Conflict resolution strategies in children with normal language development: cooperation or individualism?

Estratégias de resolução de conflito em crianças em desenvolvimento normal de linguagem: cooperação ou individualismo?

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Abstract

Purpose: To verify the conflict resolution abilities of 7- and 8-year-old children with normal language development. **Methods:** Participants were 40 children with normal language development, with ages ranging from 7 to 8 years and 11 months. To evaluate conflict resolution abilities, five hypothetical conflict contexts were presented. After the presentation of each story, children were asked the following question: "If you were him [examiner points to the story character], what would you do?". Answers were arranged into five levels and scored as it follows: level 0 (solutions that do not match the other levels) – score 0; level 1 (physical solutions) – score 1; level 2 (unilateral solutions) – score 2; level 3 (cooperative solutions) – score 3, and level 4 (mutual solutions) – score 4. **Results:** Most of the proposed strategies were placed at levels 2 (M=2.55±0.34) and 3 (M=1.53±1.26). Significant but weak positive correlation was found between children's age and their scores on the conflict resolution test (p=0.03, r=0.34). These results suggest that unilateral strategies are still frequently used by 7- and 8-year-olds, although they are already capable of dialoguing efficiently to solve problems. **Conclusion:** At 7 and 8 years of age, children with normal language development frequently use unilateral and cooperative strategies to solve problems.

Keywords: Child language; Language development; Speech; Cognition; Comprehension; Language tests

INTRODUCTION

Social cognition is an important aspect of cognition which consists in the comprehension of the social world, including comprehension regarding someone else's knowledge, thoughts, intentions, emotions and point of views, as well as knowledge about social roles and relations. Conflict resolution is a type of social interaction that characterizes cognitive development. It requires the comprehension of someone else's point of view, and also the ability of developing and expressing strategies to solve disputes; hence, both cognitive and linguistic abilities are necessary[1].

Children with normal language development (NLD) present a great number of conflict resolution strategies, which become more complex with age. Small children or children with social cognition deficits, however, use more global and less sophisticate conflict resolution strategies, because they are frequently not able to comprehend their opponent's point of view[1].

Linguistic and cognitive abilities, such as executive functions and the ability to put oneself in the interlocutor's place and comprehend the opponent's intentions and thoughts (Theory of Mind – ToM), are fundamental for social information processing. Many studies have reported the importance of these abilities to obtain success in social situations[2-7].

Studies have shown strong correlation between ToM and executive function tests, regardless of age and intelligence level[3,8,9]. Two executive abilities seem to be more related to the development of the ToM: inhibitory control[3,10] and working memory[11], since the success in tests involving ToM demands both the abilities to keep multiple perspectives in memory (working memory) and to inhibit irrelevant perspectives (inhibitory control).

Study carried out at the Speech-Language Pathology Investigation Laboratory in Language Development and Disorders of the Speech-Language Pathology and Audiology Course of the School of Medicine, Universidade de São Paulo – USP – São Paulo (SP), Brazil, with financing granted by Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – CAPES.

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Received: 6/28/2010; **Accepted:** 1/9/2010

Another line of studies have shown the importance of the mirror neurons system, found in the premotor cortex, to the development of social cognition and the comprehension of other people's intention. This network of mirror neurons, which have the ability to correlate perceptions from the environment to the internal sensorimotor representations, might have an important role in multiple aspects of social cognition, from the perception of actions to empathy[12,13].

In humans, it is speculated that the mirror neurons system is involved not only with the physical representation of an action, but also with the comprehension of intentions, thoughts and feelings that motivate an action, possibly through reciprocal connections with other brain regions, such as the limbic system or the medial prefrontal cortex[14].

Conflict resolution abilities can provide rich and varied information about linguistic, cognitive and social competencies of children with normal language development.

Hence, the aim of this study was to verify the conflict resolution abilities of 7- and 8-year-old children with normal language development.

METHODS

Ethical aspects

The present study was approved by the Ethics Commitee for the Analysis of Research Projects of the Clinics Hospital of the School of Medicine of Universidade de São Paulo, under process number 0602/07. Parents or caregivers of the participants signed the Free and Informed Consent.

Casuistry

Participants were 40 children with no language deficits and ages between 7 years and 8 years and 11 months (20 children in each age range), from both genders (18 female and 22 male), residents in the city of São Paulo (Brazil) and regularly enrolled in one of two public schools selected for this study.

For subjects' selection, teachers were asked to indicate children with no scholar difficulties and with adequate language development to participate in the study. Indicated children were submitted to a battery of tests to be actually included (or not) in the study.

