

The International Handbook of Collaborative Learning

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MOTIVATION IN COLLABORATIVE GROUPS

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While small groups have often been conceptualized as a “hook” for initiating an individual’s motivation for learning (Mitchell, 1993), there may be reason for reexamining this claim. Collaborative groups are increasingly prevalent, yet motivation researchers have predominantly studied individual motivation during independent learning, with few studies investigating students’ motivational responses to learning in group contexts (Järvelä, Volet, & Järvenoja, 2010). Moreover, learning with peers in groups raises challenges that may undermine rather than support an individual’s motivation. Within the small-group literature, most researchers focus on the benefits of groups for learning and achievement, but largely ignore motivational outcomes (Webb & Palincsar, 1996). Accordingly, the goal of this chapter is to synthesize extant research in order to examine the evidence for the motivational benefits and challenges of collaborative groups. This review also serves as the basis for suggesting new directions for future research.

WHY IS MOTIVATION IMPORTANT TO CONSIDER FOR SMALL-GROUP CONTEXTS?

It is critical to consider the potential of motivation to enhance students’ learning and engagement during group work. Drawing from studies examining motivation when students learn independently (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006), it is clear that motivation supports learning by enhancing students’ effort, persistence in the face of challenge, and use of self-regulated and deep-level learning strategies. Although motivation has primarily focused on independent learners, the underlying theoretical tenets are not specific to individuals. Thus, one can readily employ these

theoretical frameworks for understanding motivation in group settings and developing hypotheses about the role that motivation plays.

Researchers studying collaborative and cooperative groups have developed a number of programs aimed at facilitating student interactions in ways that benefit learning (e.g., Palincsar & Brown, 1984). There is an assumption that these programs support engagement and learning by supporting motivation, but few studies consider the benefits of group work for motivation. Notably, many of these programs integrate features that have the potential for motivating learning. For example, the integration of interesting and challenging tasks (Complex Instruction; Cohen, 1994), individual accountability (Johnson & Johnson, 1991; Slavin, 1995), and interdependence (Learning Together; Johnson & Johnson, 1991) are features of established programs that may facilitate motivation. Moreover, working with peers can potentially foster students' social goals and feelings of relatedness, which can enhance motivation.

Unfortunately, these motivating features may not have the intended benefits given several challenges for motivation raised by group work. First, there are challenges raised by the group's composition, such as differences in ability and cultural background (Cohen, 1994; O'Donnell & Kelly, 1994). For example, high ability students may feel that working with less knowledgeable classmates slows down their progress. Status differences in the group may have implications for motivation, especially given the central role that social comparison plays within motivation theories (Ames, 1992), as we will discuss later. In addition, there are problems raised by interpersonal dynamics. Some students may diminish their level of contribution while relying on others to do the work (i.e., free rider effect or social loafing; Karau & Williams, 1995), leading to diminished motivation. Similarly, off-task behavior and pursuit of nonacademic goals by some members of the group may discourage the motivation of remaining group members. Finally, the necessity of working jointly with others on a task can create motivational challenges as students try to establish common goals, work in a shared problem space, and negotiate multiple perspectives (Barron, 2003). Students may experience declines in motivation when they recognize that group work requires more personal responsibility and ownership in comparison with independent learning. Ultimately, the enhanced effort, time, and social negotiation required by working with others may diminish the motivating potential of learning in groups.

A second issue concerning the motivational benefits of group work is that some program features directly conflict with recommendations for supporting student motivation. For example, some programs rely on intergroup competition and rewards (Slavin, 1996). However, motivation researchers contend that an emphasis on competition fosters performance goals aimed at besting others, rather than an orientation toward learning and understanding (Ames, 1992). The use of rewards is also problematic in that it may foster extrinsic motivation instead of facilitating task enjoyment for its own sake (i.e., intrinsic motivation; Ryan & Deci, 2000a).

In sum, there are unique motivational challenges to group work as well as potentially untapped benefits from applying a motivational lens for supporting group learning and engagement. Accordingly, the purpose of the current chapter is to synthesize the somewhat limited research on motivation in group contexts and highlight avenues for future research that may be particularly fruitful based on motivational theory. In conducting this review, we included studies that examined the role of motivation in both collaborative and cooperative groups (see Dillenbourg, 1999 for a review of the distinction). The

included studies draw on three contemporary theories of motivation: achievement goal theory, self-determination theory, and social cognitive theory. Each of these theories accounts for the situation-specific nature of motivation and the facilitating role of peers, thus making them fruitful for considering how group contexts shape motivation. These theories also consider how individual motivation shapes learning and engagement, thus they are useful for considering how individual differences in motivation may alter students' interactions, learning, and engagement in the group context.

