

Preparing pupils to cooperate during cooperative controversy in grade 6: a way to increase positive interactions and learning?

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Abstract Research has underlined the necessity to prepare pupils to cooperate in order to boost cooperative learning benefits. However, this kind of training may appear very demanding. The present study aims to demonstrate that a short preparation related to social support and targeted cooperative rules relevant for the task increases constructive interactions. Thirty-two pupils from grade 6 (11.8 years) were involved in dyadic cooperative controversy (Johnson and Johnson 2007) on argumentative texts for one session. All pupils were presented with three targeted rules for controversy. Half of the pupils had a short intervention related to the demonstration of social support, and the three targeted cooperative rules for controversy were explained and discussed (listening carefully while affirming understanding, criticizing ideas, but not people, and focusing on common goal). The pupils' interactions during cooperative controversy were videotaped and coded and the individual learning regarding the content of the studied texts was assessed. Results indicated that those pupils who had been prepared to cooperate displayed more support, asked more questions, and paid more attention to their partner. The overall quality of cooperation inside the dyad was also evaluated as more positive, though no difference in learning outcomes was observed. In summary, a short preparation for cooperation elicited more constructive interactions.

Keywords Cooperative learning · Controversy · Cooperative skills · Peer interactions

Cooperative learning is a well-known educational method proposing to structure group work in order to enhance learning and constructive social interactions among pupils (Sharan 1999). Theoretical background is well established (Slavin 2011) and positive results well documented (Hattie 2008; Johnson and Johnson 2009a). Although cooperative learning is encouraged by many instructional models (Gillies 2003; Johnson et al. 2008; Kutnick et al. 2008; Stevens and Slavin 1995), it is not so easy to introduce this valued pedagogy (Sharan 2010). Even in

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elementary schools, pupils are not familiar with cooperating (Baines et al. 2009; Pianta et al. 2007); this supports the idea that it is important to teach pupils how to cooperate.

We argue that by explaining why and how to interact cooperatively, we may guide pupils to cooperative learning and that it is possible to increase the benefits of cooperative learning, even with only a brief intervention. Previous methods devised reinforcing cooperative learning benefits by preparing learners to cooperate have documented positive gains. However, they involved demanding training and several weeks (Ashman and Gillies 1997; Fuchs et al. 1997; King 2007) or even throughout whole school year (Blatchford et al. 2006; Galton et al. 2009). Our approach focused on a preparation for cooperation relevant to the specific activity chosen, hypothesizing that thus positive gains may be obtained even with a short and simple intervention. This intervention will be carried out with grade 6 pupils working on the cooperative controversy.

Cooperative learning: a powerful tool

Cooperative learning proposes group work based on the cooperation among pupils in order to develop positive peer interactions and to encourage the quality of learning in various areas. Cooperative methods differ from group work by the structure imposed by the teacher regarding the teamwork and the cooperative task. Cooperative methods require dyads or small groups to work on a group task toward a common goal while perceiving positive interdependence and endorsing individual responsibility (Davidson 1994). Positive interdependence, i.e., when pupils perceive that the success of one participant increases the success of all the group members, is a key factor to encourage constructive interactions (Johnson and Johnson 2009a; Webb and Palincsar 1996).

Cooperative learning encourages and facilitates each other's efforts in accomplishing the group's goals (Johnson and Johnson 2009a) while increasing interactions among pupils (Blatchford et al. 2006) and improving performances (Galton et al. 2009). Review of different meta-analyses underlines moderate to strong effect sizes on learning results (Hattie 2008). Taken together, major reviews (Johnson and Johnson 1989; Slavin 1983a, 1983b) demonstrated that the increase in learning benefits for cooperative learning is registered in 58 % of the comparisons with other teaching methods (individual or competitive). These results propose cooperative learning as a powerful pedagogical tool while pointing out that its benefits are not to be taken for granted. This brings us to search for the conditions which may stimulate those benefits.

