Variation in Other-Regulation and the Implications for Competence Negotiation

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Abstract: To succeed, groups need skills to jointly regulate their shared task work. The current study examines variation in other-regulation, or efforts by one student to regulate their group's work. We consider the relationship of directive and facilitative forms of other-regulation with efforts to negotiate competence, given that directive other-regulators may raise doubts about relative ability. Three groups of four 7th grade students were observed while working on two collaborative activities during an inquiry-based science unit. Results suggest the nature and quality of facilitative and directive other-regulation varies, with directive regulators focused on controlling the task product in ways that excluded others' attempts to contribute. In response, teammates worked to renegotiate their positions of competence within the group to ensure their ideas were considered for integration. The focus on relative competence promoted by directive other-regulation may diminish a focus on group learning, given the social nature of joint activity.

Successful teamwork is increasingly necessary for learning in and beyond school (Strijbos, Kirschner & Martens, 2004). To succeed, groups need skills for jointly coordinating and regulating work on a shared task product. Recent research has expanded prior emphases on individual self-regulated learning to consider the contextualized nature of students' experiences during group work, with the ultimate aim of understanding group's regulation of behavior, learning, and understanding during shared activity (Volet, Vauras & Salonen, 2009). Social regulation research has focused on who is regulating within the group indicating a range from other-regulation or coregulation, in which one student temporarily predominates the group's interactions, to socially shared regulation, whereby multiple group members jointly regulate group activity (Vauras, Iiskala, Kajamies, Kinnunen, & Lehtinen, 2003). While other-regulation is typically conceptualized as a group member temporarily guiding others' understanding (Hadwin & Oshige, 2011), there is some evidence that other-regulation may be stable once a group leader is established (Li, et al., 2007) and more directive in conducting the regulatory processes for the group (Rogat & Linnenbrink-Garcia, 2011). Rogat and Linnenbrink-Garcia's (2011) results characterized *directive other-regulation* as one group member's efforts at determining the next step of the task, detailing exactly what group members should do, and maintaining control of monitoring and task contributions. These findings indicate that there may be a broader spectrum of other-regulatory behaviors that go beyond facilitation to include more directive forms. Beyond more clearly understanding the nature of other-regulation in collaborative groups, it is also critical to understand the implications for group process. Research indicates some evidence that, unlike prior conceptualization of other-regulation, directive forms can provoke conflict in response to group members' regulation being ignored and having limited means for contributing to the task (Rogat & Linnenbrink-Garcia, 2011). Those subjected to other-regulation may come to experience their participation as peripheral and in conflict with the other-regulator, particularly when their regulatory and content contributions are not integrated. This lies in contrast to what we expect groups engaging in a guiding, or *facilitative*, form of other-regulation to experience: disagreement instead could promote co-construction of meaning and task improvement (Darnon, et al., 2006).

The current study has two goals. First, we examine other-regulation within collaborative groups to more richly understand the regulatory processes employed by directive and facilitative other-regulators. Towards this end, we designate each group's other-regulator by examining frequency and types of regulatory strategies employed by all members of the group, using distinctions made in prior research, such as regulation of content understanding, use of disciplinary norms, task process, group process, and behavior (e.g. Hogan, Nastasi & Pressley, 1998; Rogat & Linnenbrink-Garcia, 2011; Salonen, Vauras & Efklides, 2005). We also qualitatively examine these social regulatory processes to more richly characterize the nature of the employed other-regulation. Understanding variation in other-regulation is critical since, with directive forms, regulation of the group may be low quality and limit equitable involvement in ways that convey information about group members' competence.

The second goal of the research is to investigate the relationship between variation in other-regulation and group process. Specifically, we explore how other-regulation impacts efforts by group members to negotiate their own and others' positions of competence. In the context of directive other-regulation, group members may experience constrained opportunities to participate, and thus have fewer opportunities to engage as competent contributors. Group members being repeatedly ignored and having their contributions treated as irrelevant when