We excluded studies of dyads from this review because issues specific to tutoring and pair learning are different from learning among three to six group members. In addition, we excluded research on online and computer-supported collaborative learning, given that much of this work involves asynchronous learning. We sought to identify research that examined the role of group work in the context of reform-oriented learning environments (e.g., problem-based learning, project-based science, reformed-based mathematics). However, even though these programs include group work as a motivating feature (Blumenfeld, Kempler, & Krajcik, 2006), we identified few studies that examined motivation while isolating the impact of group work.

Our discussion of each theory is organized around two guiding questions:

How does engaging in group work shape students' motivation? Here, we consider whether small-group contexts lead to higher quality student motivation relative to direct or traditional instruction. In answering this question, we also identify features that may have facilitated these effects and consider potential benefits for both the motivation of the group as well as individual student motivation.

How does motivation shape learning and engagement in small groups? In this section, we account for both students' incoming personal motivation and situation-specific motivation for supporting engagement and learning during group work. We also investigate the role motivation plays in differentiating successful or productive groups.

ACHIEVEMENT GOAL THEORY

According to achievement goal theory, achievement goals provide a framework for interpreting and responding to events (Dweck & Leggett, 1988). There are thought to be two primary goals or reasons why students engage in achievement behavior. A mastery goal, also called a learning or task goal, refers to a focus on learning with the aim of developing understanding or skills. A performance goal, sometimes called an ego or ability-focused goal, reflects a focus on demonstrating one's ability or competence, often in comparison to others. These two primary goals have been further differentiated based on whether students adopt an approach or avoidance focus (Elliot, 1999; Pintrich, 2000). While the distinction between performance-approach (focus on demonstrating competence) and performance-avoidance (focus on avoiding appearing incompetent) is widely accepted, mastery-avoidance has received far less attention (Maehr & Zusho, 2009). As such, we focus our discussion here on mastery, performance-approach, and performance-avoidance goal orientations.

These three goals differentially predict students' behavior, affect, and strategy use. In general, mastery goals are beneficial and support interest, self-efficacy, emotional well-being, and cognitive engagement (Linnenbrink & Pintrich, 2000). The findings

regarding achievement are somewhat mixed, but generally suggest that mastery goals are beneficial, at least to the same degree as performance-approach goals (Linnenbrink-Garcia, Tyson, & Patall, 2008). Performance-avoidance goals are consistently associated with less adaptive outcomes such as heightened anxiety, superficial strategy use, avoidance of help seeking, and decreased academic self-efficacy, intrinsic motivation, and achievement (e.g., Church, Elliot, & Gable, 2001; Elliot, McGregor, & Gable, 1999; Karabenick, 2004; Middleton & Midgley, 1997; Skaalvik, 1997). The relative benefits and detriments of performance-approach goals have received a great deal of attention within the literature (cf., Harackiewicz, Barron, & Elliot, 1998; Midgley, Kaplan, & Middleton, 2001). Performance-approach goals may be beneficial for supporting achievement, persistence, and effort (Elliot et al., 1999; Linnenbrink-Garcia et al., 2008); however, they are also linked to maladaptive learning outcomes such as avoidant help seeking (Karabenick, 2004), shallow cognitive processing (Graham & Golan, 1991), and test anxiety (Huang, 2011). The possibility that performance-approach goals may be adaptive has led some goal theorists to suggest that espousing both mastery and performance-approach goals may be most adaptive because students may benefit from both goals (Pintrich, 2000).

One of the strengths of applying achievement goal theory to small groups is that the classroom context shapes goal orientations (Ames, 1992). Specifically, variations in tasks, autonomy support (e.g., providing students with choices, reducing control), recognition and evaluation practices, flexibility of time, and grouping practices all shape students' tendency to endorse mastery versus performance (both approach and avoidance) goal orientations (Ames, 1992; Maehr & Midgley, 1996; Patrick, Anderman, Ryan, Edelin, & Midgley, 2001).

Specific to collaborative group settings, groups have the potential to foster mastery goals when pedagogical strategies encourage learners to see fellow group members as helpful and sources of information (Webb, Ing, Kersting, & Nemer, 2006). Group tasks can help sustain a mastery focus when they encompass interesting topics, authentic problems, and are moderately challenging. In contrast, students may adopt performance-approach goals when relative ability information is salient. Teachers who publicly comment on the smartest or top performing group make information about a group's relative class standing readily available. In response, students may endorse performance-approach or performance-avoidance goals. Students who endorse performance-approach goals could prioritize looking good in comparison to others within the group, without necessarily ensuring that everyone understands (Kempler & Linnenbrink, 2004). When students hold performance-avoidance goals, they may avoid asking questions within the group because they are reluctant to admit not understanding the task (Middleton & Midgley, 1997). It may be more advantageous for educators to provide private feedback that informs groups on their progress, so that students sustain a mastery focus. In addition, interventions where the focus is on the task and everyone's contributions are encouraged and valued, such as Complex Instruction (Cohen, 1994), may help to support mastery goal endorsement.

