

MAKING A DIFFERENCE IN THE TEAMWORK: LINKING TEAM PROSOCIAL MOTIVATION TO TEAM PROCESSES AND EFFECTIVENESS

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Although the importance of team motivation has been increasingly emphasized, few studies have focused on prosocial motivation. Integrating theories on team effectiveness with prosocial motivation, we propose a theoretical model that links team prosocial motivation to team effectiveness as mediated by team processes. Team process is captured through the task-driven process of team cooperation and the affect-based team viability, and team effectiveness is operationalized as team performance, team organizational citizenship behavior (OCB), and team voluntary turnover. The model is tested in Study 1, a field study with three-source data collected from 310 members of 67 work teams over four time periods, and Study 2, a laboratory experiment with 124 four-person teams in which team prosocial motivation is manipulated. In Studies 1 and 2, we find support for indirect effects of team prosocial motivation on team performance and team OCB through the mediating role of team cooperation. Team voluntary turnover is indirectly affected by team prosocial motivation through team viability. Furthermore, in both studies the indirect effects of team prosocial motivation on team performance and team OCB through team cooperation and on team voluntary turnover through team viability are stronger when the nature of the teams' work requires greater task interdependence.

Due to their ability to more effectively respond to the dynamic and complex environments faced by organizations today, work teams have become increasingly prevalent in the past two decades (Mathieu, Maynard, Rapp, & Gilson, 2008). One of

the key drivers of effective team outcomes is the motivation of team members (Hackman & Walton, 1986; Kozlowski & Bell, 2003). A rich body of research has endorsed the value of team members' task-related motivational states, such as collective efficacy and team empowerment, in building effective teams (see meta-analytic reviews by Seibert, Wang, & Courtright, 2011; Stajkovic, Lee, & Nyberg, 2009). However, in the team motivation literature, scant attention has been paid to an important form of motivation that is especially relevant for teamwork: prosocial motivation, or the desire to exert efforts to benefit others (Grant, 2007). The omission of prosocial motivation at the team level is problematic, as motivation researchers have discovered that individuals can be motivated to work for different reasons, and many people engage in their work not for self-advancement alone, but, more importantly, for the opportunity to have a positive impact on the lives of others (Batson, 1987; De Dreu, 2006; Grant et al., 2007). These insights suggest that an integration of prosocial motivation and team literatures offers a novel perspective for better

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understanding team motivation and subsequent team effectiveness.

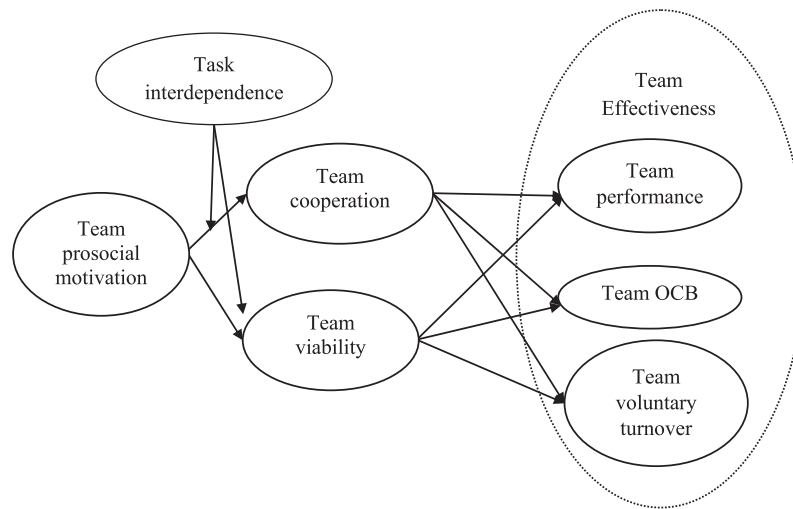
Different from other forms of motivation, such as intrinsic motivation, that have a focus on the *self* or the *task*, prosocial motivation highlights the *social* aspect of work by emphasizing individuals' concerns about how their actions can affect others' well-being (Batson, 1998; Grant, 2007). Prosocially motivated individuals are described as *givers* who are primarily concerned about contributing to benefits to others, rather than calculating personal returns, and are more likely to achieve success in the long run (Grant, 2007, 2013). Grant and colleagues' (Grant, 2008; Grant & Berry, 2011; Grant & Sumanth, 2009) empirical studies largely supported the importance of individual prosocial motivation in promoting individual performance outcomes. Extending this line of research, we contend that prosocial motivation also operates at the team level and provides positive value for team effectiveness (De Dreu, 2006). For instance, if members in a building construction team are not genuinely concerned about their customers' safety and comfort, they may engage in opportunistic behaviors that enhance short-term benefits but have a potentially detrimental impact on the residents in the building. Likewise, a lack of prosocial motivation in a lawyer's team might damage clients' subsequent well-being and also hurt the lawyer's own reputation. In practice, a wide range of teams, from firefighter squads to legal defense teams, often engage as a unit in performing prosocial behaviors, which highlights the value of collective prosocial motivation to team outcomes. Consistent with these illustrations, researchers have suggested that prosocially motivated, rather than self-interest-oriented, members are better able to engage in teamwork that facilitates team success (Batson, 1998; De Dreu, 2006). Team members' prosocial motivation is likely to be contagious, because work teams are highly influential social contexts (Hackman, 2002) in which team members are exposed to the same events, policies, and practices and are likely to develop a collective form of motivation to benefit others through their work (Li, Kirkman, & Porter, 2014). Indeed, due to the uniqueness of prosocial motivation in team contexts, Grant and Berg (2011: 27) pointed out that "it will be both theoretically interesting and practically important to explore the development and impact of collective prosocial motivation."

The primary goals of the current study are to explore *how* team prosocial motivation relates to team

effectiveness and *when* the relationship is stronger or weaker. What makes team prosocial motivation unique is that it is not simply an aggregation of individuals' prosocial motivation, but a shared collective belief regarding the extent to which their team values making a prosocial impact developed through interactions among team members (Morgeson & Hofmann, 1999). Drawing on team effectiveness theory (Hackman, 1987), we propose that due to the knowledge that others can be better helped if team members strive toward producing effective team outcomes, prosocial motivation of the team may create positive team synergy, reduce process losses, and contribute to team effectiveness (Batson, Ahmad, Powell, & Stocks, 2008; De Dreu, 2006). We further argue that this positive linkage may be realized through the mediating role of the team's task-related (team cooperation) and affect-based (team viability) processes. Furthermore, although team prosocial motivation provides members with the willingness to engage in effective team processes and produce quality team outputs, opportunities for members to do so may vary based on team context. Task interdependence, a particularly salient aspect of team context dealing with the degree to which carrying out the team's tasks requires close interactions and coordination among its members (Wageman, 1995), may contribute toward the extent to which team members have opportunities for developing a sense of collective prosocial motivation. We contend that task interdependence amplifies the positive impact of team prosocial motivation on team effectiveness.

The current research (summarized in Figure 1) represents an attempt to advance our knowledge of prosocial motivation and teams in several ways. First, we actively respond to Grant and Berg's (2011) call for research on collective prosocial motivation and extend prosocial motivation to the team level. We also provide a valuable addition to previous framework on team prosocial behaviors (Li, Kirkman, & Porter, 2014) and propose and test important questions concerning how and when team prosocial motivation relates to team effectiveness. Second, we explain how team prosocial motivation provides enabling conditions for teams to prosper through effective team cooperation and to develop strong emotional ties that act to retain members via high levels of team viability. Third, by introducing task interdependence as an important boundary condition for effects of prosocial motivation in teams, we actively respond to scholars' warnings that ignoring team context may hamper progress in

FIGURE 1
Overall Theoretical Model^a



^a For the sake of readability, we do not present the control variables in the model. In Study 1, we controlled for country source, organizational membership (i.e., five dummy-coded variables), team mean tenure, and team size; in Study 2, we controlled for individual-level prosocial motivation, intrinsic motivation, and impression management motivation.

understanding what factors inhibit or enhance team effectiveness (Kozlowski & Bell, 2003; West, Borrill, & Unsworth, 1998). Finally, an overlooked yet important way to assess the contribution of research is through its salience to practice (Locke & Golden-Biddle, 1997). From this perspective, our research offers a means through which organizations can enhance social responsibility by designing and managing teams that encourage a focus on helping others.

THEORY AND HYPOTHESES

Team Prosocial Motivation

Extending theory on individual prosocial motivation (Grant, 2008), team prosocial motivation is defined as team members' shared desire to focus their efforts on benefitting others. Although team prosocial motivation originates within individual team members, each team member's perception does not exist in a vacuum, but is influenced by the context of the work team to which he or she belongs (Hackman, 2002). Individual members' understanding of their team's prosocial motivation may converge and form a shared collective belief at the team level, which is referred to as the *bottom-up* process in multilevel literature (Kozlowski & Klein, 2000). From a motivated social information processing perspective (De Dreu, Nijstad, & Van Knippenberg,

2008), teams can serve as information processors in which team members gather information from their teammates to understand each other's values and gradually generate a shared knowledge regarding what motivates the team and whether concern for others' welfare guides their behaviors. To the extent that members sense other-orientation in fellow members' motivation, the team as a whole develops norms focused on shared team prosocial motivation.

