Peer-Based Control in Self-Managing Teams: Linking Rational and Normative Influence With Individual and Group Performance

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The authors use a multilevel framework to introduce peer-based control as a motivational state that emerges in self-managing teams. The authors specifically describe how peer-based rational control, which is defined as team members perceiving the distribution of economic rewards as dependent on input from teammates, extends and interacts with the more commonly studied normative control force of group cohesion to explain both individual and collective performance in teams. On the basis of data from 587 factory workers in 45 self-managing teams at 3 organizations, peer-based rational control corresponded with higher performance for both individuals and collective teams. Results further demonstrated that the rational and normative mechanism of peer-based control interacted to explain performance at both the individual and team levels. Increased peer-based rational control corresponded with higher individual and collective performance in teams with low cohesion, but the positive effects on performance were attenuated in cohesive teams.

**Keywords:** self-managing teams, control, team compensation, group cohesion

Considerable research has focused on identifying factors that explain differences in the effectiveness of self-managing teams (Mathieu, Maynard, Rapp, & Gilson, 2008). One important issue that has not been adequately studied is the transfer of leadership and influence from external supervisors to teams themselves (Manz & Sims, 1987; Stewart, Courtright, & Manz, 2011). To be effective, members of self-managing teams must assume responsibility for motivating both individual teammates and collective action. Understanding the motivational states that emerge in teams to replace hierarchical control is thus of critical concern. In order to understand team motivational states, prior research has predominantly applied individual-level motivational states, such as efficacy and empowerment, to the team level of analysis (Chen & Kanfer, 2006; Seibert, Silver, & Randolph, 2004). Although this perspective has yielded critical insight, we adopt a different approach. Rather than applying individual-level motivation theories up to the team level, we apply an organization-level motivational concept down to the team level. We specifically draw on theories of organizational control to introduce peer-based control as an emergent motivational state in self-managing teams that replaces hierarchical control to coordinate the direction and persistence of individual and collective efforts of team members.

Peer-Based Control as an Emergent Motivational State of Self-Managing Teams

Team motivation in its entirety represents “the collective system by which team members coordinate the direction, intensity, and persistence of their efforts” (Chen & Kanfer, 2006, p. 233). Forces that coordinate goal-directed behavior include emergent motivational states (Marks, Mathieu, & Zaccaro, 2001) that represent shared beliefs among members regarding their task environment, including what is valued in the environment and their capabilities and opportunities to handle tasks (Chen & Gocus, 2008; Chen & Kanfer, 2006). These team motivational states emerge as a result of individual motivational states, mutual interactions among team members, and contextual factors, and they exert direct (i.e., proximal) influences on the direction, intensity, and persistence of team members’ collective and individual effort (Chen & Kanfer, 2006; Marks et al., 2001). In order to describe peer-based control as a team-level motivational state, we first describe two primary mechanisms through which it operates—rational and normative influence—and then clarify its nature as an emergent motivational state.

Rational and Normative Mechanisms of Peer-Based Control

Although control is often seen as pejorative, within macro organizational theory it is simply the motivational force whereby individual acts are coordinated to assure that effort is directed toward not only individual goals but also collective pursuits (March & Simon, 1958). Consistent with this notion, O’Reilly and Chatman (1996) define control as a force that “comes from the knowledge that someone who matters to us is paying close attention to what we are doing and will tell us if our behavior is appropriate or inappropriate” (p. 161). In self-managing teams, peers become the “someone” responsible for monitoring and influencing one another to coordinate work (Barker, 1993; Manz & Sims, 1987; Tompkins & Cheney, 1985).
Barnard (1938) described two ways to exert control at work. His first mechanism of “general” inducement reflects feelings of social support and perceptions of being a critical part of the organization’s success. His second mechanism of “specific” inducement reflects monetary incentives and rewards. Over subsequent years, these two fundamental forms of inducement have served as a basis for identifying two broad types of control mechanisms: normative and rational (Barley & Kunda, 1992; Pfeffer, 1997). Normative and rational control have subsequently been incorporated into various organizational theories such as social exchange (Blau, 1964), which recognizes the influence of economic and social exchange, and psychological contracting (Rousseau, 1989), which includes both transactional and psychological agreements. These normative and rational mechanisms can also be applied at the team level.

Normative control is captured by principles from social psychology and explains how a sense of belonging and attachment invokes social pressure for individuals to comply with group or organizational standards. Desire to be part of a community motivates individuals to pursue goals endorsed by the group and omit behaviors that do not further collectively accepted goals (Sorrels & Kelley, 1984). This motivational force goes beyond mere compliance, as processes of social identification (Ashforth & Mael, 1989) and social categorization (Tajfel, 1982) operate so that normative control results in internalization of group standards (MacNeil & Sherif, 1976; Pollis, Montgomery, & Smith, 1975). In the context of self-managed teams, peer-based normative control is thus a motivational state whereby individuals feel influenced by their teammates through the pull of social inclusion and internalization.

Rational control is captured by economic principles and focuses on how knowledge of who and what determines the provision of monetary rewards influences individuals to comply with standards. The basis for rational control is the notion that employees are “calculative actors with instrumental orientations to work” (Barley & Kunda, 1992, p. 384). Desire to obtain rewards motivates individuals to pursue goals endorsed by whoever determines the rewards and to omit behaviors that detract from obtaining those rewards. In the context of self-managed teams, peer-based rational control is thus a motivational state that occurs when team members perceive their rewards as being dependent on the input and decisions of their teammates.