in conflict with the directive other-regulator's ideas may introduce doubts about relative competence (Darnon, et al., 2006). In response to relative ability being made salient and questioning the competency of one's own contributions, group members may engage in competence negotiation. In this work, we conceptualize competence negotiation by drawing on the literature on social comparison and systems of competence to investigate how individual students work to reposition themselves and their peers within the system of competence (Altermatt, et al., 2002; Darnon, et al., 2006; Gresalfi et al., 2009). Facilitative other-regulators may correspondingly work to ensure everyone ideas are solicited, fostering inclusion and respect for everyone's contributions, thus reducing the need to negotiate relative competence. Toward this end, we examine how individuals within groups work to ensure that their ideas are not ignored and are considered for integration. We expect group members with directive other-regulators to assert their own competence by *self-advocating* or *self-presenting.* We also explore whether there are moves to reposition others as more or less competent by promoting or criticizing other's contributions (i.e., *other-positive* or *other-negative*). Fundamentally, it is critical to consider implications of other-regulation since social comparison can have negative consequences for group functioning. If directive other-regulation promotes a focus on relative competence it may ultimately discourage a shared focus on learning from the task (Ames, 1992) and disengagement (Nolen, 2007), with implications for diminished conceptual understanding during collaborative tasks given the social nature of joint activity (Barron, 2000).

Method

Three 4-person groups of 7th grade students were observed during two inquiry-based science tasks focused on cell organelles and the development of reasoning skills. Groups were purposefully selected to afford exploration of variation in other-regulation. We selected groups that appeared to vary in the degree of balance of participation among group members, without including extreme cases (Patton, 1990). Two observations per group were selected that lasted at least five minutes, had minimal off-task behavior, and involved a collaborative task (excluding pair work and teacher-led tasks).

Elaborated running records were prepared from video-taped observations to contain information about body language and gestures. Next, we coded the records for social regulation. Sub-codes then were applied to differentiate regulatory types (see Table 1), and each instance was designated as taken up, ignored, or rejected with or without rationale (Barron, 2000). Frequencies and percentages were calculated for participation, regulatory moves, and responses to regulation. Other-regulators were identified by their frequent regulatory contributions relative to their group members as well as their broad use of types of social regulation (i.e. regulated more areas than most group members). Subsequent qualitative analysis of the regulation employed by these other-regulators informed our designations of the type of other-regulation as facilitative or directive. We also coded for attempts by individuals to negotiate their position of competence or that of others (see Table 1). Individuals within the group can attempt to convey that they are capable contributors via self-presentation (i.e., self-positive) or self-advocating (see Barron, 2000). Competence negotiation can also be targeted toward one's group members in efforts to promote and advocate for other's contributions (i.e., other-advocate and other-positive) or by diminishing the competence of one's teammate (i.e., other-negative). Other types of competence-relevant language which may contribute to negotiation include self-deprecation (self-negative) and group-targeted statements (group-positive, group-negative). Further, groups who focus on relative ability may shift between discussing ability within the group to discussing between-group ability comparisons (i.e., group-positive and group-negative) (Kempler & Linnenbrink, 2004). Both explicit (e.g., I am smart) and implicit (e.g. refusing or soliciting help from a particular group member) evaluative statements were considered evidence of competence negotiation given findings that older children typically rely on subtle forms of social comparison (Altermatt et al., 2002). After coding the observations, reliability was established and disagreements were resolved to yield final codes.

Table 1: Description of Codes

Codes	**Description**
Regulation Types	
Content	Regulatory moves focus on the group's understanding or use of content
Disciplinary	Focus on ensuring group's adherence to norms of disciplinary practice
Task	Regulation specific to task components, directions, procedure, and enacting task
Group Process	Focus on coordinating group interactions and turn order
Behavioral	Specific to re-engaging off-task group members and sustaining on-task behavior
Competence Positioning	
Self-positive	Positive self-targeted statements that aren't inclusive of group (e.g. "I'm right")
Self-negative	Self-deprecating comments that aren't inclusive of group (e.g. "I'm so stupid")

Other-positive	Positive comments regarding a group member's capabilities (e.g. "That's a great idea")
Other-negative	Negative deprecating comments targeting a group member (e.g. "You're wrong")
Group-positive	Positive statements about own group's competence (e.g. "We're good at this")
Group-negative	Negative statements about own group's capabilities (e.g. "We are behind")
Self-advocate	Pushing for one's own perspective to be heard by the group by repeating claims or re-asserting claims not previously taken up
Other-advocate	Promoting contributions of a groupmate (e.g. intervening when someone is excluded or ignored, asking to return to a previously dismissed idea)