Team Prosocial Motivation, Team Processes, and Team Effectiveness

We propose that prosocially motivated teams are more likely to engage in behaviors that contribute to collective benefits, including team effectiveness. At the individual level, prosocial motivation is beneficial for task performance, productivity, and organizational citizenship behavior (OCB), as prosocially motivated individuals' higher purpose of benefitting others fuels their desire to invest more time and energy in their work, compared to individuals motivated through other means (De Dreu & Nauta, 2009; Grant, 2008; Grant & Berry, 2011; Grant & Sumanth, 2009). Although prosocial motivation among individual members may help to promote effective team outcomes through a similar lens, teamwork is different from individual work, because it emphasizes the shared purposes for and

the interconnections among all individual members (Hollenbeck, Beersma, & Schouten, 2012). That is, prosocially motivated teams may influence team effectiveness through collective processes that cannot be realized from prosocially motivated individuals alone. As West and colleagues (1998: 3) noted, “teams can integrate and link in ways individuals cannot.” Teams produce successful outcomes when they are able to produce synergistic gains, minimize process losses (Hackman, 1987; Steiner, 1972), and facilitate team task coordination and interpersonal bonding (Marks, Mathieu, & Zaccaro, 2001). We identify two key team processes through which team prosocial motivation impacts team effectiveness: the more task- and duty-oriented dimension of team cooperation, and the more affect- and emotion-based dimension of team viability (Mathieu et al., 2008). We focus on three behavioral criteria of team effectiveness: (1) team in-role performance, or the extent to which a team accomplishes its tasks (Motowidlo, 2003); (2) team extra-role performance (team OCB), which is team-level normative and discretionary behavior not recognized by the formal reward system (Ehrhart & Naumann, 2004); and (3) the aggregate voluntary employee departures within a work team (Hausknecht & Trevor, 2011). Team in-role and extra-role performance reflect team members’ behaviors that contribute to a team’s current effectiveness, and have long been considered as key dimensions of team success (Ehrhart & Naumann, 2004; Mathieu et al., 2008; Podsakoff, MacKenzie, Paine, & Bachrach, 2000). Team voluntary turnover, on the other hand, signals whether a team will maintain its effectiveness in the future (Hackman, 1987; Nyberg & Ployhart, 2013). A rich body of empirical evidence has shown that teams containing members with longer team tenure have more shared experiences and team-specific capabilities that help them to produce effective team outcomes in the long term (e.g., Groysberg, Lee, & Nanda, 2008; Hausknecht, Trevor, & Howard, 2009; Huckman, Staats, & Upton, 2009; Kacmar, Andrews, Van Rooy, Steilberg, & Cerrone, 2006).

Team Cooperation as a Mediator

According to team effectiveness theory (Hackman, 1987), team prosocial motivation is expected to promote team effectiveness through a key behavioral dimension of team process—team cooperation. A key prerequisite to effective team outcomes is the team’s capability to create synergistic gains (Hackman, 1987), where the collective efforts are

greater than the simple aggregation of what the independent individuals would achieve (Larson, 2010). Team prosocial motivation may be well suited for promoting synergistic gains and facilitating effective team cooperation, as it helps to effectively integrate different ideas and perspectives within the team. Team cooperation tends to smooth dysfunctional conflicts among team members (Kozlowski & Bell, 2003) and boost effective problem-solving within the team (Podsakoff et al., 2000), which promote better teamwork outcomes (Atuahene-Gima, 2003; Devine, Clayton, Philips, Dunford, & Melner, 1999). Driven by the meaningful purpose of helping others, team members are willing to share their ideas and may not be afraid to voice viewpoints that differ from those of others as long as they believe these inputs can positively contribute to the collective goals of the team (Grant & Berry, 2011). At the same time, prosocially motivated team members tend to focus less on calculating their personal gains or losses (Meglino & Korsgaard, 2004), while being more attentive and open to others’ opinions and needs (De Dreu, 2006). This generates productive levels of task conflicts and reduces, if not eliminates, dysfunctional interpersonal conflicts, thereby creating positive team synergy and promoting effective team cooperation.

In the social psychology literature, team cooperation is often discussed with respect to *social loafing* (Karau & Williams, 1993; Latané, Williams, & Harkins, 1979), which is team members’ tendency to reduce their efforts within the work team; and *freeriding*, or team members’ intention to escape their own responsibilities by taking advantage of the shared good (Albanese & Van Fleet, 1985). Teams with high prosocial motivation are likely to have smooth team task cooperation and few social loafers and freeriders, as members are willing to take on more difficult or less desirable tasks in order to promote the welfare of potential beneficiaries within and outside the teams (De Dreu & Nauta, 2009; Grant, 2012; Grant & Sonnentag, 2010). Accomplishing undesirable yet meaningful tasks helps to reduce the workload of teammates and produces better teamwork output that could benefit clients and customers to a greater extent. Thus, prosocially motivated team members are less likely to succumb to the counter-productive interpersonal conflicts and lack of effort that thwarts team performance (Grant, 2008).

With steady team cooperation, team members are likely to effectively integrate each member’s efforts, create positive synergy among members, and produce

superior team performance (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000; Mathieu et al., 2008). Furthermore, the cooperative climate reinforces mutual support and good working relationships among team members (Beersma et al., 2009). In this regard, members are likely to exert extra effort to help others and to voice suggestions for improving the collective good (Grant & Mayer, 2009; Morrison, 2011), thereby encouraging more OCBs within the team. In addition, team cooperation serves to reduce team voluntary turnover, as, according to turnover literature, a cooperative and supportive work environment helps to prevent a team from losing its members (Bartunek, Huang, & Walsh, 2008; Heavey, Holwerda, & Hausknecht, 2013; Nyberg & Ployhart, 2013). When team members effectively cooperate with others they are likely to perceive their team-work environment favorably, which reduces the chances that they will quit their teams.

Team Viability as a Mediator

In addition to its role in promoting task-related team cooperation, team prosocial motivation promotes team effectiveness through building stronger emotional ties within the team and enhancing team members' affect regarding the team, or team viability. Team viability, or team members' satisfaction with team experiences and their intention to continue membership on the team, has long been seen as a key condition for effective team processes and sustained success (Bell & Marentette, 2011; Hackman, 1987; Sundstrom, De Meuse, & Futrell, 1990). Team viability is likely to be enhanced by team prosocial motivation. This is because prosocially motivated team members care about providing advantages to all beneficiaries of their work, including their teammates (Grant et al., 2007), which helps strengthen their interpersonal bonding—a key for promoting team viability (Barrick, Stewart, Neubert, & Mount, 1998). Specifically, in teams where most members value making a prosocial contribution, team members are benefactors and beneficiaries at the same time, in such a way that members work together to produce high-quality products and services to help other people, while simultaneously receiving help from and providing help to their fellow teammates. As a result, members are more likely to feel moved, inspired, and elevated by each other, which reinforces their interpersonal ties (Algoe & Haidt, 2009; De Dreu, Weingart, & Kwon, 2000; Grant & Patil, 2012), thereby enhancing team viability (Hackman, 1987). Indeed, as Balkundi and Harrison (2006) found in

their meta-analysis, teams with denser networks of expressive ties in which members have stronger emotional relationships demonstrate higher team viability.

A related theoretical reason for why team prosocial motivation positively influences team viability is that it highlights shared group membership and boosts members' affiliation with the team's goals (De Dreu et al., 2000). That is, within prosocially motivated teams, team members share the same other-oriented values and have a common purpose of working toward contributing to the greater good. As social categorization theory (Turner, 1987) and subsequent empirical results suggest, team members with similar work values are likely to feel committed to and identify with their teams (Kirkman & Rosen, 1999; Van der Vegt, Van de Vliert, & Oosterhof, 2003; Van Dyne, Cummings, & Parks, 1995). Thus, prosocially motivated team members are more likely to be affiliated with and committed to their collective missions and goals, which improves the quality of their team experience and increases team viability (Aubé & Rousseau, 2005).

We thus propose that prosocially motivated teams are more likely to have higher levels of team viability, which in turn leads to more effective team outcomes. The strong emotional ties and bonding precipitated by team viability serve to motivate team members to work hard for their teams, and ultimately results in higher team-performance levels (Bezrukova, Jehn, Zanutto, & Thatcher, 2009; Kozlowski, Gully, Nason, & Smith, 1999; Van der Vegt & Bunderson, 2005) than evidenced in teams with lower team viability. In addition, team viability is a long-term-oriented construct as it focuses on a team's continuous and sustained effectiveness (Bell & Marentette, 2011). With a common fate and future in mind, team members are more likely to exert extra efforts to assist the team and the organization to build long-term success, and demonstrate more team OCB. Furthermore, strong interpersonal ties increase the desirability of staying on the team (Allen, 2006; Hom & Xiao, 2011; Hulin, Roznowski, & Hachiya, 1985; Jiang, Liu, McKay, Lee, & Mitchell, 2012; Lee, Mitchell, Sablinski, Burton, & Holtom, 2004) and thus reduce the number of team members that voluntarily leave the team (Heavey et al., 2013; Russell, 2013).

Hypothesis 1: Team prosocial motivation is indirectly and positively related to (a) team performance and (b) team OCB, and negatively related to (c) team voluntary turnover via team cooperation.

Hypothesis 2: Team prosocial motivation is indirectly and positively related to (a) team performance and (b) team OCB, and negatively related to (c) team voluntary turnover via team viability.