**Peer Control as an Emergent Motivational State**

Normative and rational forms of peer-based control reflect emergent states that influence motivated behavior in work teams because they (a) emerge as shared beliefs regarding what is valued in the environment and (b) represent proximal influences of individual and collective efforts and thus directly influence goal generation and pursuit.

First, in accordance with the definition of an emergent team motivational state offered by Chen and colleagues (Chen & Gocus, 2008; Chen & Kanfer, 2006), peer-based control represents a shared belief regarding what is valued in the environment. With rational control, a desire to obtain rewards motivates individuals to pursue goals and comply with standards endorsed by peers. With normative control, a desire for belonging and inclusion in the group motivates team members to likewise pursue and comply with group standards. Thus, because normative and rational control capture shared beliefs regarding the value and necessity of conforming to group standards, they are both best identified as emergent team motivational states.

These perceptions of what is valued emerge from inputs and processes—sometimes labeled ambient stimuli (Hackman, 1992). For example, perceptions of peer-based rational control are enhanced by compensation policies that base a percentage of pay on peer evaluation (Heneman & Von Hippel, 1995). Using peer input to determine pay has been specifically advocated by Lawler and colleagues (Lawler, 2003; Lawler & Cohen, 1992) as a method for motivating both cooperative actions and personal contribution, and studies involving student work groups have found that linking peer evaluations to a portion of students’ grades improves team motivation, team processes, and collective performance (Druskat & Wolf, 1999; Erez, Lepine, & Elms, 2002). Moreover, preliminary anecdotal evidence from progressive organizations such as W.L. Gore (Shipper, Manz, & Stewart, 2012) and Johnsonville Sausage (Heneman & Von Hippel, 1995) suggests that compensation based on peer evaluations can indeed be a beneficial ambient stimulus in self-managing teams. Another ambient stimulus, norms for cooperation, unfolds over time and influences how peers allocate not only rewards (Bamberger, 2007) but also social pressures to conform (Jacobs & Campbell, 1961). Differences in ambient stimuli across groups thus suggest that perceptions of peer control emerge within teams and likely exhibit substantial variation even within a single organization.

Second, peer-based control is an emergent motivational state because perceptions of peer control fit Kanfer’s (1990) proximal rather than distal category of motivational influences. Distal influences have indirect effects on behavior, whereas proximal processes “highlight motivational constructs and mechanisms that control the initiation and execution of actions during engagement with the task” (Kanfer, 1990, p. 82). Because both rational and normative forms of peer-based control operate during task engagement, they represent proximal influences that can best be classified as motivational states. As proximal influences of individual and collective effort, both rational and normative control emerge to directly affect the direction, intensity, and persistence of goal-directed behavior. Goal generation and pursuit come specifically through the alignment of individual and team goals. Alignment comes about through a process of mutual monitoring, which is defined as “the reciprocal assessment of performance among individuals working on common tasks” (Welbourne, Balkin, & Gomez-Mejia, 1995, p. 883). This mutual influence process leads team members to establish and pursue goals that maximize not only their own individual performance but also collective performance. Peer-based control thus results in the generation and pursuit of goals that simultaneously increase both individual and collective performance.

**Hypotheses Development**

Chen and Kanfer’s (2006) framework of team motivation suggests that team motivational states affect (a) goal generation that influences how efforts are directed in teams and (b) goal pursuit that determines whether efforts are sustained. Members of self-managing teams often generate goals that focus their efforts on either individual or team performance. They then receive feedback that provides them with information about how well they are
pursuing and achieving these goals (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004). Although some motivational forces emphasize either individual or group goals at the expense of the other (DeShon et al., 2004; Terborg & Miller, 1978), the motivational state of peer-based control is expected to positively influence goal processes related to both individual and team performance. To capture this multilevel effect, we explore relationships between the two team-level motivational states of focus in this study (peer-based normative control and peer-based rational control) and performance outcomes at both the individual and team levels. The specific relationships we assess are illustrated in Figure 1. Relationships among the motivational states and collective performance exist at the team level of analysis, whereas relationships with individual performance are cross-level with team-level independent variables (rational and normative peer control) and an individual-level dependent variable.

Within the framework shown in Figure 1, peer-based normative control has received the most research attention. Indeed, social psychologists have argued that peer-based normative control is best captured by cohesion (Blau, 1964; Festinger, 1950; Heckathorn, 1990; Kwok, Au, & Ho, 2005; Marks et al., 2001; Seashore, 1954), which represents the extent to which individuals internalize group standards and thereby adopt group goals as their own (Lott & Lott, 1961; Zander, Natsoulas, & Thomas, 1960). Cohesive groups enforce higher performance norms because commitment to completing tasks increases as individuals feel greater attraction to the group (Lott & Lott, 1965; Wech, Mossholder, Steel, & Bennett, 1998). Team members are more willing to take on difficult tasks (Klein & Mulvey, 1995), and they expend more effort to complete those tasks (Karau & Hart, 1998). Indeed, meta-analytic results suggest that cohesion is positively linked to task performance of both individual team members (Gully, Devine, & Whitney, 1995) and collective teams (Beal, Cohen, Burke, & McLendon, 2003; Evans & Dion, 1991; Gully et al., 1995; Mullen & Cooper, 1994).