The need for structuring constructive social interactions

Despite potential benefits of peer instruction, instruction is mainly teacher based with few opportunities of working together (Baines et al. 2009). Group work is neither encouraged nor of much importance in elementary/primary school (Baines et al. 2009; Pianta et al. 2007). Therefore, pupils are not used to cooperate with each other. This underlines the importance of preparing pupils to cooperate and to structure group work in order to promote constructive interactions (Gillies 2004, 2008; Webb 2009).

The importance of stimulating constructive social interaction

One main hypothesis of cooperative learning assumes that the way group work is structured will influence the way pupils interact, while pupils' interactions determine the positive effect of

cooperative learning (Johnson and Johnson 1989). In their review, Webb and Palincsar (1996) summarized the main group process which mediates the effect of the structure of group work. Cooperative learning favors social support and the valorization of efforts contributing to help pupils achieve their common goal (Johnson and Johnson 1989). Moreover, cooperative learning demands of pupils to exchange information and resources, thus encouraging co-construction processes while stimulating the pupils to give and receive help (Webb 1985; Webb et al. 1995). Blatchford et al. (2006) demonstrated that exchange of information is more likely to occur in a cooperative learning context than in teacher-led situations.

Sociocognitive conflict has been identified as an important mechanism for learning (Doise and Mugny 1984; Quiamzade and Mugny 2001). Nevertheless, it is important to note that not all conflicts are positive for learning. Sociocognitive conflict regulation is particularly important (Buchs et al. 2004; Johnson and Johnson 2009b). Depending on the situation, a sociocognitive conflict can be regulated in two different ways, with differentiated effects on learning. On the one hand, conflict regulation may be focused on social comparison of competence with their partners. This relational regulation can lead pupils to be compliant in order to end conflict or to try to competitively demonstrate their own competences in a defensive way. This relational regulation reduces cognitive activities and learning (Buchs et al. 2010; Darnon et al. 2007; Doise and Mugny 1984). On the other hand, “sociocognitive” or “epistemic” conflict regulation helps pupils to focus on the task and understand the problem. This epistemic regulation leads to cognitive progress and enhanced learning.

The cooperative controversy: a way to structure constructive conflicts

Thus, it is particularly important for conflicts to be structured in a way which elicits regulation in an epistemic way. This kind of regulation is more likely in a cooperative context (Johnson and Johnson 2007). Johnson and Johnson proposed a cooperative model to structure conflict, the “cooperative controversy” (Johnson and Johnson 2007, 2009b). This controversy can be used in situations where pupils have to work on different points of view and negotiate them. It refers to a situation in which ideas or opinions of one person are incompatible with those of another person and both try to reach an agreement. Cooperative controversy enhances epistemic curiosity (i.e., motivation to understand and to acquire new knowledge) and search for additional information (Lowry and Johnson 1981; Johnson and Johnson 2009b; Smith et al. 1981). It also favors a more positive attitude toward the discussed issue and the other pupils (Johnson et al. 1985), when comparing concurrence-seeking approach in which pupils seek to avoid confrontations. Moreover, cooperative controversy favors learning by stimulating the cognitive elaboration (Smith et al. 1984) and the understanding of both perspectives (Smith et al. 1981). In other words, cooperative controversy encourages constructive epistemic conflict regulation, as it regulates the focus on the mastery of the different points of view (Buchs et al. 2004).

The cooperative controversy is based on a strong positive interdependence regarding goals, roles, and resources. It is generally structured in five steps. Pupils have to prepare a persuasive case for a given position, present this position in a compelling and interesting way, argue persuasively while refuting the opposite position and rebutting criticisms of their position, take the opposing perspective, and derive a synthesis integrating all the positions (Johnson and Johnson 2007). In order to positively design these stages, some cooperative rules are proposed: criticism of ideas but not of people; focus on achieving the best possible decision but not on winning; encouragement of everyone in participation and mastery of all relevant information; listen to everyone's opinions even if one does not agree; try to understand both sides of the

issue; restatement of what someone has said if it is not clear; begin by bringing all ideas and facts supporting both sides and then try to conclude in a sensible way; and change of minds when the evidence clearly indicates that one should do so (Johnson and Johnson 2007).

