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Do similar-ability peers regulate one another in a collaborative discourse activity?

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ABSTRACT

Despite its popularity, not enough is known about peer collaboration as a vehicle for cognitive development. We examine 64 early adolescents over several months as they collaborate with same-side and opposing-side peers in argumentation – an activity that requires coordinating own and other perspectives to fulfill a joint goal. Results support the claim that collaboration can serve a metacognitve as well as cognitive dimension, with a collaborative partner able to direct and regulate an individual's thought and action in ways that further their joint goals. Moreover, this process occurs among peers of equal ability (rather than only the unequal relation highlighted by Vygotsky), with partners alternating in serving this regulatory function for one another. Finally, the process benefits as the collaborative relationship continues over time.

1. Introduction

Collaborative activity is widely held to be beneficial to cognitive development by both researchers and practitioners (Blumenfeld, Marx, Soloway, & Krajcik, 1996; Dillenbourg, Baker, Blaye, & O'Malley, 1996; Bearison & Dorval, 2002; Howe, 2010). The shared representation of the problem space that collaborators develop is thought to enhance each individual's understanding (Chi & Wylie, 2014; Schwartz, 1995). Collaboration has been found to be more beneficial when conceptual rather than when rote learning is involved (Phelps & Damon, 1989; Pai, Sears, & Maeda, 2015). Still, there are many different kinds of conceptual achievements, not all of which demand construction of a shared understanding. When they do not, understandings may be constructed as effectively individually as collaboratively (Wirkala & Kuhn, 2011).

The benefit of collaboration may operate at a metacognitive as well as cognitive level. Metacognitive regulation of planning, execution, and evaluation between asymmetric peers has been explored both theoretically, stemming from Vygotsky's (1978) concepts of scaffolding and the zone of proximal development (ZPD), and empirically (Rogoff, 1990; Azmitia 1998; Hogan, Nastasi, & Pressley, 1999; Papathomas & Kuhn, 2017). Less is known, however, about such regulatory processes among those of similar ability. Is their interaction beneficial to either or both partners? Does one member of a pair assume the role of regulator or does this role fluctuate over time if the pair engages in an extended collaboration? To investigate these questions, we conducted the present study.

Metacognitive regulation between peers may be particularly beneficial when tasks require that collaborators not only access and represent another's perspective but must coordinate own and other perspectives for the purpose of fulfilling a joint goal (Kuhn, 2015), as for example during dialogic argumentation. In fulfilling such joint goals, collaborative partners may help to direct and regulate one another's thoughts and actions in ways that one individual cannot at the moment do consistently for herself. Doing so allows the pair to function in ways that would not be possible alone – a process that Vygotsky highlights in his idea of a zone of proximal development, but one we suggest may operate among peers of equal ability as well as in situations where one individual has superior skill,

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a possibility that has also been suggested by Forman and Cazden (1985) and Fernandez, Wegerif, Mercer, and Rojas-Drummond (2001). In this case, both inhabitants of the ZPD adopt the roles of teacher and learner interchangeably.

In the investigation of young adolescents' argumentation to be reported on here, collaboration takes place at two levels. One is between peers who share the same position on the topic and work together as partners. The second is between this pair and a series of peer pairs who hold an opposing view. In the first case, the collaboration is verbal as the pair seeks to understand and determine how best to weaken the opposing position while strengthening their own. The second form of collaboration, between opposing pairs, is conducted electronically, giving each pair the opportunity to reflect collaboratively on the discourse as it is represented on the screen before them – this opportunity having been shown to enhance both reflection and strategic progress (Felton, 2004; Iordanou & Constantinou, 2015; Kuhn, Zillmer, Crowell, & Zavala, 2013; Mercer, Hennessy, & Warwick, 2010; Kuhn & Udell, 2007).