Yet, as illustrated by applying the organizational-level perspective of control, normative influence need not be the only form of peer-based control in self-managing teams. Peer-based rational control can also be a means for monitoring and coordinating actions. Moreover, normative and rational forms of control are likely to have joint effects on performance (Barley & Kunda, 1992). Thus, in the sections that follow, we extend our understanding of control beyond cohesion by illustrating how peer-based rational control operates as an additional motivational state in self-managing teams. We then explore how normative control and rational control interact to influence individual and team performance. This analysis is critical as this is the first study to examine the effects of peer-based rational control on individual or team performance, as well as the first to explore this rational form of peer-based control in conjunction with the well-established peer-based normative mechanism of cohesion.

Cross-Level Relationships With Individual Performance

**Main effect for rational control.** Team members who perceive peer-based rational control generate a personal goal of maximizing individual contribution and then expend greater effort toward achieving that goal. The process by which this occurs can be illustrated by exploring the two primary features of peer-based rational control. The first feature is having control reside with peers rather than supervisors. In self-managing teams, peers are able to observe and evaluate individual contributions more accurately than are external supervisors. The second feature is control based on rational, or economic, rewards. The emphasis on remuneration increases effort by linking contribution tightly with an economic incentive.

Studies related to withholding of effort in team settings illustrate the benefits of perceiving peers to be responsible for monitoring and evaluation. Specifically, individuals working in groups often fail to maximize their individual performance because of free-riding and social loafing (Kidwell & Bennett, 1993). Yet, people are less apt to withhold effort when they perceive that tasks are visible (Latané, Williams, & Harkins, 1979), identifiable (Williams, Harkins, & Latané, 1981), and most importantly, able to be evaluated by peers (Harkins & Jackson, 1985; LePine & Van Dyne, 2001; Price, Gavin, & Harrison, 2006). Teammates, as active coparticipants in task processes, offer a unique perspective on a given employee’s performance that a supervisor may not be able to observe (Murphy & Cleveland, 1991; Saavedra & Kwan, 1993). This is particularly true in self-managed teams, as peers assume many traditional leadership roles such as performance monitoring (Loughry & Tosi, 2008). Improved opportunity for observation improves the reliability and validity of assessments.

![Figure 1. Multilevel framework for effects of peer-based control in teams.](image-url)
Given that people are motivated when their goals are recognized as important by others (Hackman & Morris, 1975), improved performance appraisal should in turn increase personal motivation and thereby performance.

Peer monitoring and evaluation will also be most effective when it is perceived to result in tangible economic consequences rather than when it is used only for feedback. In this sense, it is important to distinguish between peer-based rational control and traditional peer feedback. A meta-analysis by Smith, London, and Reilly (2005) found peer appraisal to have only a modest impact on performance. Peer ratings have been found to be relatively comparable across feedback and administrative purposes (Greguras, Robie, Schleicher, & Goff, 2003), but peer evaluations are infrequently tied to compensation and almost always used simply for feedback (Rynes, Gerhardt, & Parks, 2005). Peer-based rational control thus goes beyond traditional peer appraisal and captures the extent to which team members perceive rewards such as bonuses, raises, and promotions to be contingent on peer input. The present study of peer-based rational control thus captures a tighter linkage between peer evaluations and economic rewards than does traditional peer appraisal research.

The perception that peer assessments are linked to incentives is expected to strengthen the relationship between providing maximum effort and receiving valued rewards, which is a basic tenet of the expectancy theory of motivation (Sheppard, 1993). This benefit of an explicit link to rewards has been confirmed in several meta-analyses (Jenkins, Mitra, Gupta, & Shaw, 1998; Locke, Ferron, McCaleb, Shaw, & Denny, 1980; Stajkovic & Luthans, 1997), and Rynes et al. (2005) explicitly state that peer evaluation should have its strongest effect when it is believed to be attached to real consequences. Increased individual performance is thus expected to correspond with peer-based rational control in self-managing teams not only because of the enhanced observation and identification of personal effort but also because of the tighter linkage between individual contribution and economic rewards. Hence,

**Hypothesis 1:** Peer-based rational control is positively related to individual performance.

**Interaction between rational and normative control.** Control theory (Carver & Scheier, 1982) and team motivation theory (Chen & Kanfer, 2006) posit that behavior is motivated and coordinated by a process of goal generation and pursuit. From this perspective, peers influence the choice and intensity of teammate effort by encouraging choice of certain goals and then supporting efforts to pursue those goals. Normative and rational forms of peer-based control thus operate through the same process—namely, encouraging goal generation and pursuit. This common mechanism suggests that these forms of control are largely redundant. When cohesion is operating to encourage actions that increase individual and collective performance, there will be little additional benefit from the rational mechanism that encourages effort toward the same goals. In short, once team members accept and are vigorously pursuing goals to maximize individual effort in a way that does not compete with the efforts of peers, additional peer pressure supporting those same goals is expected to be of limited value.

Although not previously tested empirically, this notion that rational and normative forms of peer-based control are redundant and operate as substitutes is consistent with various theoretical perspectives on supervisor control, as well as with concepts that researchers have proposed concerning how normative group processes interact with rational forms of control (Heckathorn, 1990; Kandel & Lazear, 1992; Welbourne et al., 1995). For example, in substitutes for leadership theory, Kerr and Jermier (1978) posit that cohesive work groups have the ability to render rational-based performance feedback and control inconsequential because cohesive groups already have stable performance norms. This effect is empirically shown in relation to control that emanates from supervisors. Wang, Oh, Courtright, and Colbert (2011) illustrate that the effects of transformational (normative control) and transactional (rational control) leadership on individual performance are similar in magnitude and operate even in the absence of the other, and Judge and Piccolo (2004) show that the combined effects of transformational leadership (normative control) and contingent reward (rational control) are comparable to the effects of either alone. Leaders enacting both rational and normative control thus have essentially the same effect as leaders enacting either mechanism alone.