The Moderating Role of Task Interdependence

While team prosocial motivation provides team members with the *willingness* to work effectively with each other to produce better outputs to benefit more people, we further contend that team context influences the *opportunity* to do so in their work. Team structure that entails coordination requirements may offer such opportunities for team members to work together to realize their prosocial purposes (Grant & Parker, 2009; Kozlowski et al., 1999). A critical teamwork characteristic that may alter the impact of team prosocial motivation on team processes is task interdependence, or the degree to which team members' tasks require them to coordinate activities and exchange information with each other in order to accomplish their goals (Kiggundu, 1983; Shea & Guzzo, 1987; Wageman, 1995). When task interdependence is high, team members need to coordinate closely with each other to accomplish tasks, whereas when task interdependence is low, individual members work more independently from each other (Van der Vegt & Janssen, 2003).

According to the motivated information processing perspective (De Dreu & Carnevale, 2003), task interdependence provides team members with opportunities to better share and process information, more accurately make collective decisions, and more effectively and smoothly work with each other (De Dreu, 2007). Thus, we contend that task interdependence amplifies the positive impact of team prosocial motivation on team cooperation and team viability. Specifically, with higher task interdependence, team members may find ample opportunities to work together to realize their common purpose—benefiting others via their work output, as task interdependence connects team members together and necessitates frequent interactions, communications, and information sharing among team members (Kozlowski et al., 1999; Thompson, 1967). In this way, high task interdependence serves to trigger positive synergy, in which all members' inputs are effectively utilized and integrated. Task interdependence also serves to enhance team members' felt responsibility of others' work outcomes (Kiggundu, 1983; Pearce & Gregersen, 1991) and helps to effectively incorporate each other's differentiated ideas, skills, and knowledge (Fragale, 2006; Van der Vegt & Janssen, 2003; Van der Vegt &

Van de Vliert, 2005) to produce high-quality output to benefit others. Thus, when team tasks require high interdependence, prosocially motivated team members are not only willing, but are also able, to cooperate effectively with each other to work for the welfare of others. Furthermore, task interdependence strengthens the emotional ties among prosocially motivated members by facilitating the coherence and interconnectivity among team members (Morgeson & Hofmann, 1999). When task interdependence is high, members are more likely to spend time to understand each other's work and to translate their collective prosocial desire into reality through their collective efforts, which develops stronger interpersonal ties (Johnson & Johnson, 1989; Wageman & Gordon, 2005), increases their satisfaction with the teamwork (Shaw, Duffy, & Stark, 2000; Van der Vegt, Emans, & Van de Vliert, 2001), and enhances team viability.

Conversely, when task interdependence is low, even when team members are willing to work hard to produce quality products and services to benefit others, they are not provided with a platform for working closely to share information and create synergy, resulting in less team cooperation. Additionally, with low levels of task interdependence, team members are completing their portions of the work without the need to frequently interact with other team members (Saavedra, Earley, & Van Dyne, 1993). As a result, prosocially motivated team members may feel frustrated that they are unable to connect with other teammates to make a bigger contribution to the welfare of others, and may experience disenchantment with the team, which lowers team viability (Balkundi, Barsness, & Michael, 2009).

Taken together, integrating the above arguments with Hypotheses 1 and 2, we propose that task interdependence strengthens the indirect effects of team prosocial motivation on team effective outcomes via team cooperation and team viability. Specifically, when task interdependence is high, prosocially motivated teams are not only willing, but also have the opportunity to create frequent interactions and strong interpersonal ties. This stimulates them to produce high levels of team cooperation and team viability, which in turn help to generate high-quality team output, encourage more team OCB, and reduce voluntary turnover.

Hypothesis 3. Task interdependence moderates the indirect effects of team prosocial motivation on (a) team performance, (b) team OCB, and (c) team voluntary turnover via team cooperation,

such that these relationships are stronger when task interdependence is high than when task interdependence is low.

Hypothesis 4. Task interdependence moderates the indirect effects of team prosocial motivation on (a) team performance, (b) team OCB, and (c) team voluntary turnover via team viability, such that these relationships are stronger when task interdependence is high than when task interdependence is low.

Overview of the Current Research

To test the overall theoretical model, we designed two studies. In Study 1, we tested the overall model with three-source field data collected at four time points from diverse U.S. and Chinese teams. To constructively replicate the test of the overall model and to assess causality, we conducted a laboratory experiment (Study 2) in which we manipulated the levels of team prosocial motivation and task interdependence.

STUDY 1 METHODS

Sample and Procedures

We sampled traditional work teams with full-time employees from three companies in the U.S. and three companies in China representing diverse industries (e.g., construction, information technology, and legal services) and job types (e.g., marketing, accounting, and customer services) to increase the external validity of the proposed relationships. All data were collected on-site during paid working hours by an author or a research assistant. Team member and manager surveys and human resource records were collected at four time points to minimize common method bias. At Time 1 (T1), out of 560 members in 101 teams invited to participate, 474 team members in 85 teams completed surveys containing questions on team prosocial motivation, task interdependence, and demographic information. At T2, one month after T1, a total of 380 members representing 78 teams provided their perceptions of team cooperation and viability. At T3, three months after T1, 24 out of 35 upper-level managers rated the performance and OCB of teams under their jurisdiction. Upper-level managers, rather than team leaders, rated team performance to reduce potential social desirability bias (Hu & Liden, 2011). Upper-level managers had sufficient interactions with their teams and leaders to rate their performance and OCB. At T4, a year after T1, the companies provided turnover records for all of

the participating teams. Teams with lower than 60% within-team response rate, which was established as the minimum requirement for meaningful aggregation of data to the team level (Timmerman, 2005), or with no matched upper-level managers' data were excluded. Complete data across the four time periods were available for 67 teams, containing 310 individual members (55.36% response rate) and 24 upper-level managers (68.57%). In the team member sample, 52% were males, the average age was 29 years, 94% had obtained a college level degree or above, and the average tenure with the organization and team was 3.53 and 2.86 years, respectively. Team size ranged from two to 11, with a mean of five.

Measures

Unless otherwise noted, 1 = strongly disagree to 7 = strongly agree scales were used.

Team prosocial motivation. At T1, team members used Grant's (2008) measure, modified to capture the team level. Employing Chan's (1998) compositional perspective, team prosocial motivation reflects a *referent-shift* model that measures the team-level shared belief regarding team members' desire to work for the benefit of others. Thus, we changed the wording from "I/me" to "We/us" to reflect team members' shared prosocial beliefs, such as "It is important to our team members to do good for others through our work" ($\alpha = .88$). The appropriateness of aggregating the responses from individual team members to the team level was supported by an inter-rater agreement $\gamma_{wg(j)}$ mean value of .96, median value of .97, minimum value of .78, maximum value of 1 (James, Demaree, & Wolf, 1984), and the intraclass correlation (ICC) values (ICC1 = .24; ICC2 = .59).

Task interdependence. At T1, team members also provided ratings on their team's task interdependence via Pearce and Gregersen's (1991) five-item scale. A sample item is "Members in our team frequently must coordinate our efforts with each other" ($\alpha = .77$). The aggregation of individual team members' perceptions of task interdependence at the team level was justified via the satisfactory $\gamma_{wg(j)}$ mean value of .91, median value of .94, minimum value of .52, maximum value of 1, and comparable ICC1 value of .21, and ICC2 value of .55.

Team cooperation. At T2, a month after T1, team members were asked to provide ratings on their perceptions of team cooperation using Chatman and Flynn's (2001) five-item scale. An example item is "There is a high level of cooperation between team

members" ($\alpha = .91$). The aggregation of individual members' responses to the team level was supported by the acceptable $\gamma_{wg(j)}$ mean value of .89, median value of .97, minimum value of .57, maximum value of 1; ICC1 value of .47, and ICC2 value of .80.

Team viability. At T2, team members also provided ratings on their team viability perceptions using Barrick and colleagues' (1998) 12-item scale. A sample item is "I believe that my personal well-being has been improved as a result of participating in this team" ($\alpha = .91$). The aggregation statistics showed satisfactory results: $\gamma_{wg(j)}$ mean value of .95, median value of .97, minimum value of .71, maximum value of 1; ICC1 of .51, and ICC2 of .82, supporting the appropriateness of aggregating individual members' responses.

Team performance. At T3, upper-level managers rated the performance of teams they oversee with a four-item scale modified to the team level (Liden, Wayne, & Stilwell, 1993; e.g., "rate the overall level of performance that you observe for this team," 1 = unacceptable to 7 = outstanding; $\alpha = .74$).

Team OCB. At T3, managers also evaluated team OCB using Ehrhart's (2004) five-item scale (e.g., "Team members help out others who have been absent and return to work," $\alpha = .92$).

Team voluntary turnover. At T4, a year after T1, the participating companies informed us that 24 people quit their jobs voluntarily, five were fired, and one passed away. Team voluntary turnover (number of members within a team quitting voluntarily/team size) ranged from 0 to 50%. Because turnover data are positively skewed, which violates the assumption of normal distribution in the linear models, we used the square root of turnover raw data to represent team voluntary turnover (e.g., Hofmann & Morgeson, 1999; Hofmann & Stetzer, 1996).

Control variables. We controlled for country (dummy coded: 1 = China, 2 = U.S.) due to the potential effect of cultural differences (Tsui, 2007). Organizational membership (five dummy-coded variables) was also controlled due to the potential influences of pre-existing organization-level cultural or policy-related factors (Grant, 2012). Average team tenure was controlled, because time working together may be positively related to team effectiveness (Schaubroeck, Lam, & Cha, 2007). Team size was also controlled, because larger teams tend to have more cognitive resources to reach higher levels of team performance (Haleblian & Finkelstein, 1993).