The importance of preparing pupils to cooperate

Many authors underline the importance of developing cooperative norms (Webb et al. 2002) and learners' group working skills (Baines et al. 2009; Blatchford et al. 2003; Johnson and Johnson 2006) when proposing cooperative activities. Some researchers have investigated the effect of training in regard of both interpersonal and collaborative skills at elementary school level (Ashman and Gillies 1997; Gillies and Ashman 1996, 1998). In these studies, after two 45-min training sessions, pupils were given the opportunity to make use of cooperative learning with cooperative skills during several weeks at least 3 h a week, always within the same group. Compared to pupils who worked with cooperative learning instructions during the same time but did not benefit from cooperative skills training, trained pupils behaved in more constructive ways. Positive effects of cooperative skills training were noticed in cooperation, helping behavior within the group, and pupils' learning.

Other studies proposed training oriented toward more specific social interactions and targeted some cooperative skills. For example, training on efficient help seeking and help giving (Webb and Farivar 1994) was studied. In this study, cooperative instructions were introduced, both conditions implying that the purpose of the group work was helping each other in learning problem solution. During 5 weeks, all pupils received instructions on the development of communication skills and worked in small groups. In addition, the experimental group received instructions on help-giving and help-receiving skills and was given the opportunities to put these skills into practice by working in small groups during five additional weeks. Some positive results were noticed, especially for pupils from ethnical background minorities (Webb and Farivar 1994). Positive effect of training regarding elaborated help (given and received) was also noticed for reciprocal tutoring when tutors and tutees alternated roles in reading comprehension (Fuchs et al. 1999) and mathematics (Fuchs et al. 1997, 1999).

In the same line, King (1994) proposed training on questioning as well as training for generating elaborated answers. The two components are combined in a well-developed program ASK to THINK–TEL WHY[®]. In addition, a script invites pupils to exchange the roles of questioner and explainer, and supportive communication is trained regarding the communication skills of the questioner. This strategy has been progressively improved due to a research conducted with pupils from grades 4 to 7 and has shown to be beneficial for deep comprehension (see King, 2007 for a review).

The present research: preparing pupils for structured cooperative controversy to improve pupils interactions and learning in grade 6

Training on cooperative skills has demonstrated positive effects both in relatively opened structures (Ashman and Gillies 1997; Gillies and Ashman 1996, 1998) and in scripted structures (Fuchs et al. 1997; Fuchs et al. 1999; King 2007). Nevertheless, these interventions required an extensive training with guidance and application, which can appear very demanding. As “learning together” recommends (Johnson et al. 2008), we argue that by preparing and guiding pupils in cooperative learning specifically explaining why and how to interact cooperatively it is possible to increase benefits of cooperative learning, even with a short

intervention. Our intervention focused on three targeted cooperative rules and on one general cooperative skill. The three targeted rules were adapted from the original controversy as follows: (1) I listen to my partner's ideas and make sure to understand them even if I do not agree; (2) I criticize ideas, but not people; and (3) The goal is to find the best solution together and not to prove me right. These rules, each corresponding to particular steps, were reinforced by a general cooperative skill: the demonstration of social support. This intervention allows hypothesizing that positive gains may be obtained even with a short and simple intervention; this will be done while working on a cooperative controversy in grade 6.