Influence of Group Programs and Features on Goal Orientations

A key controversy relevant to achievement goal theory is the use of between-group competition. Group researchers have advocated between-group competition to facilitate motivation and engagement (Slavin, 1996). This approach dates back to Deutsch's

(1949) suggestion that competition fosters group cohesion as a result of the group pulling together to beat other teams. Competition has also been advocated as a strategy for decreasing social loafing, because individuals and groups are less likely to loaf when they have access to information about themselves and their abilities. Achievement-goal theorists, in contrast, suggest that between-group competition may promote performance goal adoption. Performance goals may be promoted because relative ability information is available when groups are publicly recognized for besting others through public postings or announcing group rankings (Kempler & Linnenbrink, 2004; Linnenbrink, 2005).

Most studies that have contrasted the motivational benefits of competition-based cooperative learning programs indicate that, in comparison to traditional classrooms, students who work in cooperative groups are more likely to adopt mastery goals (Nicholls, 1996; Nicholls & Miller, 1994; Sharan & Shaulov, 1990). These findings may seem to conflict with achievement goal theorists' hypothesis that the competition structure of the STAD program (Slavin, 1995) provokes performance goal adoption. However, because these studies examined cooperative learning programs (STAD, TAI, Group Investigation) with a variety of motivating features, it is unclear which features explain mastery goal adoption. For instance, it may be that mastery goals were encouraged more than performance goals because points were awarded based on group improvement scores; a focus on improvement tends to promote mastery goals.

Linnenbrink (2005) investigated this issue by teasing apart the aspects of between-group competition and group improvement that are central features of STAD. Specifically, she created three types of group evaluation practices: a mastery condition (groups received improvement points, but no between-group comparison information); a performance condition (groups received feedback about their normative performance (rather than improvement) relative to other groups); and a combined mastery-performance condition (groups received improvement points and comparison information about how their improvement compared to other groups). The combined mastery-performance condition was most similar to Slavin's STAD (1995). Findings indicated that both the mastery condition and the performance condition facilitated achievement goal adoption in line with expectations. Students in the combined mastery-performance condition espoused similarly high mastery goals relative to the mastery condition, and somewhat higher, though not statistically significant, mastery goals than those in the performance-condition. A similar pattern was observed for performance-approach goals in the combined mastery-performance condition. These findings suggest that programs like STAD may be fostering both mastery and performance-approach goals; however, Linnenbrink also manipulated the overall classroom context, so it is not clear if the observed effects are due to the change in the group evaluation procedures or if they also reflected the broader changes to the classroom context.

While not specifically studying the impact of between-group competition, Nolen's (2007) research highlights the detriments of salient relative ability information during group learning and its potential for fostering an ego or performance focus. Her examination of K-12 reading and writing instruction indicated that some classroom practices resulted in the development and gradual coconstruction of performance goal (ego) concerns, by positioning some students as capable readers, while distinguishing others as struggling readers. Ego concerns were heightened when less fluent readers were provided with fewer opportunities to read aloud in groups and had limited access

to coaching strategies (i.e., simply giving students the word). There were significant costs for the less fluent readers, whose behavior seemed to indicate a performance-avoidance focus. Struggling readers avoided reading aloud by physically withdrawing their chairs from the group, voicing a preference for reading alone, and by acting out. Ultimately, salient ability relevant information had costs because struggling readers had fewer opportunities for skill improvement (Nolen, 2007). In contrast, in classrooms where all students were viewed as contributing to understanding, students espoused a more positive view of less fluent readers. Student interviews indicated that struggling readers could improve during group reading, make significant group contributions, and no stigma was attached to being less fluent.

Overall, these findings suggest that relative ability information, which may be especially salient in some cooperative learning settings (e.g., Slavin, 1995) may be more likely to facilitate the endorsement of a performance-approach or performance-avoidance goal orientation. However, the emphasis on learning and supporting other group members, which is also prevalent during small-group instruction, has the potential to support mastery goal endorsement.

Role of Goal Orientations on Group Processes

Research has also considered how students' goal orientations influence the attitudes they develop toward group activity and the quality with which they participate. Kaplan (2004) proposed that how students approach group work depends on the match between their entering goal orientation and whether cooperative tasks are perceived as a match with their personal achievement goals. Mastery-oriented students may have positive attitudes toward group work when the task provides opportunities to enhance learning and when the group jointly focuses on task mastery (Minnaert, Boekaerts, & deBrander, 2007). In contrast, mastery-focused students would be less willing to cooperate if they perceived the task as interfering with an aim to improve and understand. In support of these hypotheses, Levy, Kaplan, and Patrick's (2004) research suggests that mastery-oriented students evaluated cooperative tasks based on how they contributed to their academic goals. Students who espoused mastery goals were more concerned with learning, relative to their focus on impression-management and social relationships. However, this contrasts with Linnenbrink's (2005) study in which she found no significant personal goal orientation x classroom goal condition interactions.