Analytical Strategy

Because every upper-level manager rated multiple teams ($M = 3$), these ratings may lack independence (Bliese, 2002). To account for this independence and to avoid inflated effect sizes and spurious findings, we tested all hypotheses using multilevel structural equation modeling (MSEM) with Mplus (Muthén & Muthén, 2012). MSEM is able to capture the nested nature of the data, examine multiple mediated and moderated relationships simultaneously, and assess the within and between effects separately to provide more accurate estimations of the proposed relationships (Preacher, Zhang, & Zyphur, 2011; Preacher, Zyphur, & Zhang, 2010). We followed Preacher, Rucker, and Hayes's (2007) method to estimate the moderated mediation model. All of the study variables except country source and organizational membership were grand mean centered, and the interaction term was created by multiplying the centered variables of team prosocial motivation and task interdependence (Aiken & West, 1991). The indirect effects (mediation) and conditional indirect effects (moderated mediation) require the calculation of compound coefficients, which are not normally distributed. We handled this with the bootstrapping-based approach via R program with 20,000 iterations to calculate bias-corrected confidence intervals (CI) to estimate indirect effects (Edwards & Lambert, 2007; Liu, Zhang, & Wang, 2012; Preacher & Selig, 2012; Shrout & Bolger, 2002).

STUDY 1: RESULTS AND DISCUSSION

Confirmatory Factor Analysis

We first sought to examine the discriminant validity of the study measures. Two separate sets of confirmatory factor analyses (CFA) were conducted, because measures were provided by different sets of respondents (i.e., team members and upper-level managers) and common-method bias most likely occurs among measures rated by the same source. Supporting the distinctiveness of the measures (i.e., team prosocial motivation, task interdependence, team cooperation, and team viability) rated by team members, the results showed that the four-factor model (i.e., the four employee-rated variables as four separate factors) provided a reasonable fit to the data ($\chi^2(294) = 1263.94$, $p < .001$, CFA = .95, NFI = .93, RMSEA = .10) (Hair, Anderson, Tatham, & Black, 1998; Hu & Bentler, 1999) and a significantly better fit than a two-factor

model (i.e., team prosocial motivation and task interdependence measured at T1 combined as one factor and team cooperation and team viability at T2 as the second factor) ($\Delta\chi^2(4) = 1624.74, p < .001$; CFA = .90, NFI = .89, RMSEA = .17), and a one-factor model (i.e., the four variables as a combined factor) ($\Delta\chi^2(5) = 2347.80, p < .001$; CFA = .88, NFI = .86, RMSEA = .19). In testing whether the two variables (i.e., team performance and team OCB) evaluated by upper-level managers are distinct from each other, the results revealed that the two-factor model (i.e., team performance and team OCB as two separate models) offered an acceptable fit to the data ($\chi^2(26) = 42.20, p < .05$, CFA = .98, NFI = .94, RMSEA = .10) and yielded a significantly better fit than the one-factor model (i.e., team performance and team OCB as a combined factor) ($\Delta\chi^2(1) = 53.51, p < .001$; CFA = .91, NFI = .88; RMSEA = .20). Thus, the results provided support for the discriminant validity of measures collected from both team members and upper-level managers.

Mediated Relationships

Table 1 shows the descriptive statistics, reliabilities, and correlations among Study 1 variables. As shown in Figure 2, with all mediation paths described in Hypotheses 1 and 2 included, team prosocial motivation (T1) was positively related to team cooperation (T2; $\beta = .56, p < .001$), which in turn was positively associated with team performance ($\beta = .49, p < .001$) and team OCB ($\beta = .24, p < .05$) rated by upper-level managers at T3, but not significantly related to team voluntary turnover obtained at T4 ($\beta = -.09, ns$). Team prosocial motivation was also shown to be positively related to team viability (T2; $\beta = .59, p < .001$), which was positively related to team performance at T3 ($\beta = .24, p < .05$) and negatively related to team voluntary turnover at T4 ($\beta = -.59, p < .001$), but not significantly related to team OCB ($\beta = .13, ns$). In addition, the main effects of team prosocial motivation on team performance ($\beta = .23, ns$) and team voluntary turnover ($\beta = -.00, ns$) were not significant, but team prosocial motivation was positively related to team OCB ($\beta = .46, p < .01$). Thus, team cooperation fully mediated the relationship between team prosocial motivation and team performance and partially mediated the relationship between team prosocial motivation and team OCB. Team viability also fully mediated the relationships between team prosocial motivation and team performance and voluntary turnover (Baron & Kenny,

1986). Among the control variables, country source was positively related to team performance ($\beta = .34, p < .01$) and membership with organization 3 was negatively related to team turnover ($\beta = -.22, p < .01$). Using 20,000 resamples via R program (Preacher & Selig, 2012), we found (Table 2) that the indirect effects of team prosocial motivation on team performance ($\beta = .27$, bias-corrected 95% CI = [.07, .51], excluding zero) and team OCB ($\beta = .13$, bias-corrected 95% CI = [.00, .29], excluding zero) via team cooperation were significant. However, the indirect effect of team prosocial motivation on team voluntary turnover via team cooperation was not significant ($\beta = -.05$, bias-corrected 95% CI = [-.14, .03], including zero). The indirect effects of team prosocial motivation on team performance ($\beta = .14$, bias-corrected 95% CI = [.01, .28], excluding zero) and team voluntary turnover ($\beta = -.35$, bias-corrected 95% CI = [-.49, -.23], excluding zero) via team viability were supported, but the indirect effect on team OCB via team viability was not significant ($\beta = .08$, bias-corrected 95% CI = [-.15, .31], including zero). Thus, Hypotheses 1a, 2a, and 2c were fully supported and Hypothesis 1b was partially supported, but Hypotheses 1c and 2b were not supported.

Moderation of the Mediated Relationships

Hypotheses 3 and 4 describe two first-stage moderated mediation models (Edwards & Lambert, 2007), where it is proposed that the moderator (task interdependence) interacts with the independent variable (team prosocial motivation) in relating to the mediator (team processes), which in turn relates to the outcome variables (team effectiveness). Results for these full moderated mediation models are revealed in Figure 3: Team prosocial motivation and task interdependence interacted in relation to team cooperation ($\beta = .35, p < .01$), which in turn was positively related to team performance ($\beta = .30, p < .05$) and team OCB ($\beta = .24, p < .05$), but not team voluntary turnover ($\beta = -.10, ns$). The interaction between team prosocial motivation and task interdependence was significant for team viability ($\beta = .20, p < .05$), which in turn was related to team voluntary turnover ($\beta = -.60, p < .001$), but not team performance ($\beta = .19, ns$) or team OCB ($\beta = .10, ns$). Country source was positively related to team performance ($\beta = .34, p = .01$) and membership with organization 3 was negatively related to team turnover ($\beta = -.53, p < .001$). Additionally, the R^2 test results demonstrated that the inclusion of

TABLE 1
Study 1: Descriptive Statistics and Correlations^a

	Mean	SD	1	2	3	4	5	6	7	8
1. Country source	1.49	.50	—							
2. Organization 1	.14	.35	-.40**	—						
3. Organization 2	.17	.38	-.45**	-.18	—					
4. Organization 3	.20	.40	-.49**	-.20	-.22	—				
5. Organization 4	.11	.32	.36**	-.14	-.16	-.18	—			
6. Organization 5	.13	.34	.39**	-.15	-.17	-.19	-.14	—		
7. Organization 6	.23	.42	.55**	-.22	-.24*	-.27*	-.19	-.21	—	
8. Team mean tenure	2.86	1.80	.38**	-.30*	-.23	.00	.58**	.18	-.17	—
9. Team size	4.82	2.01	-.19	-.04	.12	.17	.08	-.16	-.14	-.08
10. Team prosocial motivation (T1T)	5.87	.64	-.11	-.02	.09	.08	.06	-.10	-.05	.10
11. Task interdependence (T1T)	4.88	1.15	.17	-.11	-.12	.00	.04	.03	.03	.15
12. Team cooperation (T2T)	5.60	.84	-.05	.02	.07	-.02	.13	-.10	-.01	-.02
13. Team viability (T2T)	5.34	.96	-.07	.00	.09	.01	.05	-.14	.01	-.01
14. Team performance (T3M)	5.35	.95	.32**	-.05	-.23	-.15	.29*	.00	.17	.28*
15. Team OCB (T3M)	5.84	.77	.02	.00	.11	-.13	.18	-.02	-.07	.12
16. Team voluntary turnover (T4HR)	.08	.14	.08	-.03	-.20	.12	-.14	.09	.04	-.01

^a $N = 67$ teams. T1 = Time 1; T2 = Time 2, one month after Time 1; T3 = Time 3, three months after Time 1; T4 = Time 4, one year after Time 1; T = rated by team members; M = rated by upper-level managers; HR = archival data from HR. For country source, 1 = China, 2 = United States. Organizations 1 to 3 were companies located in China and organizations 4 to 6 were companies located in the United States. OCB = organizational citizenship behavior.