The specific redundancy in normative and rational mechanisms of peer control can be illustrated by further examining the effects of cohesion and comparing those effects with the already discussed effects for peer-based rational control. Specifically, early group researchers like Asch (1951) and Seashore (1954) found highly cohesive groups to exercise more influence over individual members than low-cohesive groups. In contrast, underperforming members of groups low in cohesion allow teammates little influence over their actions (Berkowitz, 1954; Schacter, Ellerton, McBride, & Gregory, 1951). The social force of peers is weak because groups low on cohesion lack synergy, cooperation, and norms encouraging high individual effort (Karau & Williams, 1993). Cohesion is thus expected to be similar to rational control in that both replace hierarchical control with concertive—or peer-based—control (Barker, 1993).

Also similar to rational control, cohesion is expected to channel behavior toward individual task accomplishment. Specifically, highly cohesive groups—which are characterized by a strong bond around high task commitment—use social pressure to induce members to expend effort toward assuring high individual performance (Barker, 1993; Beal et al., 2003; Goodman, Ravlin, & Schminke, 1987). In this sense, cohesive groups have been shown to enforce high-performance norms because commitment to completing tasks increases as individuals feel greater attraction to the group (Lott & Lott, 1965; Wech et al., 1998; Zander, 1968). Individual effort is more consistent, and social loafing decreases in cohesive groups (Karau & Hart, 1998; Seashore, 1954). Finally, team members with high individual performance receive positive support from teammates in cohesive teams (Wech et al., 1998). Desire to gain acceptance from peers translates into high individual effort in cohesive groups (Barker, 1993; Blau, 1964; Seashore, 1954).

In summary, given that rational and normative mechanisms of control operate through the same goal processes, we expect rational and normative control to operate as substitutes, in that having both forms will be comparable to having high levels on just one form of control. Specifically, individuals in either cohesive teams or teams that are high on peer-based rational control experience peer influence that encourages individuals to establish and pursue
goals consistent with high individual performance. When perceptions of cohesion are strong, team members establish and pursue goals because of a desire to gain acceptance from peers, creating a normative motivational state. Because individual effort is already being channeled toward goal formation and striving, rational control is expected to have limited impact. However, individuals in less cohesive teams do not feel attraction and social pressure, meaning that their goal-driven activity is more dependent on alternative motivational forces such as rational control (Berkowitz, 1954; Schacter et al., 1951). Peer-based rational control should thus have a weaker effect in cohesive groups because the normative motivational state is already ensuring goal generation and pursuit. Individuals who are strongly motivated by normative pressure are already putting forth high effort to achieve goals and are unlikely to become more motivated by economic influences, whereas individuals who do not perceive normative pressure are less controlled by the social influence and thus likely to be susceptible to rational control from teammates. Hence,

**Hypothesis 2:** Peer-based rational control interacts with normative cohesion such that its positive relationship with individual performance attenuates when cohesion is high.

**Group-Level Relationships With Team Performance**

**Main effect for rational control.** Similar to individual performance, collective team performance is expected to increase when peers are perceived as influencing rewards. Shifting to peer control encourages team members to establish and pursue goals that benefit the collective because peer evaluators are guided by their own self-interest and inevitably assess the extent to which a teammate’s performance has influenced, for better or for worse, their own performance, and by virtue, the performance of the team as a whole (Kandel & Lazear, 1992). Individual excellence is acknowledged and evaluated positively only when it is not detrimental to the cooperative effort and performance of coworkers. As a result, team members who pursue individual goals at the expense of teammate and collective goals will be penalized by peers who are negatively affected by competitive actions. Peer-based rational control thus aligns teammate interests and assures that attention and focus are balanced between individual and team goals.

Enhancing rational control is also helpful because it can facilitate other aspects of group self-management. Specifically, peers who perceive increased discretion over reward allocation become more observant and knowledgeable of each other’s performance (Kandel & Lazear, 1992; Mumford, 1983). Peers sense that it is their task, rather than that of a supervisor, to monitor and influence behavior. Indeed, as noted by Welbourne et al. (1995), “When workers know it is the supervisor’s job, not theirs, to monitor performance, they are more prone to ignore the deviant behaviors or excellent work performance of their peers” (p. 884). Increased observation and monitoring thus gives team members the opportunity to both reinforce behavior seen as beneficial to the team and discourage behavior that is perceived to be detrimental (Sewell, 1998). Indeed, observation and reinforcement among teammates are critical to the effectiveness of self-managing teams (Loughry & Tosi, 2008; Manz & Sims, 1987).

Yet, Kandel and Lazear (1992) suggest that mutual monitoring is best when team members have the means to affect their peers’ behavior. Perceiving that peers allocate rewards strengthens the effect of aligning the interests of individual group members with those of the group, which is consistent with Willer’s (2009) research finding that team members perceived as having greater group-oriented motivation are granted more rewards from their peers. Hence,

**Hypothesis 3:** Peer-based rational control is positively related to team performance.

**Interaction between rational and normative control.** As with rational control, the normative force of cohesion encourages team members to generate and pursue goals related to collective achievement. Normative and rational forms of peer-based control are thus expected to influence collective performance through common goal processes, suggesting an interaction similar to the relationship predicted with individual performance—again, a substitution effect.