Hänze and Berger (2007) also examined the role of goal orientations on students' perceived support for their three basic needs (see "Intrinsic Motivation" section) during Jigsaw and traditional instruction. Their hypothesis was that mastery-oriented students would be more likely to perceive enhanced support for developing competence and autonomy during group work. While mastery-oriented students experienced themselves as increasingly competent, autonomous, and socially integrated relative to students with low mastery levels, this was true regardless of the method of instruction. That is, Jigsaw did not afford a heightened sense of achievement goal match or support than did traditional instruction.

Research has also explored the role of achievement goals in differentiating productive from less effective groups. Hijzen, Boekaerts, and Vedder (2007) identified effective and less effective groups in terms of the quality of cooperative learning and task-relevant engagement. Students attended secondary vocational schools where cooperative learning was a commonly employed instructional method. Interview results suggested that

effective groups could be distinguished by their reported mastery and social responsibility goals. In contrast, groups who demonstrated more task irrelevant behaviors prioritized work avoidant and belongingness goals. Interestingly, members of the less effective groups also seemed to be less conscious of their goals, as indicated by fewer statements during interviews that referred to goal preferences.

Other studies have considered whether similar achievement goals within groups enhance motivation and learning; motivation may be facilitated when students share common achievement goals among group members, relative to groups with conflicting priorities. In addition, a shared mastery goal should have enhanced learning benefits relative to a shared performance focus. Kempler, Hruda, and Maehr (2003) explored how students' shared perceptions of their group's achievement goal focus related to social-behavioral engagement. Hierarchical Linear Modeling (HLM) analyses suggested that students who shared a perception of their group as mastery-focused were less likely to behaviorally disengage, while a shared performance-approach focus resulted in disengagement. In related research, Summers (2006) considered how shared academic and social goal endorsement shaped goal adoption. Here, academic goals referred to students wanting groups to work well together and to share their ideas and questions.¹ HLM findings indicated that sixth graders belonging to groups with shared academic goals were more likely to endorse performance-avoidance goals. Taken together, these studies suggest that when collaborating as a group, students may gradually come to hold common (achievement or academic) goals. However, questions remain as to when shared goals lead students to become overly concerned with their group's evaluation of their capabilities resulting in a focus on avoiding embarrassment in front of their peers.

Summary and Future Directions

An achievement goal theory perspective contributes a different lens from group research for interpreting the role of between-group competition within group settings. Rather than suggest a benefit via promoting group cohesion, research that has teased apart the influence of improvement points from the impact of between-group competition indicates that between-group competition may have a deleterious effect on student motivation (Linnenbrink, 2005). These results can be interpreted as evidence that between-group competition makes relative ability information salient, leading to a performance goal focus, with students aiming to avoid looking stupid during group work or working to look smart relative to other students (Nolen, 2007). Group performance goal adoption warrants concern, as a shared performance focus is associated with group members' tendency to disengage and be less productive (Hijzen et al., 2007; Kempler et al., 2003).

Future research should investigate *how* between-group competition influences group process and learning. Achievement goal theory suggests that encouraging competition may inadvertently transition from competition between groups, to fostering within-group competition. In particular, it is possible that as students draw comparisons to the capabilities of other groups, they may attempt to demonstrate competence to members of their own group. Kempler and Linnenbrink's (2004) qualitative analyses of two groups that were part of the combined mastery-performance condition in the larger Linnenbrink (2005) study suggested that between-group competition yielded conversations focused on team rank and points relative to other groups, and even a whole-group conversation about forming a "smart group." However, results also provided evidence

that not all between-group competition fosters the same type of social comparison. The second group used social comparison as a source of information as they compared their progress and speed with that of other groups. This informative role of social comparison is consistent with suggestions that social comparison is useful in self-regulatory processes (Ruble & Frey, 1991).

Achievement goal theory research also suggests that students' entering goal orientations can alter their responses to group work. When students enter the group with a mastery goal focus, they may be more attuned to the learning aspects of cooperative tasks, which in turn may facilitate effective group work (Levy et al. 2004). In addition, an initial or jointly established focus on mastery may be especially beneficial (Kempler et al., 2003; Hijzen et al., 2007). However, there is very limited research examining how students' initial goal orientations alter responses to group settings as well as how goal orientations shift and change as a function of group work. This is an area where future research is needed.

SELF-DETERMINATION THEORY

Self-determination theory (SDT) differentiates between types of motivation (intrinsic v. extrinsic) that are based on the different goals that provoke action (Ryan & Deci, 2000a). Intrinsic motivation involves engaging in an activity for its own sake and because it is inherently enjoyable. Intrinsically motivated students benefit in terms of preference for challenge, use of deep-level learning strategies, creativity, and learning. In contrast, students who are extrinsically motivated engage to achieve a separable outcome. Extrinsic motivation falls along a continuum with extrinsic motivations including some self-endorsement falling closer to intrinsic motivation. For instance, extrinsically motivated students may engage in a group task because of a contingent reward, to earn a high grade, to impress the teacher, or because of perceived value of a future outcome.