* $p < .05$

** $p < .01$

the interaction term (task interdependence * team prosocial motivation) account for 7% additional variance in team cooperation ($\Delta R^2 = .07$) and 4% in team viability ($\Delta R^2 = .04$), which suggests that task interdependence influenced the first stage of the

mediation. As shown in Table 2, the indirect effect of team prosocial motivation on team performance via team cooperation was stronger under high ($\beta = .26$, $p < .05$) compared to low ($\beta = .02$, ns) task interdependence. Supporting Hypothesis 3a,

Study 1: Descriptive Statistics and Correlations^a

	9	10	11	12	13	14	15	16
1. Country source								
2. Organization 1								
3. Organization 2								
4. Organization 3								
5. Organization 4								
6. Organization 5								
7. Organization 6								
8. Team mean tenure								
9. Team size	—							
10. Team prosocial motivation (T1T)	-.10	(.88)						
11. Task interdependence (T1T)	.06	.19	(.77)					
12. Team cooperation (T2T)	-.08	.64*	.25*	(.91)				
13. Team viability (T2T)	-.12	.59*	.37*	.47*	(.91)			
14. Team performance (T3M)	-.16	.47*	.21	.58*	.50*	(.74)		
15. Team OCB (T3M)	-.03	.59*	.09	.63*	.63*	.64*	(.92)	
16. Team voluntary turnover (T4HR)	.03	-.60*	-.20	-.57*	-.54*	-.54*	-.60*	—

^a $N = 67$ teams. Coefficient alphas are on the diagonal in parentheses. T1 = Time 1; T2 = Time 2, 1 months after Time 1; T3 = Time 3, 3 months after Time 1; T4 = Time 4, a year after Time 1; T = rated by team members; M = rated by upper-level managers; HR = archival data from HR. For country source, 1 = China, 2 = U.S.. Organizations 1 to 3 were companies located in China and organizations 4 to 6 were companies located in the U.S.. OCB = organizational citizenship behavior.

* $p < .01$

TABLE 2
Study 1: Summary of Indirect Effects and Conditional Indirect Effects^a

	Team Performance	Team OCB	Team Voluntary Turnover
Mediator: Team Cooperation			
Mediation	.27*	.13*	-.05
Moderated Mediation:			
High task interdependence	.26*	.21*	-.09
Low task interdependence	.02	.02	-.01
Difference	.24*	.19*	-.08
Mediator: Team Viability			
Mediation	.14*	.08	-.35*
Moderated Mediation:			
High task interdependence	.15*	.08	-.47**
Low task interdependence	.06	.03	-.20*
Difference	.09	.05	-.27*

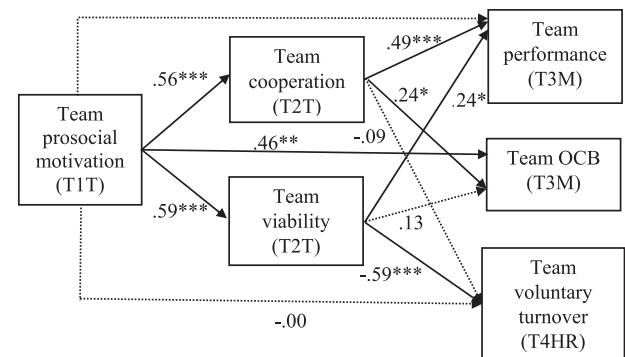
^a The indirect effect and conditional indirect effect tests were based on 20,000 parametric resamples.

* $p < .05$

** $p < .01$

employing the bootstrapping approach in R program (Liu et al., 2012), the difference in the indirect effects was significant ($\beta_{diff} = .24$, bias-corrected 95% CI = [.00, .58], excluding zero). Supporting Hypothesis 3b, the indirect effect of team prosocial motivation on team OCB via team cooperation was stronger when task interdependence was high ($\beta = .21$, $p < .05$) compared to when it was low ($\beta = .02$, ns), and the difference in these indirect effects was significant ($\beta_{diff} = .19$, bias-corrected 95% CI = [.04, .40], excluding zero). However, task interdependence did not moderate the indirect effect of team prosocial motivation on team voluntary turnover via team cooperation ($\beta_{diff} = -.08$, bias-corrected 95% CI = [-.27, .07], including zero); thus, Hypothesis 3c is not supported. Hypotheses 4a and 4b were not supported either (Table 2), as task interdependence did not moderate the indirect effects of team prosocial motivation on team performance ($\beta_{diff} = .09$, bias-corrected 95% CI = [-.08, .34], including zero) and team OCB ($\beta_{diff} = .05$, bias-corrected 95% CI = [-.08, .21], including zero) via team viability. Supporting Hypothesis 4c, the indirect effect of team prosocial motivation on team voluntary turnover via team viability was shown to be stronger under high ($\beta = -.47$, $p < .01$) compared to low ($\beta = -.20$, $p < .05$) task interdependence, and the difference in these indirect effects was significant ($\beta_{diff} = -.27$, bias-corrected 95% CI = [-.57, -.00], excluding zero). Following the procedure outlined by Edwards and Lambert (2007),

FIGURE 2
Study 1: Structural Model Results for the Indirect Effects of Team Prosocial Motivation on Team Effectiveness^a



^a $N = 67$. T1 = Time 1; T2 = Time 2, one month after Time 1; T3 = Time 3, three months after Time 1; T4 = Time 4, one year after Time 1; T = rated by team members; M = rated by upper-level managers; HR = archival data from HR. Solid lines indicate significant relationships and dashed lines depict nonsignificant relationships.

Standardized path estimates are reported. For the ease of readability, we did not present the coefficients of the paths from the control variables (i.e., country source, organizational membership or five dummy-coded variables, team size, and team tenure) in the model. Among the control variables, country source was positively related to team performance ($\beta = .34$, $p < .01$) and membership with organization 3 was negatively related to team turnover ($\beta = -.22$, $p < .01$).

The explained variance was $R^2 = .43$ for team cooperation, $R^2 = .47$ for team viability, $R^2 = .54$ for team performance, $R^2 = .58$ for team OCB, and $R^2 = .62$ for team voluntary turnover.

* $p < .05$

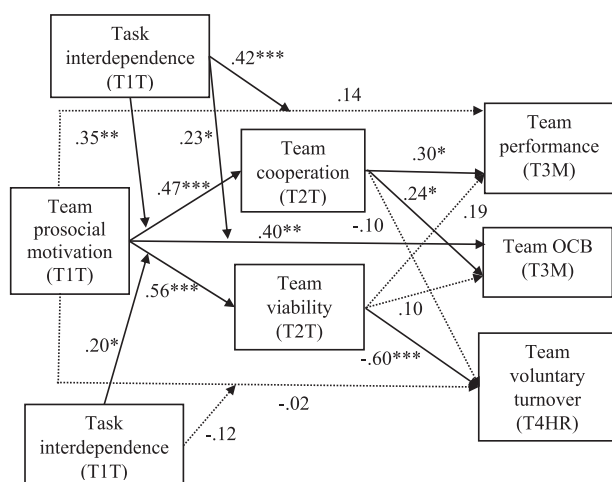
** $p < .01$

*** $p < .001$

we plotted the indirect effects of team prosocial motivation on team outcomes through team processes at higher (1 standard deviation (SD) higher) and lower (1SD lower) levels of task interdependence in Figures 4, 5, and 6.

Although the results provided major support for the proposed indirect effects and conditional indirect effects, they have several limitations. First, as a time-lagged field study, causality of the study relationships cannot be determined, making reverse-causality a distinct possibility. For instance, a prior high team performance record may enhance team members' confidence to succeed and encourage them to continue working hard to benefit others through their work, thereby enhancing team prosocial motivation. Likewise, from the perspectives of self-perception (Bem, 1967) and cognitive dissonance (Festinger, 1957), team members' perceptions

FIGURE 3
Study 1: Structural Model Results for the Overall Moderated Mediation Model^a



^a $N = 67$. Standardized path estimates are reported. Solid lines indicate significant relationships and dashed lines depict non-significant relationships. For the ease of readability, we did not present the coefficients of the paths from the control variables (i.e., country source, organizational membership or five dummy-coded variables, team size, and team tenure) in the model. Among the control variables, country source was positively related to team performance ($\beta = .34, p = .01$) and organization 3 was negatively related to team turnover ($\beta = -.53, p < .001$). The two boxes of task interdependence refer to the same measure; it has been displayed in two separate positions for better presentation of the proposed moderation.

The explained variance was $R^2 = .51$ for team cooperation, $R^2 = .56$ for team viability, $R^2 = .61$ for team performance, $R^2 = .64$ for team OCB, and $R^2 = .64$ for team voluntary turnover.

* $p < .05$

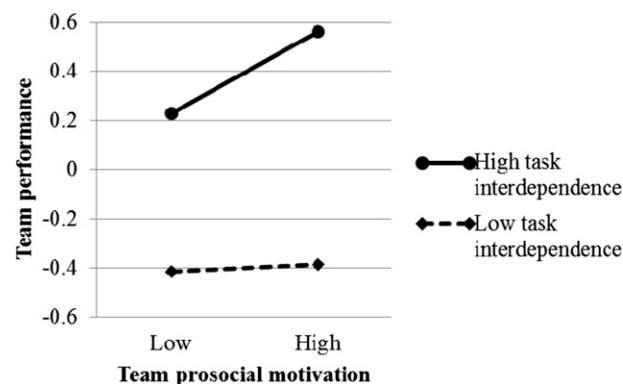
** $p < .01$

*** $p < .001$

and attitudes are aligned with their behaviors. Thus, when team members collectively engage in citizenship behaviors that help others, they are likely to be prosocially motivated after observing their own behaviors. Meanwhile, low team voluntary turnover helps to form team cohesion, and strengthen team members' interactions and increase their commitment to the team's goals. This positive teamwork environment may further motivate team members to work toward benefiting others.