The following tests were included in the battery: Phonology Test – ABFW, Test of Segmentation of Words and Pseudowords into Letters, Phonological Sensitivity Test, and Reading and Writing Test (Level I was carried out with 7-year-old children, and Level II with 8-year-old children)[15-18]. The selection process ended when 40 children presented adequate performances in all tests, and were selected for the study.

Procedure

Selected children were assessed using the Conflict Resolution Test[1]. The test was carried out in approximately 15 minutes, in a room within the school setting.

Initially, children were given the following instruction: "I would like to know how boys (girls) like you think about some things. I'm gonna tell you something that happened to a boy. After that, I would like you to think about everything that he could do about that. Tell me everything that comes to your mind. Pretend that all the boys are [subject's age] years".

After that, five hypothetic conflict contexts were orally presented to the subjects (Appendix 1)[1]. All stories are composed by three stages and drawings that represented the conflict situations were presented at the same time, in order to facilitate children's comprehension; three drawings were presented for each story, representing each of the stages. The drawings were judged by four post-graduate speech-language pathologists, who verified whether they actually depicted the stories.

After each presentation, children were instructed to retell the story, in order to verify their comprehension of the events. Children who did not understand the hypothetical conflict situations would have been excluded from the study sample; however, all subjects demonstrated adequate comprehension of the five stories.

After each story was retold, the following question was asked: "If you were him [examiner points to the character], what would you do?". Hence, children should report what the protagonist of the story could do in that specific situation, providing only one strategy to solve the problem. Responses were recorded in a Panasonic® digital recorder model RR-US380 for further analysis.

Subjects' answers were analyzed to determine, initially, the presence or absence of conflict resolution strategies. Then, responses were organized into 27 strategies, described in Chart 1[1].

Strategies were grouped into five levels, which constitute an evolutionary development scale for conflict resolution abilities, and children's responses were scored according to the proposed levels, as described in Chart 1.

Data analysis

The significance level adopted was 0,05 (5%). Statistical analysis used the following tests: Wilcoxon, Mann-Whitney, Spearman correlation, and, to validate the correlations, the Correlation Test.

RESULTS

Table 1 presents the comparison of mean number of answers for the five proposed levels; statystical analysis of these data used the Friedman test. The results showed a significant difference between levels, both for the general sample and for each age group. To precisely determine which levels present differences, the Wilcoxon test was used, and all levels were paired to be compared; these p-values are described in Table 2.

For the group as a whole, children proposed more level 2 strategies, and the levels with fewer responses were 0 and 4. Seven-year-olds also used level 2 strategies frequently and had fewer levels 0 and 4 responses. For 8-year-olds, the most used strategies also belonged to level 2, followed by level 3, and the least used levels were 0, 1 and 4 (Tables 1 and 2).

Chart 1. Conflict resolution strategies for hypothetical situations

Evolutionary levels	Score	Strategy	Definition
Level 0 Solutions not described in the other levels	Score 0	"Others"	All strategies that do not fit in the other levels
Level 1 Physical solutions	Score 1	Physical intervention	Use of strength, for instance pushing, punching
		Verbal intention	Insults
		"Non-interaction"	Get out or avoid the other
Level 2 Unilateral solutions	Score 2	Material bribe	Bribe for objects
		To threaten, demand or claim	To demand someone else's action
		Punishment	To punish the other individual
		To appeal for the adult's authority	To try to find an adult's help to solve the conflict
		To justify	To justify saying that he was there first or that he had an adult's permission
		To complain	Expression of dissatisfaction or resentment
		Sarcasm	Sarcastic expressions
		Exclusion of the other	To not ponder about the other individual
		To question	To question in order to solve the conflicts
		"Weak" initiatives	To use "please" or play the victim or weak
		To obey the orders, give in	To use someone else's power
		To apologize, to appease	Attempts to diminish the situation for the other individual
Level 3 Cooperative solutions	Score 3	Requests, suggestions, instructions	To ask give hints or instructions
		To persuade and explain	Appeal to the other's ability to reason
		To wait, postpone the action	To postpone the resolution
		Punishment to teach a lesson	To provide a punishment, forcing a possible learning
		Interpersonal bribe	Psychological , non-material bribe
		Conciliation	Turn taking, to mediate and share
		Change of perspective	To take into account the other's point of view
		Empathy, interference of feeling/compliance	To interfere over the other's feeling
Level 4 Mutual solutions	Score 4	Discussion	To talk about the conflict
		To appeal for unity	To appeal for a group of "unity"
		Joint solutions	Solutions that involve mutual decisions or interpersonal negotiations

Spearman Correlation was used to measure the correlation degree between subjects' age ranges (7-year-old age range: from 7 years to 7 years and 11 months; 8-year-old age range: from 8 years to 8 years and 11 months) and total score obtained in the Conflict Resolution Test, and the Correlation Test validated the correlation found. A positive significant correlation was found (p=0.03, r=0.34), however, r=0.34 means that the correlation was poor.