Self-determination theory also posits that intrinsic motivation is facilitated in classroom and group contexts that support students' basic psychological needs for competence, autonomy, and relatedness (Ryan & Deci, 2000a). Autonomy needs are facilitated when students experience themselves as causal agents, which is conceptually similar to an internal perceived locus of causality (deCharms, 1968). Group work likely supports autonomy because students have enhanced responsibility for their learning in comparison to direct instruction, and group work provides opportunities for choosing topics and planning how to accomplish a task. Students' competence needs are supported when they experience success after investing effort, accomplish optimally challenging tasks, and receive positive informational feedback. Programs like Jigsaw may facilitate competence because students become "experts" as they develop familiarity during their investigation. More generally, students who take leadership roles, provide explanations to their peers, and have opportunities to contribute to the group's understanding, likely perceive competence support. Finally, students' needs for relatedness are supported by forming close relationships with peers and teachers, and by becoming a contributing member of the community. Students' relatedness needs are fostered through opportunities to work closely with and develop relationships with their peers during group work (Hänze & Berger, 2007).

A related theoretical approach is that of interest development (Hidi & Renninger, 2006; Schiefele, 2009). Although interest development and SDT represent separate

theoretical perspectives, many of the features thought to facilitate interest are similar to those proposed by SDT (Krapp, 2005). Briefly, research on interest development differentiates between *individual interest*, which is relatively stable, resides within the individual, and includes a deep personal connection to and enjoyment of the domain, and *situational interest*, which emerges from and is supported by the context, is relatively brief, and based more on the situation than an enduring quality residing within the individual (Hidi & Renninger, 2006; Schiefele, 2009). When situational interest is supported, it has the potential to develop into individual interest (Hidi & Renninger, 2006; Linnenbrink-Garcia, Patall, & Messersmith, 2012).

With respect to small-group learning, the construct of situational interest is most relevant, as there are several components of the small-group context that may encourage situational interest. Specifically, class work that supports opportunities for students to be actively involved, including engaging in cooperative learning, may support situational interest (Bergin, 1999; Freeman, McPhail, & Berndt, 2002; Mitchell, 1993). Other indirect aspects of small-group instruction may also enhance situational interest. For example, as noted above, autonomy support is likely enhanced in small-group settings and initial research suggests that support for autonomy may help to support situational interest (Hijzen et al., 2007; Linnenbrink-Garcia et al., 2008, 2012). Additionally, many small-group learning tasks are more authentic than traditional tasks, helping to highlight the connections between course material and real life. An emphasis on real world connections helps to support situational interest (Durik & Harackiewicz, 2007; Linnenbrink-Garcia et al., 2012; Mitchell, 1993). Thus, while there is very little research that isolates the role of small-group learning in supporting situational interest, both theory and preliminary evidence suggest that several aspects of small-group instruction should facilitate situational interest, which may ultimately enhance individual interest.

Below we highlight the role of small groups in shaping intrinsic motivation and situational interest. We are not aware of research examining how existing levels of intrinsic motivation or interest alter group processes, thus our discussion of SDT and small-group functioning focuses solely on the first question of how group contexts support motivation.

Influence of Group Programs and Features on Intrinsic Motivation

Some research has studied motivation to explain *why* small group instruction is more advantageous than direction instruction for promoting achievement. Both Jigsaw (Aronson, 1978) and Group Investigation (Sharan & Shaulov, 1990) explored the benefits of these small-group programs for supporting intrinsic motivation. These two programs allow students to explore a topic or conduct an in-depth experiment without incorporating reward structures that are likely to undermine intrinsic motivation. Hänze & Berger (2007) found that Jigsaw supported intrinsic motivation. However, results for Group Investigation are mixed, with some indicating enhanced intrinsic motivation (Sharan & Shaulov, 1990), no benefit (Tan, Lee, & Sharan, 2007), or motivational declines (Shachar & Fischer, 2004) relative to a control group. However, Tan et al. (2007) and Shachar and Fischer (2004) both suggested that their unexpected findings should be interpreted cautiously given that the group work in these studies were temporally close to a national exam, and students found the grouping technique less appropriate when preparing for the national exam.

Studies have also explored how specific features of group work benefit motivational outcomes. Ciani, Summers, Easter, and Sheldon (2008) examined whether choice of group membership benefits intrinsic motivation. This question fits within a SDT framework because autonomy supportive teachers provide students with choice in ways that facilitate intrinsic motivation (Ryan & Deci, 2000a). Ciana et al.'s (2008) results were in line with SDT; students in university classes that were offered choices when selecting their groups reported significantly higher intrinsic motivation, even after accounting for students' perceptions of teachers' autonomy support and differences in class size.