Second, pre-existing perceptions and organizational factors may have driven the results (Grant, 2012). For example, it is possible that when teams form, members with similar prosocial motivation values are more likely to be attracted and retained in their teams (Schneider, 1987). Organization-level factors, such as organizational culture or leadership,

FIGURE 4
Study 1: The Conditional Indirect Effects of Team Prosocial Motivation on Team Performance via Team Cooperation at High and Low Levels of Task Interdependence



may be important omitted variables that influence team members' prosocial motivation and team effective outcomes. Thus, the use of existing work teams may obscure the effects of some variables that influence the results of the hypothesized relationships (Antonakis, Bendahan, Jacquart, & Lalive, 2010).

Third, although the primary focus of the study is on the linkage between team prosocial motivation and team effectiveness through team processes, we did not control for the potential impacts of individual members' own prosocial motivation or other forms of motivation, such as intrinsic motivation, on team outcomes. It is important to consider that although teams develop a shared prosocial motivation state, individual team members may have developed their own prosocial motivation and other motivational forces that may have a direct impact on their behaviors (Grant et al., 2007). To address these limitations in Study 1, we designed a lab experiment (Study 2) to replicate the field study findings and assess causality.

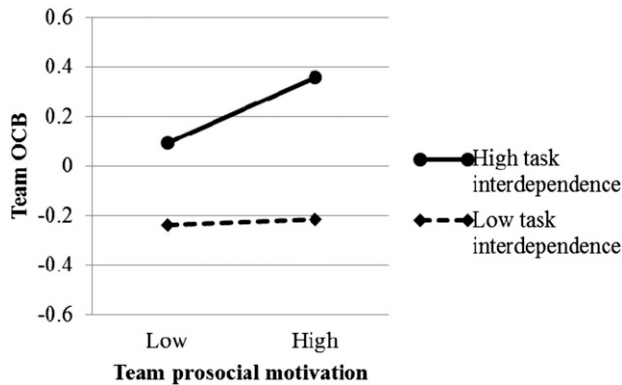
STUDY 2 METHODS

Sample and Procedures

A total of 496 undergraduate business students (mean age = 20 years, 60% male) from a Midwestern U.S. university participated in the lab study in exchange for extra course credit. We randomly assigned participants into 124 four-person groups and divided these groups evenly into four conditions, in a fully crossed, 2 (high vs. low team prosocial motivation) \times 2 (high vs. low task interdependence) factorial design ($n = 31$ groups

FIGURE 5

Study 1: The Conditional Indirect Effects of Team Prosocial Motivation on Team OCB via Team Cooperation at High and Low Levels of Task Interdependence



per condition). In all conditions, participants were told that they were members of a consulting team and were asked to read a message that explained the background of the consulting project, as follows:

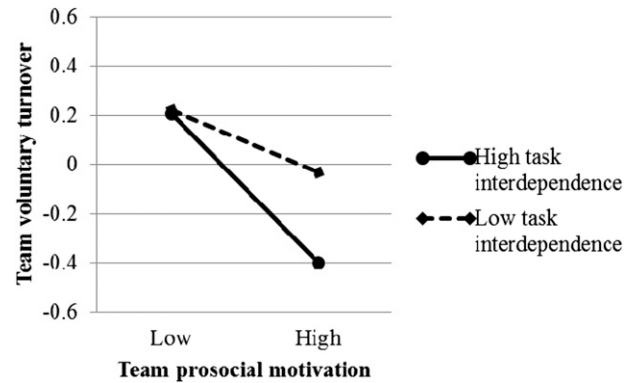
Gina's Books is a small book retailer in the area. The store, owned and run by Gina Compton, has been in business for over 20 years and has benefited many local customers. However, compared to three years ago, the store's revenue has dropped by 70% and many people consider bookstores as a dying industry.

The message varied in its information on the team's prosocial motivation to help promote the well-being of the employees from a local struggling bookstore, and in the degree of task interdependence required in their team task across the four conditions. Specifically, in the high team prosocial motivation conditions, participants received the following message:

The store's 25 employees are really worried. They are all really anxious because they depend on having this job and many of them have a family to feed. The owner and employees could really use some help from a consulting team. Using your intelligence and knowledge, please work with your teammates as a consulting team to provide some suggestions to help the bookstore. The main objective of your consulting team should be to show your concern for the employees of the bookstore by providing suggestions that can improve the bookstore's revenues and thus protect the livelihood of each employee. By caring about the well-being of the clients, together, you can make a difference in the lives of the employees of the store.

FIGURE 6

Study 1: The Conditional Indirect Effects of Team Prosocial Motivation on Team Voluntary Turnover via Team Viability at High and Low Levels of Task Interdependence



In the low team prosocial motivation conditions, the message was:

The store has 25 employees. The store represents a substantial capital investment and it is difficult to accept such a steep drop in revenues. Using your intelligence and knowledge, please work as a consulting team to provide some suggestions to help the bookstore's owner. The main objective of your consulting team should be to provide recommendations for either revitalizing the business or developing other strategies for solving the problem. Your suggestions should be designed to maximize the owner's net worth. One primary benefit of working on the project is for your consulting team to gain a reputation which will put you in a position to get consulting contracts with larger companies in the future. This would enable your team to make more money.

In the high team task interdependence conditions, the message was as follows:

Thus, in the following 10 minutes, through discussion and brainstorming, please work closely with your teammates to develop 12–16 ideas and recommendations for helping the bookstore. After completion, please give your team output to the researchers.

In the low team task interdependence conditions, the message read as:

Thus, in the following 10 minutes, each member of the group should independently develop 3–4 ideas and recommendations for helping the bookstore. After completion, please give your team output to the researchers.

Participants were asked to work with three teammates to generate ideas for increasing the company's revenue. Videotapes of each team were viewed by independent raters to evaluate each team's cooperation and viability (e.g., Burris, 2012). After they provided their ideas, team members completed a survey that included measures of the manipulation checks and their own motivations. Following completion of the surveys, they were asked to execute a voluntary task (the OCB measure) and sign up for another lab study (measuring team voluntary turnover).

Measures

Unless otherwise noted, 1 = strongly disagree to 7 = strongly agree scales were used.

Manipulation check 1. For team prosocial motivation, Grant's (2008) measure was adapted to fit with the task context (e.g., "Our team was engaged in this consulting project because we cared about benefiting Gina's bookstore through this work"; $\alpha = .89$). Aggregation to the team level was supported ($\gamma_{wg(j)}$ mean = .94, $\gamma_{wg(j)}$ median = .97, $\gamma_{wg(j)}$ minimum = .28, $\gamma_{wg(j)}$ maximum = 1.0; ICC1 = .56, ICC2 = .84, $F = 6.19$, $p < .001$).

Manipulation check 2. For task interdependence, as in Study 1, Pearce and Gregersen's (1991) measure was used ($\alpha = .92$), and once again aggregation was supported ($\gamma_{wg(j)}$ mean = .95, $\gamma_{wg(j)}$ median = .97, $\gamma_{wg(j)}$ minimum = .63, $\gamma_{wg(j)}$ maximum = 1.0; ICC1 = .62, ICC2 = .87, $F = 7.66$, $p < .001$).

For team cooperation, two trained coders, blind to the study purposes, used Chatman and Flynn's (2001) five-item measure ($\alpha = .95$) to independently rate the teams after watching the 10-minute video tape of each. The raters paid special attention to each team's cooperation based on whether teams had dysfunctional conflicts, and the degree to which there was collaboration and information sharing among team members (inter-rater reliability = .92).

For team viability, the two coders also provided independent ratings on each team's viability using Hackman's (1988) seven-item scale (e.g., "There is a lot of unpleasantness among members in the team" (reverse-coded); $\alpha = .83$ and inter-rater reliability = .90).

For team performance, six independent experts (different than the raters who assessed team cooperation and viability), all of whom had prior management consulting or entrepreneurial experience, each rated the performance levels of an average of 41 teams, with a mixture of teams from all experimental conditions. In total, each team's output was rated by

two raters. Raters were told only that we had asked the teams to provide suggestions for a struggling local bookstore to enhance its revenue. The raters assessed the extent to which ideas generated by the team were of high quality, useful, novel, and effective ($\alpha = .96$; inter-rater reliability for rater pairs = .90).

We assessed team OCB with a direct measure in which we told the participants that Gina's Books would be grateful if the teams could make recommendations to help the bookstore increase revenues, and we told them that, if they wished, they should send their ideas directly to Gina via email (gina.compton70@yahoo.com—an address that we created for this project). We told the participants that doing so was completely voluntary. If a team sent the ideas to this email address, it was considered a form of actual team OCB (coded as 1) and if not, it was coded as 0.

For team voluntary turnover, at the end of the experiment we asked participants to sign up for another group project the following month and provided them with three options: (1) No, I am not interested in the next teamwork exercise; (2) Yes, I am interested, but I would prefer not to work in the same team; and (3) Yes, I am interested, and I would like to continue to work in the same team. Responses to this question were then transformed into the team's voluntary turnover rate by calculating: (number of option 1s + number of option 2s) / 4.

In order to identify the potential impact of individual members' own motivational forces on team processes and effectiveness on the team's prosocial motivation, we controlled for individual prosocial motivation (Grant's (2008) four-item scale, $\alpha = .95$), intrinsic motivation (Grant & Sumanth's (2009) five-item scale, $\alpha = .92$), and impression management motivation (Rioux & Penner's (2001) nine-item scale, $\alpha = .89$).

Analysis Strategy

Because of the multilevel design with substantive variables at the team level and individual-level control variables, we applied MSEM via Mplus, and the bootstrapping-based technique in R program using 20,000 iterations to obtain the bias-corrected 95% CIs to test indirect and conditional indirect effects.