Results

We began by exploring differences in other-regulation among the groups by examining whether the amount of talk contributed by students to discussion was equitable using percentage of total turns taken by each group member (Hogan, et al., 1999). Results confirmed the variation in other-regulation in line with our purposeful sampling of groups (see method and Table 2). In Group 1, all four students participated relatively equally during group discussion, while Groups 2 and 3 showed more imbalanced contributions among group members with both groups having a single member who participated more frequently than others. Group 2 was differentiated by having one group member who evidenced very limited participation, while Group 3's remaining group members showed more equal participation. To identify the other-regulators, we also examined frequencies of participation, total regulation and counts of regulation types employed by members of the group (see Table 2). Below we characterize the nature of each group's other-regulation given these frequency data and a qualitative analysis of the how the other-regulator engaged in regulatory processes for the group.

Table 2: Frequencies of regulation types by individuals within groups and participation

		Content		Disciplinary		Task		Group Process		Behavioral		Total Regulation		Participa-tion - % of total turns
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
Group 1	Allison	1	9	8	36	5	22	20	42	2	14	36	31	28.3
	Bob	2	18	1	5	1	4	9	19	2	14	15	13	24
	Cindy	4	36	3	14	3	13	7	15	0	0	17	14	20.5
	Donna	4	36	10	45	14	61	12	25	10	71	50	42	27.1
	Totals	*11*	--	*22*	--	*23*	--	*48*	--	*14*	--	*118*	**--**	
Group 2	Amy	4	18	2	29	22	46	4	31	3	38	35	36	27.9
	Billy	0	0	0	0	1	2	1	8	0	0	2	2	1.9
	Carla	9	41	2	29	12	25	5	39	5	63	33	34	42.3
	David	9	41	3	43	13	27	3	23	0	0	28	29	27.9
	Totals	*22*	--	*7*	--	*48*	--	*13*	--	*8*	--	*98*	**--**	
Group 3	Adam	8	24	2	100	4	29	0	0	0	0	14	25	23
	Bridget	0	0	0	0	1	7	0	0	0	0	1	2	13.1
	Carol	11	33	0	0	7	50	2	29	0	0	20	35	41.8
	Dylan	15	44	0	0	2	14	5	71	0	0	22	39	22.1
	Totals	*34*	--	*2*	--	*14*	--	*7*	--	*0*	--	*57*	**--**	

Note: This table presents the frequencies and percentages of social regulation types that occurred during the three groups' discussions. Percentages assist group comparisons since observation length and on-task engagement varied between groups. In addition, other-regulators for each group are designated using bold font. Finally, total number of turns for each group was - Group 1: 258 turns; Group 2: 215 turns; Group 3:122 turns.

Variation in Other-Regulation

Donna was identified as Group 1's other-regulator. She engaged more frequently and broadly than her groupmates in all forms of social regulation, with the exception of content regulation in which her frequencies were typical for her group. Donna's other-regulation can be characterized as facilitative: she regularly posed task regulation questions to evoke widespread participation (e.g. "This evidence, okay well how does it relate to the movement and energy models?"), brought the group back to task (e.g. asking "What'd you guys write this as?" during off-task behavior), and regulated group process in ways that prevented exclusion of Bob's minority perspective on Task 1 (e.g. "Now we're gonna add 'How would you rate this, Bob?'"). Donna also kept the group accountable to the class' jointly created disciplinary criteria by referencing the norms during discussion

(e.g. "The most important thing of good evidence is if it's relevant. If it's irrelevant, it's not good."). Allison also made regulatory moves frequently in Group 1, but she most heavily regulated group process and disciplinary practice, with her group process regulation primarily focused on turn order. Bob and Cindy both regulated less often overall, but also tended to regulate group process. Overall, Donna's facilitative other-regulation generally prompted all group members to participate and thus fostered equal access to knowledge construction, widespread inclusion and integration of ideas.