Peer-based normative control corresponds with collective performance because members of cohesive groups strongly associate themselves with the team and become concerned that collective performance reflects on them personally (Jehn & Shah, 1997). Cohesive groups are specifically known to enforce high productivity norms and regulate effort toward achieving common objectives (Goodman et al., 1987). Such an emphasis on team facilitation likely explains the positive meta-analytic link (Beal et al., 2003; Evans & Dion, 1991; Gully et al., 1995; Mullen & Cooper, 1994) between cohesion and collective team performance.

Specific evidence supporting pursuit of team-facilitating goals comes from George and Bettenhausen (1990), who found individuals in cohesive groups to engage in more helping behavior. Cohesive teams also share more information and communicate better (Keller, 1986; Lott & Lott, 1961; Melleringer, 1956), suggesting that cohesive teams better coordinate goal activity. Higher team cohesion specifically leads to more difficult goals and to stronger goal commitment, which in turn corresponds with improved team performance (Klein & Mulvey, 1995; Mulvey & Klein, 1998).

Teams with either cohesion or rational peer-based control thus assure coordination of collective goal-driven effort. For highly cohesive teams, there is high task commitment and synergy, which occurs because of internal social pressures (Beal et al., 2003). In these teams, economic rewards decided by peers are expected to have little influence because the social pressures characteristic of highly cohesive groups already operate sufficiently to encourage generation and pursuit of team-facilitating goal processes. In contrast, peer-based rational influence is expected to be critical in less cohesive teams, as team members lack a social mechanism to influence coworkers’ actions and thereby assure cooperative task pursuit.

Thus, as with individual performance, we expect rational and normative control to be substitute mechanisms in that having both will be comparable to having a high level of either alone. Although this study represents the first time this interaction has been explored in relation to peer-based control, the proposed pattern of the interaction is once again consistent with substitutes for leadership theory, which suggests that the stable performance norms inherent in cohesive groups may render rational feedback and control redundant and inconsequential (Kerr & Jermier, 1978). Further-
more, evidence on supervisor control, particularly studies on transformational/transactional leadership and structure/consideration perspectives of leadership, shows that normative and rational forms of supervisor control have nearly equal effects on group performance, operate successfully even in the absence of each other, and provide little incremental advantage in combination (Judge & Piccolo, 2004; Judge, Piccolo, & Ilies, 2004). This leads to our final hypothesis:

_Hypothesis 4:_ Peer-based rational control interacts with normative cohesion such that its positive relationship with team performance attenuates when cohesion is high.

**Method**

**Sample**

Data were obtained from a sample of 587 factory production workers organized into 45 self-managing teams at three manufacturing plants of different companies in the midwestern United States. The manufacturing plants varied in terms of the goods they produced, including electronic equipment, small appliances, and rubber. Average team size was 14. Average age of participants was 42 years. Fifty-six percent of participants were women, and 98% were Caucasian. Participants averaged 14 years of tenure with their organization and 3.5 years with their team. Participants across teams and organizations completed essentially the same types of tasks, which included receiving materials and information from suppliers, transforming and adding value to those inputs in cooperation with management and staff, and delivering output to customers. Furthermore, participants’ work was largely designed so that members depended on teammates in completing their work. Thus, group tasks can be classified primarily as behavioral in McGrath’s (1964) typology and as additive in Steiner’s (1972) taxonomy. All three organizations were working with a common organization development consultant (not a study author) to facilitate self-managing teams, which explains why the three different plants relied on similar influences of team cohesion and peer-based allocation of rewards. Although the emphasis on rewarding for group versus individual contributions varied somewhat across groups, in all cases compensation plans included a mix of incentives for both individual and collective contributions. As expected, the effectiveness of these teams as self-managing, cohesive units allocating peer-based rational control differed across work teams, even within the same organization.

**Measures**

**Peer-based rational control.** As noted earlier, peer-based rational control reflects individuals’ perceptions regarding the degree to which they believe their economic rewards depend on recommendations from teammates. We thus deemed perceptions of peer-based control, rather than objective compensation practices (which are ambient stimuli), to be a superior method of capturing this construct.

Given the lack of a specific measure of peer-based rational control, the literature for an existing measure that could be adapted was first scanned. Substitutes for leadership theory, which identifies a set of individual, task, and organizational variables that substitute for, or neutralize, the effects of leadership (Kerr & Jermier, 1978), was found to come the closest to capturing peer-based rational control. One variable included in substitutes for leadership theory is whether rewards are outside the leader’s control. This scale was adapted by clarifying that the rewards were perceived as being under the control of teammates, not just outside the leader.

Participants were asked to individually rate their perceptions of peer-based rational control in their respective teams using five items adapted from Childers, Dubinsky, and Gencurk (1986). Items were based on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating greater peer-based rational control. Specific items were “My chances for a pay raise depend on the recommendation given by my team”; “My chances for a bonus are not influenced by my team’s recommendation (reversed)”; “My chances for promotion depend on the recommendation given by my team”; “I am not dependent on my team for important organizational rewards (reversed)”; and “The rewards I receive are determined by the recommendation of my team members.” Coefficient alpha for the scale was .78.