STUDY 2: RESULTS AND DISCUSSION

Cell (i.e., low/high team prosocial motivation \times low/high task interdependence) means and standard

TABLE 3
Study 2: Means and Standard Deviations by Condition for Measured Variables^a

Conditions	Team Performance		Team OCB		Team Voluntary Turnover		Team Cooperation		Team Viability	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
High team prosocial motivation, high task interdependence	5.90	0.69	0.74	0.44	0.15	0.21	6.57	0.40	6.28	0.86
High team prosocial motivation, low task interdependence	3.15	0.99	0.16	0.37	0.36	0.18	5.04	1.31	4.73	1.26
Low team prosocial motivation, high task interdependence	4.42	0.69	0.39	0.50	0.46	0.21	4.74	1.06	4.65	1.27
Low team prosocial motivation, low task interdependence	2.88	1.23	0.03	0.18	0.87	0.18	2.95	1.36	4.29	1.54

^a $N = 31$ for each condition.

deviations for all study variables are shown in Table 3.

Manipulation Checks

Team members rated their prosocial motivation higher in high ($M = 5.21$, $SD = .69$) than in low ($M = 3.89$, $SD = .91$, $F [1,122] = 42.34$, $p < .001$) team prosocial motivation conditions. Furthermore, teams rated their task interdependence higher in the high ($M = 5.70$, $SD = .64$) than in the low ($M = 4.04$, $SD = .89$, $F [1,122] = 37.72$, $p < .001$) task interdependence conditions. In addition, the prosocial motivation manipulation was not related to the perceived task interdependence rating ($r = .06$, ns) and the task interdependence manipulation was not related to the prosocial motivation rating ($r = .05$, ns), indicating that neither manipulation biased the other. Finally, the interaction of the prosocial motivation and task interdependence conditions with the manipulation checks for prosocial motivation ($F(1,120) = 3.12$, ns) and task interdependence ($F(1,120) = .68$, ns) as dependent variables were not significant. Thus, the results fully supported the efficacy of both experimental manipulations.

Hypothesis Testing

Mediated relationships. Table 4 presents the descriptive statistics and correlations among study variables. Regarding Hypotheses 1 and 2, as demonstrated in Figure 7, when all mediation paths were included, team prosocial motivation was positively related to team cooperation ($\beta = .26$, $p < .01$), which was in turn positively associated with team

performance ($\beta = .59$, $p < .001$), and team OCB ($\beta = .25$, $p < .05$), but not team voluntary turnover ($\beta = .05$, $n.s.$). Team prosocial motivation was also positively related to team viability ($\beta = .58$, $p < .001$), which was positively related to team performance ($\beta = .51$, $p < .01$) and negatively related to team voluntary turnover ($\beta = -.56$, $p < .001$), but not related to team OCB ($\beta = .04$, $n.s.$). The direct effects of team prosocial motivation on team performance ($\beta = .02$, $n.s.$) and team OCB ($\beta = .07$, $n.s.$) were not significant, but the direct effect on team voluntary turnover was significant ($\beta = -.30$, $p < .01$). Thus, team cooperation in the relationships between team prosocial motivation and team performance and OCB was considered to play a fully mediating role. In the relationship between team prosocial motivation and team performance, team viability also played a fully mediating role, while the mediation in the relationship between team prosocial motivation and team voluntary turnover was partial. Among the control variables, individual intrinsic motivation was negatively related to team voluntary turnover ($\beta = -.22$, $p < .05$). The results displayed in Table 5 provide support for the indirect effects of team prosocial motivation on team performance and team OCB via team cooperation, and on team performance and team voluntary turnover via team viability (for team cooperation as the mediator and team performance as the outcome, $\beta = .15$, bias-corrected 95% CI = [.01, .31] and for team OCB as the outcome, $\beta = .07$, bias-corrected 95% CI = [.00, .15]; for team viability as the mediator and team performance as the outcome, $\beta = .30$, bias-corrected 95% CI = [.15, .47], and for team voluntary turnover as the outcome, $\beta = -.32$, bias-corrected 95% CI = [-.49, -.19], all excluding zero). Therefore, Hypotheses 1a, 1b, and 2a were fully supported and

Hypothesis 2c was partially supported, but Hypotheses 1c and 2b were not supported.

Moderation of the mediated relationships. As illustrated in Figure 8, after controlling for the main effects, the interaction between team prosocial motivation and task interdependence was significant for team cooperation ($\beta = .31, p < .01$), which was further positively related to team performance ($\beta = .26, p < .01$) and team OCB ($\beta = .22, p < .05$), but not related to team voluntary turnover ($\beta = -.02, n.s.$). The interaction was also significant for team viability ($\beta = .29, p < .01$), which was in turn negatively related to team voluntary turnover ($\beta = -.58, p < .001$), but not related to team performance ($\beta = .16, ns$) and team OCB ($\beta = .12, n.s.$). Among the control variables, individual prosocial motivation was positively related to team OCB ($\beta = .25, p < .01$), and individual impression management motivation was negatively related to team voluntary turnover ($\beta = -.40, p < .001$). In addition, the R^2 results showed that the interaction term (task interdependence * team prosocial motivation) alone explained 8% of the variance in team cooperation ($\Delta R^2 = .08$) and 8% in team viability ($\Delta R^2 = .08$), which suggests that task interdependence influenced the first stage of the mediation. The results in Table 5 further reveal that the indirect effects of team prosocial motivation on team performance and team OCB via team cooperation differed significantly under high and low task interdependence conditions (for team performance as the outcome, $\beta_{diff} = .08$, bias-corrected 95% CI = [.01, .18]; for team OCB as the outcome, $\beta_{diff} = .07$, bias-corrected

95% CI = [.00, .16], both excluding zero). Likewise, the indirect effect of team prosocial motivation on team voluntary turnover via team viability differed significantly when task interdependence was at high versus low levels ($\beta_{diff} = -.17$, bias-corrected 95% CI = [-.30, -.06], excluding zero). Figures 9 to 11 further illustrate the nature of the conditional indirect effects. Consistent with expectations, the indirect effects of team prosocial motivation on team effectiveness were generally stronger under the high task interdependence condition. Thus, Hypotheses 3a, 3b, and 4c were supported, but Hypotheses 3c, 4a, and 4b were not.

In addition, results in Figure 8 reveal that the manipulations of team prosocial motivation and task interdependence had a significant and positive interactive effect on team performance ($\beta = .25, p < .01$) and team OCB ($\beta = .28, p < .01$), which indicates that task interdependence strengthened the direct relationships between team prosocial motivation and team performance and OCB. However, the interaction term between team prosocial motivation and task interdependence manipulations was not significantly related to team voluntary turnover ($\beta = -.15, n.s.$).

Taken together, the results suggest that after controlling for individual prosocial motivation, intrinsic motivation, and impression management motivation, team prosocial motivation was a significant indicator of team processes and subsequent team effectiveness. Furthermore, similar to Study 1's field results, task interdependence strengthened the positive indirect relationships between team prosocial motivation and team performance and team OCB via team cooperation

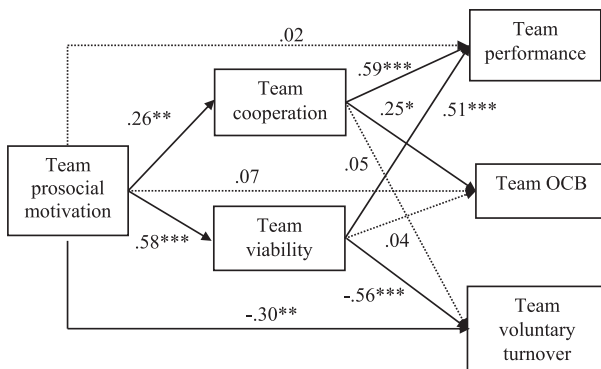
TABLE 4
Study 2: Descriptive Statistics and Correlations^a

	Mean	SD	1	2	3	4	5	6	7
Level 1:									
1 Individual prosocial motivation	4.77	.84	(.95)						
2 Individual intrinsic motivation	4.98	.87	.64**	(.92)					
3 Individual impression management motivation	3.01	.87	-.15	-.26**	(.89)				
Level 2:									
1 Team prosocial motivation	1.50	.50	—						
2 Task interdependence	1.50	.50	.00	—					
3 Team cooperation	4.82	1.69	.58**	.49**	(.95)				
4 Team viability	4.99	1.46	.36**	.33**	.52**	(.83)			
5 Team performance	4.09	1.51	.29**	.61**	.52**	.47**	(.96)		
6 Team OCB	.33	.47	.32**	.56**	.56**	.37**	.57**	—	
7 Team voluntary turnover	.46	.33	-.59**	-.52**	-.46**	-.40**	-.46**	-.47**	—

^a $N = 496$ individuals at Level 1 and 124 teams at level 2. Coefficient alphas are on the diagonal in parentheses. OCB = organizational citizenship behavior.

** $p < .01$

FIGURE 7
Study 2: Structural Model Results for the Indirect Effects of Team Prosocial Motivation on Team Effectiveness^a



^a $N = 124$. Standardized path estimates are reported. Solid lines indicate significant relationships and dashed lines depict nonsignificant relationships. For the ease of readability, we did not present the coefficients of the paths from the control variables (i.e., individual-level intrinsic motivation, prosocial motivation, and impression management motivation) in the model. Among the control variables, individual-level intrinsic motivation was negatively related to team voluntary turnover ($\beta = -.22, p < .05$).

The explained variance was $R^2 = .37$ for team cooperation, $R^2 = .33$ for team viability, $R^2 = .31$ for team performance, $R^2 = .43$ for team OCB, and $R^2 = .50$ for team voluntary turnover.