The Mann-Whitney test was used to compare genders and total score on the task. Although there was a difference between genders, with the score obtained by female subjects being higher than that obtained by male subjects, such difference was not significant, that means, genders had similar behaviors on the Conflict Resolution Test.

DISCUSSION

Level 0 and 4 strategies were the least used in the general sample and for each age range; for 8-year-olds, level 1 also did not differ from levels 0 and 4. Hence, based on the strategies used, it can be concluded that 7- and 8-year-old children still frequently use unilateral conflict resolution strategies, however, they are able to efficiently dialogue in order to solve problems.

Even though subjects still used mutual solutions (level 4), which are frequently more efficient, they also used level 0 strategies a few times, demonstrating that, although children in this study were not able to use more sophisticated strategies, from the linguistic point of view, they did show ability to solve problems.

It is expected that social cognitive abilities and, consequently, abilities necessary to solve problems, improve considerably with age; even so that many studies regarding these abilities were carried out with older children[1,2,19,20].

Because it is probable that older children and adolescents frequently use more sophisticated strategies, it would be interesting to expand this studies' sample, including older age

Table 1. Number of responses in each of the five levels, for the total sample and 7- and 8-year-old groups

Age range/evolutionary levels		Number of responses	Mean	Median	SD	CI	p-value
From 7 years to 8 years and 11 months	Level 0	40	0.15	0.0	0.36	0.11	<0.001*
	Level 1		0.60	0.0	0.90	0.28	
	Level 2		2.55	3.0	1.11	0.34	
	Level 3		1.53	1.5	1.26	0.39	
	Level 4		0.18	0.0	0.50	0.16	
From 7 years to 7 years and 11 months	Level 0	20	0.15	0.0	0.37	0.16	<0.001*
	Level 1		1.05	1.0	1.00	0.44	
	Level 2		2.60	3.0	1.23	0.54	
	Level 3		1.05	1.0	1.19	0.52	
	Level 4		0.15	0.0	0.49	0.21	
From 8 years to 8 years and 11 months	Level 0	20	0.15	0.0	0.37	0.16	<0.001*
	Level 1		0.15	0.0	0.49	0.21	
	Level 2		2.50	2.0	1.00	0.44	
	Level 3		2.00	2.0	1.17	0.51	
	Level 4		0.20	0.0	0.52	0.23	

* Significant values (p≤0,05) – Friedman test
Note: SD = standard deviation; CI = confidence interval

Table 2. p-values regarding the number of responses on the five levels, for the total sample and 7- and 8-year-old groups

Age group/evolutionary level		Level 0	Level 1	Level 2	Level 3
From 7 years to 8 years and 11 months	Level 1	0.005*			
	Level 2	<0.001*	<0.001*		
	Level 3	<0.001*	0.004*	0.005*	
	Level 4	0.776	0.019*	<0.001*	<0.001*
From 7 years to 7 years and 11 months	Level 1	0.002*			
	Level 2	<0.001*	0.005*		
	Level 3	0.007*	0.958	0.006*	
	Level 4	1.000	0.004*	<0.001*	0.006*
From 8 years to 8 years and 11 months	Level 1	1.000			
	Level 2	<0.001*	<0.001*		
	Level 3	<0.001*	<0.001*	0.296	
	Level 4	0.739	0.783	<0.001*	<0.001*

* Significant values (p≤0,05) – Wilcoxon test

ranges. This would allow the analysis of how and when the improvement on conflict resolution abilities occurs and in what age children begin to use mutual strategies to solve problems.

When the score obtained by the participants on the Conflict Resolution Test was analyzed, it was observed there was a poor correlation between age range and total score, which corroborates the literature[1] and suggests that 7- and 8-year-old children present the same conflict resolution abilities .

The poor correlation between score and age was expected because linguistic abilities do not improve significantly between 7 and 8 years old. Meta-representation abilities and executive functions (fundamental for problem solving) present great improvement around 4 years[3,7,8,21,22] and the next linguistic development milestone that could influence social abilities is literacy, which occurs around 5 years old[23]. However, although no difference was found between the scores of different age groups, 7-year-old subjects used level 1 strategies more frequently than 8-year-old subjects, and 8-year-olds used more level 3 strategies when compared to 7-year-olds.