Because participants were nested within teams and peer-based control is conceptualized as a collective construct, it was necessary to aggregate perceptions of peer-based rational control to the group level. In order to justify the aggregation of perceived peer-based rational control to the group level, agreement and consistency were assessed among teammate perceptions regarding the degree to which their individual rewards depended on peer recommendations. Following Bliese (2000), rwg values were calculated to assess team member agreement, a one-way analysis of variance (ANOVA) was conducted to assess variance across teams, and interclass correlation (ICC) values were calculated. ICC(1) indicates the amount of variance in ratings due to team membership, whereas ICC(2) indicates whether work units can be differentiated on the variable of interest. A rectangular distribution of rwg was assumed, and given that some measures were only available as means and not at the item level, rwg(1) was calculated, with scale means being used as a representation of a single item scale. Mean rwg(1) across teams for peer-based rational control was .78. The one-way ANOVA supported significant variation across teams, $F(45, 587) = 7.86, p < .05$, ICC(1) was .40, and ICC(2) was .91.

Aggregation of peer-based rational control as a group-level construct was thus supported (LeBreton & Senter, 2008).

**Team cohesion.** Individual team members rated their perceptions of team cohesiveness using a four-item measure developed by Seashore (1954) and adopted by O’Reilly, Caldwell, and Barnett (1989). Items were based on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating greater cohesion. Items included the extent to which members were “ready to defend each other from criticism by outsiders,” “helped each other on the job,” “got along with each other,” and “stuck together.” Coefficient alpha was .87. $R_{wg1}$ was .74; the one-way ANOVA was significant; $F(45, 587) = 3.06, p < .05$, ICC(1) was .24; and ICC(2) was .75, justifying aggregation of cohesion to a group-level variable.

**Individual performance.** Supervisors provided ratings of individual performance. An eight-item, 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) previously used by Barrick, Mount, and Strauss (1993) was adopted. Dimensions included quantity of work, quality of work, initiative, interpersonal perfor-
performance, job knowledge, planning and implementing goals, effort, and overall performance. Exemplars include “Completes work thoroughly, accurately, and according to specifications” and “Maintains good interpersonal relations.” Factor analysis revealed a single factor underlying the items. Therefore, the mean score of the eight items was adopted as a measure of individual performance. Coefficient alpha was .93.

**Team performance.** Team performance was assessed through ratings from team supervisors on a scale developed with eight items using a 5-point scale (1 = *somewhat below requirements*, 5 = *consistently exceed* requirements; Barrick, Stewart, Neubert, & Mount, 1998). Performance dimensions in the scale are quality of work, quantity of work, knowledge of tasks, initiative, planning and allocation, interpersonal skills, commitment to team, and overall team performance. Each dimension was defined for raters by a one-sentence description and included several interpretive examples. Factor analysis supported a single factor. Hence, the mean of the eight items was adopted as the measure of team performance. Coefficient alpha was .83.

**Covariates.** At the individual level of analysis, team tenure (years since the individual had joined the team) was controlled for because longer tenure in a team may result in higher individual performance (McDaniel, Schmidt, & Hunter, 1988). At the team level, four variables were controlled for: organization, team size, degree of task interdependence, and peer-based feedback. Because data from three organizations were collected, two dummy variables were created to capture potential differences across organizations. Interdependence and team size served as team-level covariates because of their potential effects on team performance and processes (Campion, Medsker, & Higgs, 1993; Stewart & Barrick, 2000). Interdependence was measured using a seven-item 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*; coefficient alpha was .74) adapted from Kiggundu (1983). Rwg(1) was .87; the one-way ANOVA was significant, $F(45, 587) = 3.06, p < .05$; ICC(1) was .21; and ICC(2) was .73. Example items include “other members of my team depend on my performance to do their work” and “how other team members do their work has an impact on my performance.” Finally, because peer assessments are often used to provide feedback independent of rewards (Meyer, Kay, & French, 1965), we also wanted to assure that perceived peer-based rational control represents something that extends beyond peer-based feedback. Four items were thus adapted from Childers et al. (1986) to assess and control for peer-based feedback. Items were based on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*), with higher scores indicating greater peer-based feedback. Specific items included “Feedback about how well I am doing my work comes primarily from information from members of my work team” and “I rely on members of my work team for feedback about how well I am performing.” Rwg(1), was .82; the one-way ANOVA was significant, $F(45, 587) = 2.30, p < .05$, ICC(1) was .10; and ICC(2) was .60.

**Analysis**

Individual performance and team tenure are variables at the individual level of analysis. Peer-based rational control, team cohesion, organization, interdependence, peer-based feedback, team size, and team performance are team-level constructs. Hierarchical linear modeling (HLM) is a preferred method for testing hypotheses when the dependent variable is measured at the lowest level (individual level in the present case; Hofmann, Griffin, & Gavin, 2000). Regression analysis is appropriate when the dependent variable is captured at the higher level of analysis (team level). Hence, HLM techniques were adopted to assess relationships with individual performance and regression techniques to explore relationships with collective performance.

**Results**

Table 1 presents descriptive statistics and intercorrelations for study variables. To test Hypothesis 1, which predicted greater peer-based rational control to be positively related to individual performance, we first determined that 18% of the variance in individual performance resides between groups. Additional results are displayed in Table 2. We first entered team tenure as a Level 1 predictor of individual job performance and team membership as a random effect. We next included our Level 2 variables to test how team-level characteristics influence individual performance, after controlling for team tenure. As a set, cohesion, peer-based rational control, and their interaction explained 63% of the variance in the Level 2 intercepts, which reflects 11% of the total variance in individual performance. As indicated in Table 2, Hypothesis 1 was supported in that perceived peer-based rational control had an overall positive effect on individual performance.