Group 2's participation was skewed and involved directive other-regulation by Carla. Carla's regulation was focused on task and content, with many moves involving directive statements that offered little room for response from groupmates (e.g. "Get a calculator"). Further, Carla's directive regulation was low quality, with few rationales and a focus on simply besting others. David and Carla battled for control over whose regulation and positions would be taken up in the group. In one example where the task required discussing evidence quality, Carla argued for Evidence F and David for Evidence C. David and Carla battled over which evidence was best in extended and heated fifteen turn exchange. Carla said "I don't like it. F. F!" and David yelled back "C!" Further, David routinely made Carla the target of his regulation, responding to her directive approach (e.g. "Add it up!"). Of the remaining group members, Billy largely did not contribute to the group and his views were not solicited. Amy mostly made moves to regulate the task, such as checking what steps the group would take, but was largely ignored. Amy used disciplinary regulation to intervene during Carla and David's arguments, but she was ignored every time. Thus, Group 2's directive other-regulation was low quality given limited elaboration, highly critical monitoring, as well as limited opportunities for all group members to contribute.

Group 3's other-regulation can be characterized as directive, although the participation was more balanced than Group 2's. While Dylan regulated at a similar frequency to Carol, it was Carol who used regulation to ensure that her response was incorporated in the final product and whose ideas were not ignored. Characteristic of Carol's other-regulation, she engaged in some high quality content and task regulation, with her regulation including rationales as feedback. However, these instances of high quality regulation often involved a single partner with whom she chose to engage, while excluding others. For example, while arguing with Dylan about how to interpret the evidence during Task 1 (i.e., content and disciplinary regulation), Carol did not make efforts to include Bridget or Adam using group process regulation. Also, Adam's many attempts to regulate were ignored despite the high quality of his regulation during Task 1. In one example, Adam provided disciplinary monitoring by indicating that the group was relying on inference, rather than focusing on the evidence. Overall, Group 3's pattern suggested that Carol dominated the group's regulation in ways that primarily involved ignoring group members' regulatory contributions: her directive other-regulation involved excluding ideas that contradicted hers and refusing to incorporate monitoring offered by groupmates.

In summary, our results point to two forms of other-regulation which can be differentiated in nature and quality. For Group 1, facilitative other-regulation involved inclusion of everyone's contributions through the regulation of group process, behavior, and task in ways that afforded co-construction of knowledge and coordinated work on the shared product. In contrast, the other-regulation in Group 2 and 3 can be characterized as directive. Group 2 exhibited directive regulation leading to reduced access to participation opportunities and informational feedback, with regulation that could be characterized as harsh (i.e., battling, ignoring). Group 3's other-regulation involved a directive other-regulator working to control the group's final product. While at times her content and task regulation provided feedback, she simultaneously failed to be inclusive of other group member's contributions.

Competence Negotiation

In this section we explore whether differences in other-regulation co-occurred with attempts to negotiate competence. More specifically, given Darnon and colleagues' (2006) findings that conflict can promote a focus on relative competence, directive forms of other-regulation may lead group members to experience threats to their competence. In response, students may resort to promoting their competence via self-presentation or self-advocating, and in some cases, by putting down teammates.

We turn now to an analysis of competence positioning moves in these groups. Competence positioning differed between groups in its frequency and function (Table 3). While Group 1 and Group 3 had a similar tally of positioning, Group 2 engaged in three times as many competence positioning moves relative to the other groups. Further qualitative analysis suggested that this was representative of high salience of relative competence in the group's interactions. We engaged in qualitative analysis to consider how negotiating competence functioned within each group. In the following sections, we first discuss how messages regarding relative ability were made salient via competence messages within the group context in ways that provided background for negotiating competence, followed by discussing individuals' efforts made to present themselves as competent within the group.

Table 3: Frequency of Competence Positioning Moves by Group

Competence Positioning Moves	Group 1	Group 2	Group 3
Self-positive	0	11	5
Self-negative	0	1	0
Other-positive	2	0	1
Other-negative	1	25	9
Group-positive	0	0	0
Group-negative	0	2	0
Self-advocate	18	40	13
Other-advocate	2	1	0
Framing Task Competence	1	0	0
Totals	**24**	**80**	**27**