Until 7 years of age, children are not yet able to completely comprehend the nature of someone else's knowledge and thoughts, and therefore, at this age, they still have great difficulty to understand thoughts as interpretations that can vary from one individual to another. The idea that important improvements occur aroud 6/7 years old corroborates the idea that at 5/6 years old children still have difficulties reasoning about problems that involve thoughts[6].

Based on the aforementioned research, it is possible to conclude that at seven years of age children begin to effectively comprehend the abstract nature of thoughts and that they can

vary according to the situation (an ability necessary for conflict resolution); this information is important to understand why 7-year-old children used level 3 strategies less frequently in the present study. It is possible that these subjects are still beginning to better comprehend someone else's thoughts, and did not yet experience many social situations in which they could actually use this recently acquired knowledge. Therefore, the improvement observed at seven years might justify why 8-year-olds used more level 3 strategies, since at this age children are already able to comprehend with more assertiveness the nature of thoughts and have had more opportunities to have used this knowledge in social situations, being able to elaborate strategies more relevant to the problem situation.

Another important developmental milestone that occurs just before seven years and might have favored the performance of 8-year-old subjects regarding the use of level 3 strategies is the ability to reason about multiple possibilities and to answer questions like: "If tomorrow rains, can we go to the beach?". It is only around 7 years that children are able to maturely think about future possibilities and genuinely evaluate the possible alternatives[24].

According to the exposed, it is possible that the improvement of social cognition abilities and, hence, of problem-solving abilities, is related to the individual's social experience, along with the improvements observed in language development and abstract reasoning, which emphasizes the importance of further studies with older children.

In the present study, no differences were found between genders on scores obtained in the Conflict Resolution Test. This result corroborates the literature, since there are no evidences that boys and girls at this age present differences in the development of linguistic and cognitive abilities[1,2,20].

This study provides important background to future studies regarding conflict resolution abilities of children with normal language development, and keeps open the possibility of important correlations between the improvement of conflict resolution abilities and the increase of social situations experienced by older children.

CONCLUSION

Seven- and 8-year-old children with normal language development frequently use unilateral and cooperative strategies to solve problems. Although they still rarely use mutual solution strategies, children at these ages already demonstrate some problem-solving abilities.

RESUMO

Objetivo: Verificar as habilidades de resolução de conflito de crianças de 7 e 8 anos em desenvolvimento normal de linguagem. **Métodos:** Participaram do estudo 40 crianças em desenvolvimento normal de linguagem, com idades entre 7 anos e 8 anos e 11 meses. Para avaliar as habilidades de resolução de conflito foram apresentados cinco contextos hipotéticos de conflito. Após a apresentação de cada história, foi feita a seguinte pergunta: "Se você fosse ele [avaliadora aponta para o personagem da história], o que você faria?". As respostas foram agrupadas em cinco níveis e pontuadas da seguinte forma: nível 0 (soluções que não se enquadram nos demais níveis) – zero ponto; nível 1 (soluções físicas) – um ponto; nível 2 (soluções unilaterais) – dois pontos; nível 3 (soluções cooperativas) – três pontos e nível 4 (soluções mútuas) – quatro pontos. **Resultados:** A maioria das estratégias propostas pertenciam aos níveis 2 (M=2,55±0,34) e 3 (M=1,53±1,26). Foi observada correlação significante e positiva (p=0,03, r=0,34), porém ruim, entre a faixa etária das crianças e a pontuação na prova de resolução de conflito. Esses resultados indicam que aos 7 e 8 anos as crianças ainda utilizam frequentemente estratégias unilaterais, porém já são capazes de dialogar com eficiência para solucionar problemas. **Conclusão:** Aos 7 e 8 anos de idade, crianças em desenvolvimento normal de linguagem utilizam com mais frequência estratégias unilaterais e cooperativas para solucionar problemas.

Descritores: Linguagem infantil; Desenvolvimento da linguagem; Fala; Cognição; Compreensão; Testes de linguagem

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Anexo 1. Hypothetical conflict situations – translated stories[1]

1 - Thiago is João's best friend. But now Thiago plays with a new boy at school every day. Thiago doesn't play with João anymore.

2 - Rodrigo wants to use the computer to play his favorite game. His brother Lucas is already using the computer. Lucas hates to be interrupted when he's using the computer.

3 - Marcelo is hungry. He wants his older brother Daniel to help him get some cookies in a high kitchen shelf. Marcelo is afraid that Daniel says no.

4 – There's a boy named Marcos who lives next to Eduardo. Marcos is very annoying. Almost every day Marcos insults Eduardo on his way to school.

5 - Pedro is a new boy in the neighborhood. One Saturday, Bruno asked Pedro to come over to watch cartoons. After ten minutes, Pedro changes the TV channel without asking.