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**Table 1**

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Means, Standard Deviations, and Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>N</td>
</tr>
<tr>
<td>1. Team tenure</td>
<td>587</td>
</tr>
<tr>
<td>2. Individual performance</td>
<td>587</td>
</tr>
<tr>
<td>3. Peer rational control</td>
<td>45</td>
</tr>
<tr>
<td>4. Team cohesion</td>
<td>45</td>
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<tr>
<td>5. Peer feedback</td>
<td>45</td>
</tr>
<tr>
<td>6. Task interdependence</td>
<td>45</td>
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<tr>
<td>7. Team size</td>
<td>45</td>
</tr>
<tr>
<td>8. Team performance</td>
<td>45</td>
</tr>
</tbody>
</table>

*Note.* Individual-level descriptive statistics and intercorrelations are shown in the upper part of the table. Team-level descriptive statistics and intercorrelations are shown in the lower part of the table.

*p < .05.*


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(γ₀₇ = .281, 95% CI [.15, .41]). Consistent with expectations, cohesion also had an overall positive effect on individual performance (γ₀₀₈ = .31, 95% CI [.22, .39]).

Hypothesis 2 predicted that peer-based rational control would have greater effects on individual performance when group cohesion was low. As shown in our HLM results in Table 2, peer-based rational control and team cohesion did interact to explain individual performance (γ₀₀₈ = −.09, 95% CI [−.17, −.01]). Following the guidelines of Cohen, Cohen, West, and Aiken (2003), the nature of the interaction is shown graphically in Figure 2, with cohesion as a moderator of the relationship between peer-based rational control and individual performance. Post hoc probing revealed that whereas the simple slope of the regression equation was greater than zero when cohesion was either low (.36, 95% CI [.27, .45]) or high (.20, 95% CI [.11, .29]), consistent with our prediction, the magnitude of the relationship is greater when cohesion is low. This finding supports Hypothesis 2, with the relationship between peer-based rational control and individual performance being strongest when cohesion is low.

Hypothesis 3 predicted that perceptions of peer-based rational control would correspond with higher levels of team performance. Hierarchical regression results used to test this prediction are shown in Table 3. We assessed a model (Model 1) with team performance regressed on the covariates (organization, team size, peer-based feedback, interdependence) plus the main effects of group cohesion and peer-based rational control. Our results provided support for Hypothesis 3 in that teams with stronger perceptions of peer-based rational control had higher team performance (β = .68; 95% CI [.25, 1.00]).

To examine Hypothesis 4, we added a cross-product term (Model 2) to our hierarchical regression analysis shown in Table 3. Results revealed a change in $R^2$ of .15 for the model with the interaction term (β = .48; 95% CI [−.77, −.19]). Following the guidelines of Cohen et al. (2003), the pattern of the interaction is plotted in Figure 2, with cohesion as the moderator. As expected, teams low in cohesion performed substantially better when peer-based rational control was high, whereas the performance of highly cohesive teams was less affected by peer-based rational control (see Figure 3). Post hoc probing revealed that the simple slope for peer-based rational control is significantly greater than zero when cohesion is low (.57, 95% CI [.14, 1.00]) but not when cohesion is high (.17, 95% CI [−.34, .68]). These results support Hypothesis 4 as the effects of peer-based rational control attenuated as cohesion increased. Highly cohesive teams benefited very little from increased rational control. Either form of peer-based control by itself was essentially equivalent to the combination of both.

**Discussion**

This study highlights the importance of peer-based control as a team motivational state in self-managing teams. Specifically, this study represents the first attempt to study the multilevel performance effects of the rational mechanism of peer-based control and its interaction with the more commonly studied normative mechanism. Our results suggest that perceptions of peers controlling team member rewards correspond with increased performance at both the individual and team levels. This finding adds to previous research concerning the normative mechanism of cohesion by illustrating how peer-based control—whether normative or rational—encourages high performance of both individuals and teams. Furthermore, our results also clarify the nature of the relationship between rational and normative mechanisms of peer-based control in self-managing teams. In the case of collective team performance, the two control mechanisms essentially substituted for one.
another. Collective performance of teams can thus be enhanced either through perceptions of belonging and commitment (peer-based normative control) or through perceptions of aligned economic interests (peer-based rational control), but having shared perceptions of both peer-based control mechanisms does not result in even higher performance. Interestingly, the interaction effect was slightly different for individual performance. Consistent with expectations, the effect of peer-based rational control on individual performance attenuates as cohesion increases. Yet, for most teams the effect is not sufficiently strong so that a high level of team cohesion completely substitutes for the effect of increased perceptions of peer-based rational control. Up to a point where cohesion is several standard deviations above the mean, increased peer-based rational control corresponds with additional improvement in individual performance. Thus, combining normative and rational control can be somewhat beneficial for individual performance.

Implications for Theory and Research

Our findings identify peer-based rational control as a motivational state that, in addition to cohesion, can improve performance across both individual and team levels. Numerous studies have demonstrated the value of cohesion as a normative peer force, but little work has explored other peer forces such as rational control. Team members who perceive their teammates as having input into their individual rewards increase their own individual performance in a way that also adds to rather than detracts from collective performance. To date, team researchers have largely ignored the effectiveness of this economic mechanism of peer-based rational control, and future research should seek greater understanding of rational forms of peer-based control. Future efforts should particularly focus on identifying objective factors, such as pay practices, that create the ambient stimuli needed to create peer-based rational control.