Group-level Efforts to Negotiate Competence

Group 1 can be differentiated by competence positioning moves that were positive and affirmed the competence of all group members. Four of their moves evidenced bolstering the competence of fellow group members rather than oneself (i.e., 2 other-positive, 2 other-advocate). Specifically, the facilitator, Donna, helped to ensure that everyone's views were valued during group discussion. For instance, Donna other-advocated for Bob to ensure his perspective was heard and prevent his view from being prematurely rejected. Here, Donna requested that Cindy stop interrupting Bob because the group would not know his contribution unless he had the opportunity to voice it. Also, on two separate occasions Bob and Donna acknowledged each other's correct contributions (i.e., other-positive) after having voiced opposing views. For example, Donna chuckled while voicing agreement with Bob's statement that their prior argument justified to the conclusion that his claim was plausible. Next, Allison offered the sole other-negative comment to Bob in jest: "No, you're wrong this time. You said 3." Despite the underlying poke at Bob's competence, this comment can be interpreted in the context of friendly competition as was indicated by Allison's follow-up statement to Donna recognizing the validity of Bob's contribution: "Look, him 1 [point], us 1. We're tied." Bob followed this exchange with an other-positive comment, "Because even though you guys are right it doesn't relate to the model, it's still good evidence." In sum, Donna's other-regulation ensured that everyone's views were treated as competent and valued. This seemed to foster positive valuing of ideas, complimenting contributions, and even other-advocating for the inclusion and respect of the minority perspective within the group.

We observed negotiation that involved dismissiveness and criticism of group members' contributions which devalued members' competence in the two groups with directive other-regulators. Group 2's positioning involved a focus on mistakes paired with mostly explicit relative competence messages. There were 25 instances of other-negative comments; some of the most striking included Carla singling out David with salient references to relative competence in his class standing saying "You're the only one in this class who likes C" and repeating "Don't ever grow up to be a scientist." Even when engaged in a hypermedia task that included a team game, Carla and David repeatedly pointed out each other's errors. For example, Carla asked "How are you in honors literacy?" when David was slow to read from the screen. David repeatedly pointed out to the group that Carla was to blame for the computer's malfunction (e.g. "You broke it! You broke it!"; "Carla broke the computer!"). These criticisms are representative of Carla and David's interactions with each other: the two regularly putdown and criticized one another's competence, with some criticisms extending beyond the immediate group context to each other's more global competence (e.g. literacy, use of technology, career choices). Use of negative competence messages allowed David and Carla to restrict access to opportunities for others to be competent contributors. Notably, the highly salient relative ability comments escalated among other group members. Amy made two group-negative statements that served to compare their group with the other groups (e.g. "Hurry up, I think we're the only group still doing this"; group-negative). The salience of competence produced putdowns of groupmates and even between-group social comparison. In sum, Group 2 stood out as being a highly competitive context rife with competence threats: there were high stakes for perceived incompetence as group members were very publicly and harshly recognized for incorrectness in ways that diminished their contributions' value in the group.

Group 3's directive other-regulation was similarly linked to putdowns and restricted access to contribution opportunities, but less frequently than observed for Group 2. Further, Carol used implicit rather than explicit messages to convey competence. Carol both ignored and dismissed group members' ideas. She tended to ignore group members with whom she was not directly working; both her partner Bridget and Adam were ignored when Carol was busy trying to delegitimize Dylan's argument. Relative to the group context, Carol also criticized group members' views that did not agree with or validate her own (i.e., other-negative). Several moves were made in reaction to Carol's efforts at thwarting their competence. Often, Dylan responded to Carol with other-negative comments that saliently focused on her ability. Dylan stated "You're stupid!

You're so stupid!" It is critical to also highlight that the group responded counterproductively to Adam's attempts at recognizing each group member's valuable contributions through other-positive competence positioning. In particular, when Adam recognized both Dylan and Carol's views as having merit ("I know I know, you're both right"), Carol simply resorted to self-presenting her own ideas (i.e. repeating "I think I'm right, guys", while ignoring Adam's positive feedback). In summary, competence positioning was indicative of both frustration with Carol's directive, gatekeeping style of other-regulation and devaluing of others' contributions. Group 3 had an overarching negative tone with attempts to broaden access to the competent contributor role; unlike Group 2, the other-regulator's competence messages were subtle via ignoring and exclusion. However, her less direct criticism still provoked significant resistance and repositioning efforts that included explicit references to ability, which evidenced the group's frustration with limited access to contribute.