In another approach for examining how group work supports intrinsic motivation, studies have investigated whether program features that support students' basic needs (autonomy, competence, relatedness) lead to intrinsic motivation. In line with these proposed relations, Hänze and Berger (2007) found that Jigsaw led to enhanced intrinsic motivation and deeper processing in high school physics due to Jigsaw's support for students' basic needs. Additionally, they found that physics students with low initial academic self-concept in physics benefited from group learning relative to direct instruction because Jigsaw supported their competence, suggesting an added benefit of Jigsaw for students with low academic self-concept.

Finally, studies of university and vocational students' coursework suggest that support for students' basic needs predicts situational interest (Boekaerts & Minnaert, 2006; Minnaert et al., 2007). Minnaert et al. (2007) explored how each basic need may play a varying role in explaining situational interest over the course of a long-term group project. Perceptions of relatedness support enhanced motivation across all phases of the project. In contrast, competence needs contributed most to explaining motivation during the orientation or initial planning phase of the project. Autonomy support afforded by group collaboration gained importance for situational interest later in the project, during the execution and closing phases.

Summary and Future Directions

Group research using self-determination theory has focused on how particular program features enhance intrinsic motivation and situational interest. Results indicate a benefit of pedagogical strategies that promote choice and facilitate students' needs for autonomy, competence, and relatedness. Boekaerts and her colleagues (Boekaerts & Minnaert, 2006; Minnaert et al., 2007) further extended this work by examining the uniquely facilitative role for each basic need during varying phases of a group project.

One program feature whose impact remains under considerable debate and warrants continued attention is the influence of reward structures. There has been significant debate in the motivation literature regarding the influence of rewards on intrinsic motivation (Ryan & Deci, 2000b), with a series of meta-analyses indicating that tangible rewards that are contingent on task performance undermine intrinsic motivation. The interpretation has been that rewards have an undermining effect on intrinsic motivation when they are perceived as trying to control behavior (i.e., low autonomy support). However, when the informational component of rewards is made salient, rewards do not have this same undermining effect due to support for competence and autonomy.

Although a number of group programs employ incentive structures to foster engagement and accountability, the evaluation studies of these programs have not examined motivational outcomes (Slavin, 1996). It is not clear whether the results from motivation research with individuals can be generalized to small-group learning. On the one hand,

rewards may not have the same undermining effect if group rewards foster interdependence (Slavin, 1996) and consequently foster feelings of competence, relatedness, and cohesion. In addition, because students take on more responsibility for their learning during group tasks, it may be that autonomy support is more salient for students relative to the extrinsic, controlling aspect of rewards. Alternatively, if students perceive these group rewards as controlling, they may have a deleterious impact on intrinsic motivation. Thus, the influence of reward structures in groups on intrinsic motivation, engagement, and learning is a worthwhile extension for future research. In this work, it will also be important to differentiate competition from extrinsic rewards.

SOCIAL COGNITIVE THEORY

Social cognitive theory is grounded in the principle that learning new behavior is influenced by both social interactions and aspects of the individual (Bandura, 1997). The theoretical framework of triadic reciprocity describes the mutual interactions among (a) personal cognitive, affective, and biological factors, (b) behavior, and (c) environmental influences that jointly affect learning and engagement (Bandura, 1997). One of the most powerful personal factors in social cognitive theory is self-efficacy beliefs (Bandura, 1997). Self-efficacy refers to an individual's belief in his or her ability to succeed in a particular academic domain or on a given task. Self-efficacy beliefs are important because they affect students' choices, effort, persistence, and academic performance (Schunk & Pajares, 2005). It is not surprising then that students engage in tasks in which they feel a sense of efficacy and avoid tasks in which they do not. Self-efficacy is positively associated with effort, persistence, and deep levels of cognitive processing (Greene & Miller, 1996; Nolen, 1988; Pintrich, 2000) as well as achievement in a variety of domains (Linnenbrink & Pintrich, 2003; Multon, Brown, & Lent, 1991). When encountering obstacles, highly efficacious students are more likely to attribute difficulty to low effort or skills, both of which can be improved in the future.

Self-efficacy is shaped by four primary sources (Bandura, 1997). Mastery experiences, such as successful completion of challenging tasks, are the strongest predictors of self-efficacy (Usher & Pajares, 2008). Students also build efficacy beliefs through the vicarious experience of observing teachers and peers. When students observe other's successful behaviors, they can contrast their own capabilities in relation to observed behavior, and then form judgments about the likelihood of success, informing their self-efficacy beliefs. In addition, verbal and social persuasions, such as encouragement from teachers or peers, also support self-efficacy. Finally, self-efficacy can be influenced by emotional and physiological states such as experienced anxiety or mood. For instance, heightened anxiety may trigger a reduction in self-efficacy.