Thus, we propose a short intervention (one single session displayed in three 45-min lessons) based on cooperative controversy, with an overall cooperative learning framework comprising the earlier mentioned three classic basic elements: positive interdependence (goal and resource), individual responsibility, and constructive interactions. Cooperative controversy appears to be particularly relevant for working on argumentation in grade 6. Indeed, this controversy provides a relevant cooperative structure for working on argumentative texts as proposed in curriculum and fits adequately with the usual didactic recommendations (Yerly 2001). The aspired goals in the curriculum are “take into account others' perspective and express disagreement,” “search for an opposed argument to the ones you have heard,” “summarize arguments in a letter,” and “identify organizational marks in a letter.” In the present intervention, we observed pupils in different conditions for controversy: a control controversy and experimental controversy. In the control controversy, pupils worked on a cooperative controversy with simple instructions, i.e., with a mere introduction of the three cooperative rules. In the experimental condition, pupils benefited from a cooperative controversy with preparation for cooperation. We added two additional components designed to prepare pupils to cooperate: (a) communicating positive norms for cooperative work by underlying the value and benefits of cooperation for learning (we added a speech based on valorization of cooperation for learning, i.e., why to cooperate) and (b) preparing pupils to cooperate by proposing specific work on three targeted cooperative rules and one general cooperative skill (how to cooperate). Experimental controversy corresponds to our focal intervention. First, we predict that the preparation for cooperation should enhance learning at the end of the cooperative controversy (H1). Second, we predict a similar positive effect on pupils' interactions during cooperative controversy (H2).

Methods

Participants

The intervention was conducted in two sixth grade classes in the French-speaking area of Switzerland. The class teachers agreed that an external experimenter would conduct the intervention in two ways depending on experimental conditions. Pupils ($N=32$, mean age $M=11.8$ years old) were stratified regarding their French level (4 pupils with a low level, 12 with a moderate level, and 16 with a high level). Dyads were composed by teachers, so pupils worked either in slightly heterogeneous dyads or in homogeneous dyads. Gender was also taken into account by teachers to propose same-gender dyad (except one mix-gender dyad in control condition). In each class, half of the dyads worked in the experimental controversy and half in the control controversy. Researchers split the dyads between conditions as follows: three moderate/high dyads, two moderate/low dyads, and three high/high level dyads (with four boy dyads, three girl dyads, and one mixed dyad) in control controversy condition and three moderate/high dyads, two moderate/low dyads, one moderate/moderate dyad, two

high/high level dyads with four boy and four girl dyads in experimental controversy with preparation for cooperation.

Material

For the first step of the controversy, pupils received texts with arguments pro and con dogs as domestic pets. These texts were written by researchers and approved by regular teachers as being relevant for pupils. Both texts had the same structure, one sentence for introduction, four arguments, and one conclusive sentence. During all controversy steps, the pupils were wearing necklaces with images representing the assigned position and exchanged them when they reversed position.

As semantic connectors are necessary in order to construct argumentative reasoning by articulating different arguments, we introduced in the last step some connectors proposed by didactic material usually used in the district (Yerly 2001, sheet number 6, see procedure for more details).

An incomplete letter demanding pupils to fill in the blanks was elaborated specifically for this research to simplify the synthesis step. The pupils received pieces of paper each containing a sentence mentioned in the original texts. They then had to decide together which of those sentences would complete their letter forming a consensual position.

Procedure

In both conditions, the five steps proposed by Johnson and Johnson (2007) were explained to the pupils and three cooperative rules were introduced. Pupils were informed that the goal was to discuss within dyad so that both pupils master the whole information. The pupils were informed that they will have to present a common position at the end of the assignment and that they will have to individually answer questions on both positions afterwards (positive goal interdependence and individual responsibility). The initial position was randomly distributed among pupils, so in each dyad, one pupil had to defend arguments for having dogs as pets while the other had to defend arguments against having dogs as pets. The first position was counterbalanced. Starting on the assignment, instructions for each phase were then recalled before each step. The main steps are summarized in Table 1.

