedures (other materials on which the source was written)
24.2 or remnants of huts might have been found	Claim	Predication on alternative procedures (other sources)
24.3 and they would prove naturally, in the building, perhaps in the way it was used, how they used it	Justification	Appeal to material aspects of the socio-cultural context
Nicola 25.1 I think that if he had written it on a stone	Opposition Counterfactual strategy initiating	Predication on the possibility of the condition (writing material)
25.2 they couldn't have written that is written there everything, everything	Justification	Appeal to data from the source (amount of information)
25.3 simply because writing on stone is not the same as writing on paper	Justification	appeal to a general principle
25.4 thus I think that all this news would not have been understood, in short do you understand?	Claim Counterfactual strategy ending	Predication on the quality of source's information
25.4a <i>but since they are understandable</i>	<i>Implicit justification</i>	
25.4b <i>thus the source is false</i>	<i>Implicit claim</i>	

Group discussions are situations of «cognitive apprenticeship» [6]: reasoning is both a situated and a distributed action. The social negotiation activity on history topics is carried out with chil-

dren autonomous groups in the absence of teacher and it differs from the talk about narrative that was guided by the teacher as it can be seen in the Excerpt 5 [40].

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# Развитие мышления посредством аргументации у детей раннего возраста

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Целью данной работы является анализ хода рассуждений детей младшего школьного возраста во время аргументированных дискуссий в различных учебных заведениях. Согласно положениям Выготского и социально-культурного подхода, мы считаем, что развитие мышления ребенка осуществляется на основе дискурса, особенно во время учебного процесса, в котором также происходят взаимодействие между сверстниками и дискуссии под руководством взрослого. В данной статье мы представляем и качественно анализируем часть наших эмпирических данных, собранных с целью показать уместность нарративных процессов при дискуссиях (спорах) при участии детей младшего школьного возраста в образовательном контексте. Во-первых, мы говорим о контрафактивном рассуждении, используемом детьми дошкольного возраста в качестве аргументированной стратегии в спорах о нарративе. Мы приводим некоторые конкретные пространственно-временные характеристики, которые в основном связаны с необходимостью в обобщении и в логических основаниях (т. е. авторитет источников, ритуальность ситуаций и правдоподобность последствий). Во-вторых, мы анализируем, как во время семейных разговоров дети используют практические рассуждения, которые происходят, из родительских дискурсов о нормах и правилах. В заключение мы приводим пример, в котором рассуждения через аргументацию применяются в школе при преподавании истории детям младшего школьного возраста. Обсуждаются процессы рассуждения у детей в различных образовательных учреждениях, и подчеркивается их роль и значимость в школе и семейных мероприятиях.

**Ключевые слова:** подход Выготского, социально-культурный подход, рассуждения, аргументация, нарративы дошкольников, семейные беседы.