When considering these four sources of efficacy, it seems reasonable that small groups may promote efficacy beliefs. Perhaps most relevant is the role of vicarious learning. During group work, students may benefit from opportunities to observe and model behavior and strategies. In addition, group members may provide positive feedback (i.e., verbal persuasion) when they value an individual's task contributions. However, there are also potential challenges to self-efficacy beliefs. Students may not always model and learn the most productive behaviors. Also, it may be easier to undermine a group member's self-efficacy via negative feedback or discouragement (Bandura, 1997). And, as noted previously, vicarious learning may not universally enhance self-efficacy, as some

students may use this information to infer that they are less able. Bandura's (1997) characterization of collective efficacy is also particularly relevant to the role of efficacy beliefs during collaboration. Collective efficacy refers to a group's shared belief in their team's capabilities to execute tasks and produce a specific level of attainment (Bandura, 1997). Thus, in addition to individual efficacy, group-level efficacy may be particularly important for supporting students' learning and engagement in small-group settings.

Influence of Group Programs and Features on Academic Self-Efficacy

Prior research suggests that collaborative learning promotes individuals' self-efficacy beliefs in introductory physics (Fencl & Scheel, 2004) and among nonphysics majors enrolled in science classes (Fencl & Scheel, 2005). Very little research, however, has identified specific program features that shape efficacy beliefs, although the findings from self-determination theory related to competence needs provide some insight (see earlier review).

More fine-grained qualitative investigations of group interactions suggest, however, that not all group interactions are likely to support self-efficacy, as some group members exhibit highly disrespectful and critical feedback toward other's task work (Linnenbrink-Garcia, Rogat, & Koskey, 2011; Rogat & Linnenbrink-Garcia, 2011). While not specifically examining repercussions for lowered self-efficacy, these observed negative group interactions may lower self-efficacy through negative verbal persuasion. Additionally, negative group interactions had consequences for discouraging participation, experienced negative affect (i.e., frustration), and the quality of socially shared regulation. These findings bring into question the extent to which students benefit from vicarious learning experiences in small-group settings, especially when a group member is openly criticized or discouraged from participating.

Finally, it is important to note the potential benefit of group settings for supporting collective efficacy. Specifically, tasks that require group members to work interdependently and in coordination may help to foster collective efficacy (Shamir, 1990; Weldon & Weingart, 1993). As noted below, the establishment of collective group efficacy may be especially important for shaping group learning outcomes (cf., Gully, Incalcaterra, Joshi, & Beaubien, 2002).

Role of Self-Efficacy in Group Learning and Engagement

Students' level of self-efficacy within the group can potentially increase the quality of students' collaborative interaction and group performance. Groups with higher self-efficacy were more likely to use deep-level strategies, engage in higher quality discussions, and demonstrate higher group performance (Wang & Lin, 2007). Additionally, collaboration may be strengthened when group members establish collective efficacy (Gully et al., 2002). And, collective efficacy may lead group members to use resources more effectively and exert greater effort on tasks, even when they encounter difficulties (Bandura, 2002). Although the level of individual self-efficacy for each group member is related to the overall collective efficacy of the group, it is still possible that groups can establish high collective efficacy beliefs even when all group members do not individually feel efficacious (Gibson, 1999). The potential benefits of collective efficacy for group performance may also vary as function of task demands. Katz-Navon and Erez (2005) found that when interdependence was low among group members there was a stronger

relation between individual self-efficacy and group performance. However, when groups engaged in tasks that required high interdependence, collective efficacy was a better predictor of group effectiveness and performance.

Summary and Future Directions

Group researchers examining self-efficacy point to the reciprocal relation between self-efficacy beliefs and academic and social collaborative outcomes. These findings maintain that self-efficacy beliefs contribute to the quality of group performance and that high quality collaborative interactions support individual student's personal efficacy beliefs. More recently, researchers have examined whether group interactions lead to the development of collective efficacy. This research found that the quality of group members' interactions appeared to mediate the relation between collaborative learning, efficacy beliefs, and performance. That is, when group members function interdependently, collective efficacy beliefs had a greater impact on performance than when tasks were divided among group members.

The extant research provides initial steps toward understanding the role peers have in fostering feelings of efficacy. In considering possible avenues for research it may be interesting to consider how particular conditions influence efficacy beliefs. For instance, complex tasks may exceed students' perceptions of a moderate level of challenge, with consequences for efficacy. One future direction is to consider the role of task scaffolding for facilitating motivation and ensuring that group tasks build efficacy. Future research should also consider whether task elements can be adapted to foster both individual and collective self-efficacy based on the four primary sources of self-efficacy (mastery experiences, vicarious experiences, verbal persuasion, and physiological experiences). As noted earlier, small-group settings have the potential to enhance self-efficacy via the first three sources, but there are also potential pitfalls that may reduce self-efficacy via these same mechanisms. Furthermore, researchers may also benefit from examining the process by which collective efficacy develops within the group.