Overall, competence messages were present in all groups, but messages varied in salience as well as focus. Competence positioning efforts dominated the interactions in Group 2. Importantly, the competence messages served more exclusionary functions in Groups 2 and 3, whereas Group 1's messages facilitated the integration of all members' perspectives. Group 2's competence messages made individual competence evaluation salient because of the constant invocation of a competence hierarchy in service of David and Carla's own attempts to use each other's presumed incompetence to justify exclusion from contributing to the group. Finally, negotiation of competence in Group 3 was driven by Dylan and Adam's attempts to access the competent contributor role in the face of Carol's condescending approach to their contributions. Groups 2 and 3 show that directive other-regulation seems to yield competence threats that promote harmful group interactions.

Individual Level: Positioning Oneself as Competent

We identified self-advocating as the most frequent form of competence positioning for all groups, with students repeating their own positions seemingly to ensure they were heard and their points might be taken up by the group (Barron, 2000). Barron (2000) found that repetitions in a less academically successful group were efforts to be heard and were exclusively self-referential, with much time spent pushing for one's own view. A more successful group had more varied uses of repetitions, one of which was repeating a view while discussing whether it was right. Consistent with Barron's findings, the function of self-advocating varied across groups. Members of Group 1 self-advocated clarifying claims misunderstood by groupmates. For example, Bob said "I want to argue that it could be a two and not a three [quality rating of the evidence]" to reintroduce a comment which had been interrupted. Later, he re-advocated his contribution: "I never said it was a 2" to highlight the group's misunderstanding of his claim. Group 1 can also be differentiated by their responsiveness to self-advocating. For instance, Group 1 actively listened to Bob's repeated claims, and made efforts to both interpret and provide feedback to his ideas. Finally, it is notable that no self-positive or self-negative statements were observed, suggesting a de-emphasized focus on proving one's individual competence to groupmates.

In Group 2, self-advocating involved repeating claims without additional elaboration or justification. For example, Carla and David continued repeating their claims across 10 turns, with Carla advocating that Explanation F was highest in quality (e.g., "I don't like it. F. F!"), followed by David repeating that he preferred Evidence C ("It's C!"). Carla gave some elaboration for why she preferred Evidence F, but even when some rationale was provided, repeated claims received minimal group responsiveness (e.g. David: "No it does NOT!"). Group 2 also had 8 instances of self-positive. Self-presentation comments involved demonstrating superiority of one's competence (e.g. "Ha, I told you"; "I bet you it's better"). Also, Group 2's individual positioning was used to thwart opposing and competing views that may have threatened one's own competent contribution. Moreover, self-presentation set a competitive tone to the group's interactions that made relative ability salient.

In Group 3, Dylan self-advocated similarly to Bob from Group 1 by clarifying his claims in attempts to have his ideas included in the group task. Similarly, Adam self-advocated 6 times, with attempts to clarify his positions (e.g. adding emphasis in saying, "It says he *received* a 10 dollar bill before closing" and "I'm talking about Sam!") and once self-advocated for task regulation (e.g. "We have to discuss the problems"). However, Carol did not work to understand or integrate their points, as we had observed for Group 1. Instead, Carol ignored each of Adam's attempts and questioned the legitimacy of Dylan's claims. For instance, she diminished Dylan's contribution saying, "I don't think that matters, but…" Additionally, in her own attempts to self-advocate, Carol directly attacked Dylan's claims, while boosting her own by saying, "Okay, so…if he paid 15 dollars…Hello?! Are you listening? If he paid him 15 dollars, there's no such thing as a 15 dollar bill." There were also 5 instances of self-positive, with four instances of Carol saying she was right and one instance of Dylan saying his own reasoning was correct in the middle of an explanation. Taken together, Dylan and Adam's individual positioning seemed to function as a means to contest a directive other-regulator's monopolization of task access. Carol coupled self-advocating with self-presentation in ways that seemed to aim at maintaining her position as most competent contributor. While the self-presentation was not as harsh or as direct as demonstrated in Group 2, Carol's advocacy for being right and for her own ideas communicated more subtly who was competent in the group.