The pupils started by individually preparing a persuasive case for their assigned position. They received a paper with four arguments to help them in preparing their initial position (positive resource interdependence) and were given 7 min for completion. In this time, they could choose among given arguments and add their own ones, as long as they were adequate to the given position. Then, inside dyads, each pupil had to present her/his position in a compelling and interesting way (positive roles interdependence, 4 min for each position). The order for presenting texts pro and con dogs as pets was counterbalanced. When one after the other presenting, each pupil had the responsibility to transmit her/his position in the most complete and compelling way, while the partner had to listen carefully and assure understanding by asking clarification questions. The pupils could not take notes at that time; the information had to be remembered. The third phase consisted of an open discussion. The pupils had to argue persuasively, refuting the opposing position and rebutting critics of their own position. At the next phase, the pupils had to take the opposing position (4 min each), based on the previous partner's presentation (thus guaranteeing resource interdependence and individual responsibility). These first four phases allowed the pupils the opportunity of obtaining a more complete vision of the subject from different perspectives. Before proceeding to the synthesis, the experimenter introduced some connectors (e.g., it is true that,...

Table 1 Main steps for controversy in relation to usual didactic recommendations in grade 6

	Cooperative controversy structure <i>(additional preparation for cooperation in experimental controversy appears in italics)</i>	Didactic recommendations regarding argumentative texts: "Taking into account contrary arguments and express disagreement"
5 min	Introduction	
10 min	<i>Preparation for cooperative skills : collective reflexion on showing support</i>	
15 min	Explanation of the 5-step controversy	
5 min	Introduction of 3 cooperative rules: "I listen to my partner's ideas and make sure to understand them even if I do not agree" "I criticize ideas, but not people" "The goal is to find the best solution together and not to prove me right"	
10 min	<i>Preparation for cooperative skills: explanation and discussion of the 3 cooperative rules, discussing the correspondence of each rule with steps</i>	
7 min	Step 1. Individual preparation: reading and preparation of the initial position	
2×4 min	Step 2. Presentation of the two positions inside dyads in a compelling and interesting way ("I listen to my partners' ideas, making sure I understand them even if I do not agree")	Taking into account contrary arguments
7 min	Step 3. Persuasive argumentation of the positions: refuting the opposing position and repudiating critics of their own position ("I criticize ideas, but not people")	Taking into account contrary arguments + express disagreement
2×4 min	Step 4. Taking the opposite perspectives in a compelling and interesting way, each pupil reverse position ("I listen to my partners' ideas, making sure I understand them even if I do not agree")	Taking into account contrary arguments
10 min	Discussion about connecting words in collective interactive situation <i>Reminder of the importance of showing support and the importance of focusing on coming to the best decision possible and not on winning</i>	Identification of connecting words, use of expressions as "it is true..., but..."
10 min	Step 5. Construction of a synthesis	Search for opposing arguments while using connecting words (use of expressions as "it is true..., but...")

however,...) allowing the construction of an argumentative position, and presentation of how these connectors can be used, giving various examples. This work on connectors was proposed in an interactive way. Finally, dyads had to produce a final synthesis which should include both positions on the subject. At that point, the objective was no longer the confrontation of opinions but their integration in a consensual reasoned final production (positive goal interdependence). Due to time constraints and the age of the pupils, we decided to ask the pupils to stick tips of precut phrases and connectors in an incomplete letter instead of writing a synthesis. By the end of the assignment, all 32 pupils had an individual evaluation referring to both sides of the argument (see below for dependent variables).

Throughout the procedure, a specific work on social support and targeted cooperative rules was introduced in the experimental controversy with preparation for cooperation (see below for independent variable, presented in italics in table 1). For the purpose of the experiment, each condition was moved with the intervener into a designated room while the other stayed with the regular teacher in their class for a non-related activity. The following week groups were exchanged. The condition who was first to engage in the experience was counterbalanced between classes.

Independent variables

In the *control controversy*, the cooperative rules were presented but not discussed with the pupils. In the *experimental controversy with preparation for cooperation*, a specific work on the targeted cooperative skill “showing support,” identified by teachers, was introduced before presenting the steps of the controversy. This presentation was then followed by discussions on the three targeted cooperative rules.