CONCLUSION

Through a synthesis of research on motivation in collaborative and cooperative groups, our review explored two questions: (a) how does group work shape students' motivation and (b) how does motivation shape learning and engagement within small groups? Our synthesis suggests that group research has primarily investigated particular program features that may promote motivation. However, this research does not often consider current motivational theory when establishing these programs, nor have researchers consistently evaluated the impact of small-group programs on motivational outcomes. Adding to this dearth of research, motivational researchers primarily investigate motivation for individual learners, examining the benefits of fostering motivation for supporting high quality engagement, strategy use, and learning.

Although we organized this chapter by examining how groups shape motivation and the role of motivation in small groups, much can be gained from considering how these processes work in combination. Bridging these areas may provide a richer understanding of how program features optimize both motivation and group functioning. From this perspective, motivation can be conceptualized as mediating the impact of group features on student outcomes. That is, we can identify particular motivating features

of small-group instruction that promote high quality motivation during group work, which in turn supports students' engagement and learning.

Using the integration of motivation and group research as a starting point, we propose several recommendations for future research. From a group research perspective, it is important to consider how using a motivational lens informs the design of small-group instruction. Specifically, motivation theories help in identifying features that foster student motivation during group work. When programs foster mastery, enjoyment, and feelings of relatedness, autonomy, and competence, student engagement and learning is enhanced. These principles derived from current motivational theories and research conducted in group settings can work in coordination with the expertise of group researchers to formulate design principles for small-group programs.

Our synthesis proposes four initial recommendations for program design, grounded in motivation research. First, we can no longer assume that working with peers in groups is sufficient for motivating students in ways that benefit engagement and learning. Working in small groups raises significant challenges for motivation. Second, group research should design group programs that integrate some of the recommendations derived from motivational research in individual and group contexts. Third, programs should extend beyond a focus on interest and rewards as strategies for fostering motivation. Motivational research highlights the need for caution when relying on rewards and competition to facilitate high quality motivation in group settings and suggests that a broader range of motivation principles should be incorporated. For instance, introducing strategies for modeling effective behaviors and providing positive feedback before introducing criticism, and using authentic group tasks may help to support high quality motivation. Finally, to better assess the effectiveness of group instruction in supporting motivation, we recommend designing program evaluations to examine how features of small-group instruction impact several aspects of motivation including achievement goals, individual and collective academic self-efficacy, and intrinsic motivation or situational interest.

Bridging the areas of motivation and group research is not unidirectional, and motivation research has much to learn from research conducted in groups. There is richness to studying motivation in group contexts because of the dynamic nature of motivational processes during social interaction, which is not captured by relying on an individual difference perspective. Social constructivist and situative perspectives that consider how students jointly coconstruct meaning and negotiate multiple perspectives are central to research on groups, but is just beginning to inform motivation research (Nolen & Ward, 2008). Methodologically, it is not sufficient to aggregate the motivation of individual group members when drawing conclusions about the dynamics of motivation within a group (Hickey, 2003).

The initial research exploring the shared nature of motivation has considered the implications of group achievement goals and collective efficacy. These studies raise important questions for further understanding the shared nature of motivation and highlight some challenges to motivating group work. For instance, initial findings raise concerns for establishing group performance goals with consequences for fostering disengagement (Hijzen et al., 2007; Kempler et al., 2003). Similarly, negotiating academic goals (Summers, 2006) and engaging in social comparison within the group (Kempler & Linnenbrink, 2004) may significantly undermine the quality of group motivation.

A consideration of these issues suggests several new avenues for research, particularly

regarding the conceptualization of motivation as co-constructed among group members. For example, how does establishing shared motivation benefit group and individual outcomes? It is possible that group collaboration may elevate the quality of motivation for those group members with less adaptive motivation (i.e., lower efficacy, extrinsic motivation, performance-avoidance goal orientations). Moreover, research should also examine how shared, group-level motivation relates to productive engagement and learning for the entire group. To date, only a few studies have considered these processes at the group level. The nature of coconstructed motivation also raises questions about how shared motivation develops across time. Finally, it is important to understand how individual and group processes work together to explain group outcomes.

Advancing motivation research will require new methodologies that examine the shared nature of group activity and how shared motivation changes over time. In addition, we should extend beyond a limited conceptualization that separates individual's entering orientations from the shared motivation among group members into two distinct programs of research (Järvelä et al., 2010). Instead, future research needs to consider how multiple individuals with entering orientations jointly construct their motivation for the group task. In addition, drawing on the rich research histories of both small-group research and motivational research will be critical for further advancing research in this area and for informing practice.

NOTE

1. Academic goals are distinct from achievement goals as specified in achievement goal theory.

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