Our results also clearly illustrate that rational and normative peer-based control interact. This finding highlights the need to explore how different control mechanisms—and perhaps other team motivational states—combine to influence team outcomes. Barley and Kunda (1992) argued that rational and normative control mechanisms are opposed, and, hence, an emphasis on one mechanism usually reduces emphasis on the other. In contrast, our results show that in the case of peer-based control, the two mechanisms do not work in opposition such that the presence of one harms the other, but, rather, that they act as substitutes. Of course, additional research is needed to fully understand their joint influence, but our results suggest that future effort should be directed toward gaining a better understanding of how peer-based normative and rational control mechanisms combine in the context of self-managing teams.

Our multilevel findings also confirm that control mechanisms can have differential effects on individual and group performance. Even though either form of control by itself may be sufficient for assuring high collective performance, a combination of both normative and rational control may be necessary to assure the highest level of individual contribution. One explanation is that cohesion has a stronger influence on coordinated action than on individual excellence. Indeed, the theoretical explanation of higher collective action through greater identification seems stronger than the explanation of higher individual performance through greater task commitment. Nevertheless, given that most people working in team settings are expected to contribute both as an individual and as a member of a group, capturing performance at both levels of analysis seem critical.

Implications for Practice

Our results also have important practical implications. A common conclusion in the literature has been that peer-based forms of
influence such as peer input into performance appraisals may be detrimental to team functioning (Saavedra & Kwun, 1993). Although we did not objectively assess compensation features of the teams in our sample (i.e., ambient stimuli), our results do suggest that higher individual and collective performance results from perceptions that peers influence organizational rewards, especially for groups that are dysfunctional in terms of cohesiveness. Managers should thus realize that to maximize a team’s potential, they must motivate both the individual and the collective, and peer-based rational control does this.

Yet, creating a sense of peer-based rational control may not be equally beneficial in all settings. Peer-based rational control is particularly well suited for teams that are low in cohesiveness. It also seems that peer-based rational control may potentially be ideal for organizations using empowerment strategies. Empowerment is aimed at increasing intrinsic motivation at work through the decentralization of power and authority to the lowest levels of the organization (Conger & Kanungo, 1988; Seibert, Wang, & Courtright, 2011; Thomas & Velthouse, 1990). Because of its shift of control to teammates, peer-based rational control is likely an important motivational ingredient for empowered teams. Peer-based control may be particularly beneficial given that individuals and teams feel psychologically empowered when they believe they can influence strategic, administrative, or operational activities (Kirkman & Rosen, 1999; Spreitzer, 1995).

We might also note that organizational leaders should potentially account for individual differences, as some team members may be more susceptible to rational control mechanisms and others more sensitive to normative mechanisms. For example, extraverts are susceptible to external rewards (Stewart, 1996); hence, it is possible that extraverts are influenced more by rational control, whereas others, perhaps agreeable team members who dislike conflict, are influenced more by normative control. Additional research is needed in this area.

Limitations and Future Research

We should note several limitations of our study. First, we did not measure the ambient stimuli that generate a sense of peer-based rational control. In particular, measures of actual compensation practices would serve to capture the unique effects of peer-based rational control. Specifically, giving peers a say in each other’s pay differs from other methods of reward systems in teams such as team-based rewards, where members’ pay is based on collective performance. Future research should compare team-based reward systems and compensation systems based on peer evaluations in terms of their relative effects on perceptions of peer-based rational control and, in turn, team performance. Moreover, given that we were unable to assess other compensation practices that were not peer based, we were not able to control for these effects. It is, of course, possible that these other compensation practices influence team motivational states in ways that we did not capture. We thus hope that future research can include these and other potentially relevant variables to examine the multiple psychological mechanisms through which a mix of team and individual rewards affect perceptions of peer-based rational control and performance.

A second limitation concerns contextual factors. We included team tenure, organization, team size, interdependence, and perceived peer-based feedback as covariates. Task interdependence is particularly critical because it has been shown to have important interactions with other team characteristics. In fact, it is possible that interdependence might interact with the two control mechanisms. Although the analyses reported above include interdependence only as a main effect, we did test for interactions between interdependence and cohesion and peer-based rational control. No interaction could be detected to explain either individual or collective performance, suggesting our analyses adequately controlled for this important contextual factor.

Third, we did not explicitly examine mediating variables. We drew on team motivation theories to suggest that goal-setting processes (i.e., goal generation and goal pursuit) account for the relationships between peer-based control and individual and team performance. Future work should specifically examine goal generation and pursuit at both the individual and team levels of analysis. Other mediators besides goal-setting processes could also be examined. For example, team processes that effectively manage conflict and emotions may serve as mediators.

Fourth, our performance variables were measured using supervisor ratings rather than objective ratings, which were not available. Nevertheless, we eliminated common-method bias by capturing predictors from team members and performance from supervisors.

Finally, our findings are based on cross-sectional data. Future studies should longitudinally examine the effects of control mechanisms to rule out, for example, the possibility of reverse causality. Moreover, a particular emphasis should be placed on the temporal effects (Marks et al., 2001; Stewart, 2010) of peer-based rational control, as researchers have suggested that over time, peer-based rational control could lead team members to maximize their own rewards by suggesting less reward for teammates (Saavedra & Kwun, 1993).

Conclusion

Normative and rational peer-based control both correspond positively with individual and collective performance in self-managing teams. The two forces are, nevertheless, somewhat substitutable. Either form of control is strongest when the other is weak. This highlights the importance of simultaneously examining both motivational forces. Our findings also demonstrate the importance of using a multilevel framework when investigating motivational states as the effects can be different at the collective and individual levels. We hope this initial study stimulates further research on peer-based control in self-managing teams.

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