During 10 min, the pupils had to consider and share how social support may be demonstrated in behavior and speech. They started with individually writing on a piece of paper ideas on the meaning of *demonstration of social support* or *reception of support* (4 min). Thereafter, the pupils had to choose with their dyad partner one idea from each list and present their partner's idea to the other pupils. All propositions were written on a collective poster, so that the pupils could refer to the list during the rest of the activity, to reinforce their demonstration of social support.

In addition, during another 10 min, each of the three targeted cooperative rules was discussed more deeply, while the pupils' participation was encouraged, and different examples and ways of use were discussed regarding the three rules “I listen to my partner's ideas and make sure to understand them even if I do not agree”; “I criticize ideas, but not people”; and “The goal is to find the best solution together and not to prove me right.”

The pupils also discussed the matching of cooperative rules with cooperative controversy steps. The collective discussion concluded that listening to everyone's ideas, while trying to understand everything even if one does not agree, especially fits steps 2 and 4; criticizing ideas, but not people, especially fits step 3; and while focusing on coming to the best possible decision and not on winning, especially fits step 5.

Dependent variables

The dependent variables consisted of pupils' interactions and their learning outcomes.

Pupils' interactions Videotaped observations were used to collect data regarding the pupils' interactions. All dyads were filmed from steps 2 to 5 of the controversy. Following the intervention, interactions were coded by two students who were following a methodological course on social interaction in peer learning in an observation grid established for the purpose of this research. The grid was divided in two parts according to dependent variables. First, judges coded interactions step by step. After the first coding, the judges observed the videos again and coded them on general behaviors regarding all steps.

For some variables, we assessed the occurrence of individual pupil behaviors across controversy steps: the *number of questions* pupils asked in order to clarify and the *number of critics* of the partner (when a pupil openly criticized or accused her/his partner, e.g., “you suck,” “you steal my arguments,” “stop behaving like this,” and/or use of abusive language). Ten pupils' interactions from five dyads were coded by the two independent judges with an agreement of 82.5 % for those items.

For other variables, we assessed the frequency during the whole controversy (from 1 “almost never” to 5 “almost always”). *Attention toward the partner* refers to the involvement in the interaction with the partner and was identified by visual contacts and postural openness. *Active listening* was identified when the pupils reacted in a way related to the said, or when they expressed interest in verbal and/or none verbal ways, expressing connection and alignment. *Social support* was identified with smiling, encouraging, head nods, and positive remarks such as “come on, you can do it” and “do not be stressed.” The two judges coded the same ten pupils' interactions, and the inter-judge reliability was calculated with the correlation between the subscale of each judge (split half $\alpha=0.75$). We also evaluated the *degree of cooperation* inside the dyad at the end of the video on a five-point scale (from 1 “almost never” to 5 “almost always”, $r=0.95$ for five dyads doubled coded).

Learning outcomes Pupils' learning outcomes were measured on a multiple choice questionnaire including four questions with four possible answers each. The learning outcomes test for this research was established in collaboration with the regular teachers as they would have done in their own practice.

A multiple choice test with four questions was used to assess individual learning outcomes (two questions relating arguments in favor of dogs as pets and two questions relating arguments against dogs as pets). Each question was presented as an affirmation followed by four possibilities. For each question, only one answer was correct. One point was allocated for a correct answer and no points for false or blank answers.

Results

As the number of participants in the research was small (16 in each condition) and data is not normally distributed, we have computed nonparametric test for testing our hypotheses. More specifically, we have computed Mann–Whitney U tests and we will report the average ranks at the same time that as mean results for each condition. We have balanced the level of dyads and gender composition in both conditions, but one mix-dyad in control controversy. Results remained the same when the mix-gender dyad was removed.

H1 The specific work on social support and targeted cooperative rules should enhance learning at the end of the cooperative controversy.