We focus on the metacognitive dimension of verbal exchanges between same-side partners during collaboration. In this discourse, partners have the opportunity to verbally plan and evaluate the strategies they employ in their electronic exchanges with opposing-side pairs. It is in this interaction that metacognitive guidance of one partner by the other may occur. For example, one may say to the other, "No, that's not what we're supposed to be doing right now." Or one may ask the other, referring to information they are at that moment examining, "How does this help us?"

The research question we pose here is whether, by the end of these sessions, the pair displays evidence of fruitful metacognitive regulation. And is this regulation mutual or unilateral (always instituted by one partner to benefit the other)?

In this study we examine collaboration of pairs of young adolescents who worked together as partners over the course of six dialogic sessions (*Stay* condition) engaging in electronic dialog with a series of pairs holding an opposing view on a social issue. This extended collaboration over the six sessions, we hypothesized, as the pair worked together to fulfill a joint goal, would give them the opportunity to develop and profit from the regulation of one another's thinking and behavior, whether this benefit was unilateral (always from the same partner to the other) or mutual and shifting. In a comparison condition, same-side dyads worked with different partners during each of the six sessions with an opposing dyad (*Switch* condition) and hence lacked the opportunity to develop a collaborative relationship over time. Any differences that emerge between the two groups by the time of the final session stand to be informative regarding the potential benefits of collaboration and the conditions affecting the degree to which they will be realized.

2. Method

2.1. Participants

Participants were 64 students (34 female), 11–12 years old, attending a modestly selective urban public middle school in the Northeast US. Approximately 80% of students at the school were Hispanic or African American, and 60% qualified for reduced-price or free lunch. Students were predominantly from lower SES backgrounds, but some middle-class students attended the school.

On their entry to the school at sixth grade, students had been randomly assigned to one of three classes; hence the three classes could be regarded as equivalent. Two of these classes were randomly chosen to participate in a twice-weekly 50-min class devoted to argumentation during their sixth and seventh grade years and constitute the participants in the present study.

2.2. Procedure

The curriculum was implemented as a stand-alone course delivered by the researchers and has been described in more detail elsewhere (Kuhn & Crowell, 2011; Kuhn, Hemberger, & Khait, 2016). Students spent seven to eight weeks (13 class sessions) of engagement with each of a series of social topics (e.g., whether kidneys should be allowed to be sold). Students chose which side they wished to take. Each topic cycle repeated a sequence of 13 activities, each activity constituting a class session. The initial two sessions were devoted to small-group, same-side team-work ("Pre-game") in which students worked in small groups to generate and evaluate reasons to support their side's position. In the following six-session phase ("Game"), students were paired with a same-side peer to engage in a series of six electronic dialogs on the topic (one per class session), each time with a new opposing-side pair of peers. Dialogs lasted 20–25 min. Dialogs were electronic to promote and facilitate reflection on the exchange and remained visible on the screen in front of each pair as the dialog between pairs took place. Students were provided short (one-to-two sentence) pieces of information related to the topic and also were able to pose and receive answers to their own questions. These remained available during the remainder of the topic cycle.

While waiting for the opposing pair to make a response, the pair was asked to jointly complete a "Reflection Sheet" during each dialog session; in doing so they were able to refer to the ongoing dialog transcript that appeared on the screen before them. These were of one of two forms (alternated across sessions) – one asking the pair to identify and reflect on one of their own arguments and the other to identify and reflect on one of the opponents' arguments. Each asked students to identify counters and rebuttals and to reflect on whether these could be strengthened.

During the following phase ("End-game"), students returned to their same-side small groups for two classroom sessions to prepare for a final whole-class "Showdown" debate that served as the capstone experience of the sequence, followed by a debrief session to review the Showdown and a final individual essay assignment.

The condition manipulation instituted in the present study took place during the second and third topic cycles of the second year of participation, after students were very familiar with the sequence of activities that constituted each topic cycle. It involved only the dialog ("Game") phase and concerned the assignment of pairs to work together in conducting their electronic dialogs with an opposing-side pair. Students normally were paired with a single same-side partner for the six dialog sessions with six opposing-side