Discussion

Overall, our results indicate that other-regulation can take varying forms ranging from facilitative to more directive forms. In our results, we further described degrees of directive other-regulation, with some demonstrating explicitly controlling qualities (Group 2) and others employing more subtle methods of control (Group 3) (also see Rogat & Linnenbrink-Garcia, 2011). This finding extends previous research which has primarily characterized other-regulation as supportive of understanding (Hadwin & Oshige, 2011; Li, et al., 2007; Vauras, et al., 2003). This distinction in other-regulation highlights qualitative differences in employed social regulation. First, in terms of the nature of the regulation, facilitative regulators focused on guiding group process, content understanding, and task contributions, while directive other-regulators focused on controlling and managing the task product as well as who ultimately made contributions to the work. Second, forms of other-regulation varied in quality. Facilitators more often engaged in high quality regulation, given their emphasis on ensuring equitable participation and encouraging shared understanding, while directive other-regulation was lower quality, given a focus on excluding participation and controlling the ideas integrated in the final product. Further, the harsh criticism in one group's directive other-regulation led to even lower quality regulation compared to a group with less volatile interactions.

This observed variation in other-regulation has implications for group process. In an extension of work that considered directive regulation's detrimental influence on group's socioemotional interactions (Rogat & Linnenbrink-Garcia, 2011), we observed negative impact on another group process, competence negotiation. Other regulators played a central role in defining competence for the group and thereby shaped negotiation, as group members engaged in competence negotiation in response to the tone set by other-regulation. Facilitators' solicitation of others' perspectives, advocation for others, and treatment of everyone's views as valuable for the overall solution helped focus the group on achieving shared understanding and democratized access to the role of competent contributor. This encouraged all group members to take up opportunities to contribute by making claims as well as raising questions. In this context, group members self-advocated in a productive way resembling academically successful groups in past research (Barron, 2000). In contrast, directive other-regulators monopolized opportunities for making competent contributions through implicit and explicit competence messages that produced a hierarchy of competence (Altermatt, et al., 2002): they ignored and dismissed views, treating conflicting points as in competition with their own. These competence moves led to discussions of competence by groupmates, as well as to hostility and putdowns in reaction to directive other-regulation. Here, it is critical to highlight that while the two directive other-regulators varied in their emphasis on explicit (Group 2) versus implicit competence messages (i.e., Group 3's dismissive talk, ignoring), both seemed to have detrimental effects. Competence norms negotiated in the group had implications for how individuals positioned themselves to contribute on the group task.

What explains the emergence of directive other-regulation and the accompanying low quality regulation? It is important to highlight that these groups were observed during initial weeks of an intervention focused on collaborative reasoning. During early weeks, individual students may have still operated under a conceptualization of academic tasks as individual work and student's motivational orientations may have been focused on competition and demonstrating ability, marked by a performance goal orientation. This has several implications including that (1) groups may have still been in the process of resolving the many motivational and emotional regulation challenges required when coordinating joint work (Järvelä & Järvenoja, 2011; Rogat, Linnenbrink-Garcia & DiDonato, 2013); and (2) groups may have represented a distinct sub-context within the classroom (Pintrich, Conley & Kempler, 2003), reflecting a second system of competence for which students need to negotiate their position (Gresalfi, et al., 2009). In particular, even with competence systems at the whole class level involving disciplinary norms focused on equitable access to competence via criteria, students may attempt to assert dominance within the small group. As our findings demonstrated, a goal of besting others within the group and maintaining one's position of dominance can be antithetical to the goals of collaboration (Levy, Kaplan, & Patrick, 2004; Rogat, et al., 2013).

In terms of practical implications, our results indicate that social regulatory processes and group processes are mutually sustaining in that it is the interplay among high quality facilitative other-regulation and support for everyone making competent task contributions that promotes student learning during small group activities. This suggests that it is critical to address high quality group interactions as well as regulatory processes comprehensively to support collaboration. Taken together, these findings indicate that individual competence can look different in varying settings, and we need to conceptualize collaborative groups as activity systems nested within the classroom (Gresalfi, et al., 2009). Future research should investigate how other-regulation is initially negotiated within the group. In addition, we need to consider the role of individual differences, such as motivational orientation and student's perceptions of group work in explaining the emergence of other-regulation. Moreover, more attention should be given to the development and change in other-regulation over time, and what contextual factors and individual differences explain group members who continue to persist in providing high quality monitoring and in negotiating competence in the face of harsh feedback and sustained efforts to exclude contributions.

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