It is important to note that our learning outcome test was easy for pupils ($M=3.75$ on four-point scale). Learning outcomes varied from 2 to 4. Those pupils who benefited from preparation for cooperation achieved an average performance of $M=3.88$ ($SD=0.34$, average rank=14.94, with two pupils achieving 3 points and 14 pupils achieving 4 points). The pupils from the control condition achieved an average performance of $M=3.63$ ($SD=0.62$, average rank=18.06, with one pupil achieving 2 points, four pupils achieving 3 points, and 11 pupils achieving 4 points). This difference between the two conditions was not significant ($U_{\text{Mann-Whitney}}=153.00$, $p=0.36$).

H2) The specific work on social support and targeted cooperative rules should have a positive effect on pupils' interactions during cooperative controversy.

The work on the rule “I criticize ideas, but not people” should reduce the number of critics against partner. The number of critics is presented in Table 2. Pupils expressed from 0 to 8 critics during the whole controversy, and the number of critics did not differ significantly between control controversy ($M=1.69$, average rank=18.34) and experimental controversy

Table 2 Number of occurrences for criticisms and questions during the different steps of the controversy the two controversy conditions

	Controversy (control group)	Controversy with preparation for cooperation (experimental group)
Number of critics		
0	9	13
1	2	0
2	1	1
3	0	0
4	1	0
5	1	1
6	1	0
7	0	1
8	1	0
Mean occurrence	$M=1.69$	$M=0.68$
Average rank	18.34	14.66
Number of questions		
0	13	6
1	2	3
2	1	3
3	0	2
4	0	2
Mean occurrence	$M=0.25$	$M=1.43$
Average rank	12.53	20.47

with preparation for cooperation ($M=0.68$, average rank=14.66; $U_{\text{Mann-Whitney}}=98.5$, $p=0.27$).

The work on the rule “I listen to my partner’s ideas and make sure to understand them even if I do not agree” should enhance the number of questions the pupils asked in order to clarify understating as well as increase the frequency of active listening. Overall pupils’ active listening was judged to be more frequent (see Table 3) in experimental controversy ($M=4.69$, average rank=19) in control controversy ($M=4.19$, average rank=14; $U_{\text{Mann-Whitney}}=168.00$, $p=0.14$). In contrast, results indicated that pupils asked more questions ($M=1.43$,

Table 3 Means (and standard deviations) and average rank for overall evaluation of pupils’ interactions during controversy (1=almost never–5 = almost always)

	Controversy (control group)	Controversy with preparation for cooperation (experimental group)
Pupils’ active listening, M	4.19 (1.11)	4.69 (0.79)
Average rank	14.00	19.00
Attention toward partner, M	3.50 (1.03)	4.75 (0.77)
Average rank	10.62	22.38
Pupils’ support, M	1.56 (1.09)	3.25 (0.86)
Average rank	10.56	22.44
Overall cooperation, M	2.25 (1.28)	4.00 (0.93)
Average rank	5.50	11.50

average rank=20.47) in experimental controversy with preparation for cooperation than without ($M=0.25$, average rank=12.53; $U_{\text{Mann-Whitney}}=191.50$, $p=0.02$) (see Table 2). More pupils asked questions and the questions asked were more frequent in the experimental condition. Indeed, out of the 16 pupils in both conditions, only three asked questions to their partner without the preparation for cooperation (two pupils asked one question and one pupil asked two questions), whereas ten pupils asked at least one question with preparation for cooperation (three pupils asked one question, three pupils asked two questions, two pupils asked three questions, and two pupils asked four questions).

In the same line, overall attention toward the partner was evaluated as more frequent in experimental controversy with preparation for cooperation ($M=4.75$, average rank=22.38) than in control controversy without this specific work ($M=3.50$, average rank=10.62; $U_{\text{Mann-Whitney}}=222.00$, $p=0.001$). Preparation for cooperation also reflected on social support. Overall social support was judged more frequent in experimental controversy with specific preparation ($M=3.25$, average rank=22.44) than in control controversy without preparation for cooperation ($M=1.56$, average rank=10.56; $U_{\text{Mann-Whitney}}=223.00$, $p=0.001$).

Finally, the general degree of cooperation inside the dyads was higher evaluated for dyads who had benefited from specific work on preparation for cooperation ($M=4.00$, average rank=11.50) than the other dyads ($M=2.25$, average rank=5.50; $U_{\text{Mann-Whitney}}=56.00$, $p=0.01$).

Conclusion and discussion

We argued that pupils are not used to cooperative learning. Furthermore, many researchers stressed the necessity of training pupils to cooperate in order to promote the benefits of this method. While previous interventions have proposed long-term training, we suggest that scripted cooperation with a short preparation for cooperation focused on social support and on specific targeted cooperative rules will enhance constructive pupil interactions. To examine this proposition, we invited sixth graders to participate in a cooperative controversy (scripted cooperation proposed by Johnson and Johnson 2007) operating with three cooperative rules “I listen to my partner's ideas and make sure to understand them even if I do not agree”; “I criticize ideas, but not people”; and “The goal is to find the best solution together and not to prove me right.”) in two different conditions. In the control controversy, we applied a cooperative controversy instructions group (structuring the three basic components of cooperative learning with a mere introduction of the cooperative rules), while in the experimental controversy, a preparation for cooperation was added (cooperative controversy instruction with valorization of cooperation for learning and specific work on social support as well as on targeted cooperative rules). It is important to note here that this specific preparation for cooperation took 20 min, which is realistic in a usual classroom context.

It was noticed that the numbers of critics against their partner as well as active listening were similar in both conditions. These observations may be interpreted in terms of general cooperative framework due to scripted cooperation. Indeed, the number of critics is small in both conditions, and pupils are likely to listen to their partner because of the structure of controversy that reinforces personal responsibility and positive goal, resource, and role interdependence. No significant difference on learning outcomes was noticed.

In contrast, results revealed the added value of preparing pupils to cooperate: The pupils who had benefited from this specific work on social support and targeted cooperative rules demonstrated more social support, more attention toward their partner, and also clearly asked more questions. Overall, the specific work enhanced the general quality of cooperation inside dyads.

These results underline the role of the preparation to cooperate, especially for positive pupil interactions. We have mentioned in the “Introduction” that cooperative learning does not result in positive gains in all the studies analyzed in meta-analyses and that implementation of cooperative learning remains a challenge. Our intervention stresses that when the preparation to cooperate is framed in a specific way (adapted to the situation and inviting pupils to participate in the construction of rules and skills), benefits can appear even after a short intervention (one single 20-min session).

Some major limitations can be noticed. First, the sample of the study is small with only 32 pupils participating in this research. Second, while pupils with preparation to cooperate in this study scored higher, the difference for learning did not reach a significant point and cannot be generalized. Our learning questionnaire was very simple and short. This questionnaire should be improved to allow variation in learning outcomes in order to test whether the specific work on targeted cooperative skills and rules can improve pupils' learning. An additional limitation was that the pupils were not asked to prepare written notes and to present a synthesis of their conclusion, as proposed in the original cooperative controversy. Due to the limited time allocated to the controversy, we proposed instead that the pupils complete the blanks in an incomplete letter using different proposed sentences relating to the argumentative texts. This kind of synthesis requires low level processing. Thus, we acknowledge that the conditions for testing differences in learning outcomes were reduced.

Despite these limitations, our results underlined that pupils' preparation to cooperate allows the emergence of cooperative gains. For teachers willing to implement cooperative learning, the conclusions of this research positively imply that a short investment of time could improve pupils' ability to interact in constructive ways. As shown, a specific preparation for cooperation may require limited time and resources to produce positive results. Hopefully, the results of this study may increase teachers' willingness to use cooperative learning with preparation for cooperation in their classrooms and thus offer pupils the possibility to gain cooperative skills which are, in individual and competitive teaching, set aside.

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Current themes of research:

Cooperative learning.

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Current themes of research:

Social psychology of education. Cooperative learning. Struggle for competence in academic selection.

Most relevant publications in the field of Psychology of Education:

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