* $p < .05$

** $p < .01$

*** $p < .001$

and the negative indirect effect of team prosocial motivation on team voluntary turnover via team viability. The experimental design helps to rule out the potential influence of preexisting organizational and team factors on the proposed relationships, and strengthens the veridicality of the results. Table 6 summarizes the results of all hypothesis testing across the two studies.

GENERAL DISCUSSION

Although prior research has emphasized the importance of team motivation in building team effectiveness, a critical form of motivation, prosocial motivation, has been neglected in team contexts. The current investigation integrated theories of team effectiveness and prosocial motivation, and provided evidence from both field and experimental studies for the salutary effect of team prosocial motivation on team processes and effectiveness. Furthermore, team prosocial motivation demonstrated a stronger impact on team processes and

TABLE 5
Study 2: Summary of Indirect Effects and Conditional Indirect Effects^a

	Team Performance	Team OCB	Team Voluntary Turnover
Mediator: Team Cooperation			
Mediation	.15*	.07*	.01
Moderated Mediation:			
High task interdependence	.11*	.09*	-.01
Low task interdependence	.03	.02	.00
Difference	.08*	.07*	-.01
Mediator: Team Viability			
Mediation	.30*	.02	-.32*
Moderated Mediation:			
High task interdependence	.12*	.09	-.42**
Low task interdependence	.07	.05	-.25*
Difference	.05	.04	-.17*

^a The indirect effect and conditional indirect effect tests were based on 20,000 parametric resamples.

* $p < .05$

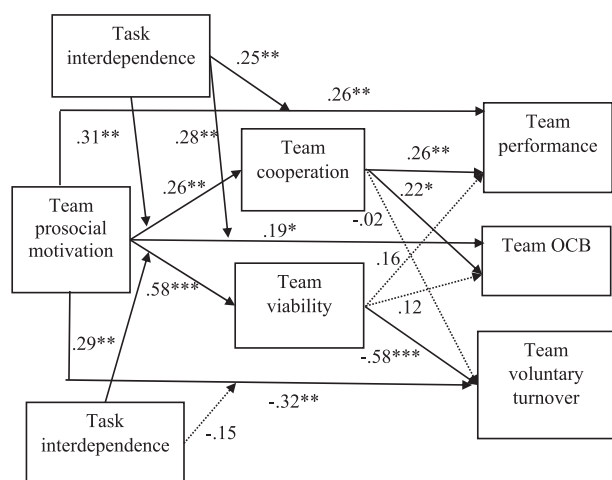
** $p < .01$

effectiveness outcomes when team tasks required higher interdependence among team members. The results provide several meaningful implications for theory and practice.

Theoretical Implications

As a key contribution, the current research demonstrates the important value of team prosocial motivation for overall team effectiveness. The extant literature on team motivation has primarily focused on team members' motivation related to the task, neglecting the fact that rather than being motivated by financial income or personal enjoyment, many people are driven by the impact that their work has on the well-being of others (De Dreu, 2006; Grant, 2008; Grant et al., 2007). The current research fills this critical gap in the literature by proposing and demonstrating the unique value of prosocial motivation to team effectiveness. We propose that in work team contexts, prosocial motivation appears to be especially salient, as teams provide individuals with direct social stimulation (Hackman, 2002) that enriches their concerns about the welfare of the recipients of their work and in turn elevates their sensitivity to the needs of their teammates, and willingness to promote effective teamwork (De Dreu, 2006; Grant, 2008). Indeed, the findings from the field study and laboratory experiment support the unique contribution of team prosocial

FIGURE 8
Study 2: Structural Model Results for the Overall Moderated Mediation Model^a



^a $N = 124$. Standardized path estimates are reported. Solid lines indicate significant relationships and dashed lines depict nonsignificant relationships. For the sake of easy readability, we did not present the coefficients of the paths from the control variables (i.e., individual-level intrinsic motivation, prosocial motivation, and impression management motivation) in the model. Among the control variables, individual-level prosocial motivation was positively related to team OCB ($\beta = .25$, $p < .01$), individual impression management motivation was negatively related to team voluntary turnover ($\beta = -.40$, $p < .001$).

The explained variance was $R^2 = .45$ for team cooperation, $R^2 = .55$ for team viability, $R^2 = .71$ for team performance, $R^2 = .62$ for team OCB, and $R^2 = .52$ for team voluntary turnover.

* $p < .05$

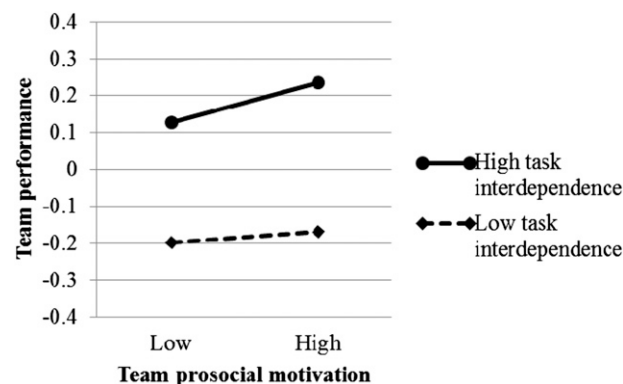
** $p < .01$

*** $p < .001$

motivation to effective team outcomes, including high team performance and OCB, and low voluntary turnover. The compelling evidence thus opens up a new direction for understanding the underlying motivational drives for team members to engage in teamwork (Chen & Kanfer, 2006), presents empirical support for De Dreu's (2006) implication that prosocial motives may be conducive to team success, and provides a valuable extension to the growing body of research on the impact of prosocial motivation on performance outcomes (Grant, 2008; Grant & Berry, 2011; Grant & Sumanth, 2009) at the team level.

Another unique feature of the current study is the application of team effectiveness theory (Hackman, 1987, 2002) as a theoretical basis to explain how team prosocial motivation influences team effectiveness through both the behavioral and emotional

FIGURE 9
Study 2: The Conditional Indirect Effects of Team Prosocial Motivation on Team Performance via Team Cooperation at High and Low Levels of Task Interdependence

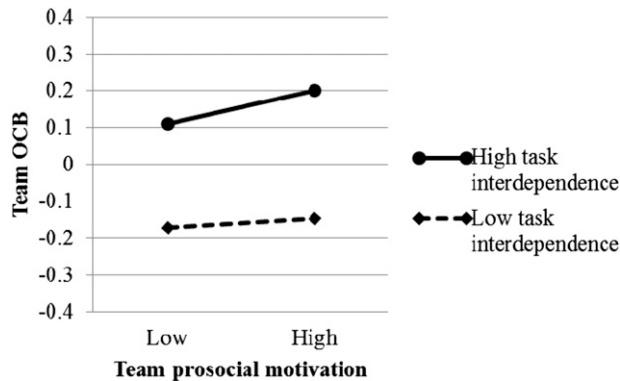


processes within the team. Prior research has discussed the antecedents of collective prosocial behaviors within the team (e.g., Li et al., 2014), while limited attention has been paid to how team members' prosocial intentions can contribute to team processes and effectiveness. Extending this line of research, and consistent with team effectiveness theory (Hackman, 1987), we proposed that driven by the desire of benefiting the welfare of others, team members are motivated to work effectively with each other to produce quality products that benefit more people, and are less likely to calculate personal loss and gains. This helps to create effective team cooperation, build strong interpersonal ties, and enhance team viability. The findings demonstrate that both team cooperation and team viability enhance the effect of team prosocial motivation on team effectiveness. Previous team studies have been criticized for lacking a more complete account of different team processes that link team-level stimuli to team effectiveness (Balkundi & Harrison, 2006; Chen & Gogus, 2008; Zaccaro, Rittman, & Marks, 2001). By assessing the mediating roles of both task-oriented and affect-based team processes in the relation between prosocial motivation and team effectiveness, the current research addresses this concern.

A further extension of the current research to the team literature is the inclusion of task interdependence as an important contingency for the influence of team prosocial motivation on team effectiveness. The results suggest that when there is a higher interdependence requirement in team

FIGURE 10

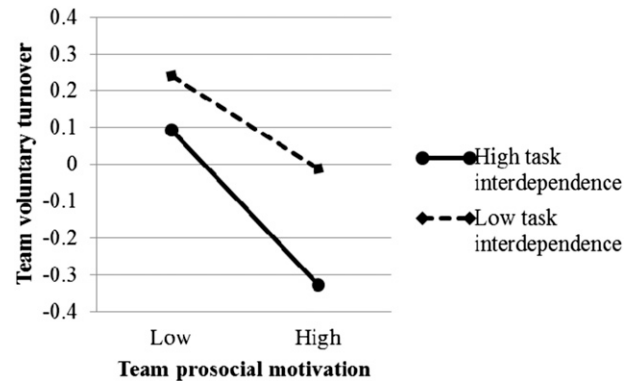
Study 2: The Conditional Indirect Effects of Team Prosocial Motivation on Team OCB via Team Cooperation at High and Low Levels of Task Interdependence



tasks, prosocially motivated team members have more opportunities to cooperate with each other, foster strong interpersonal ties, and demonstrate viability, which in turn guides them to build team effectiveness. These results answer calls to consider team structure characteristics as conditions for team motivational effects (Chen & Kanfer, 2006; Chen, Kanfer, DeShon, Mathieu, & Kozlowski, 2009). Interestingly, and not fully supporting our expectations, it was found in both the field study and the experiment that with higher task interdependence, team prosocial motivation facilitates task-driven team cooperation, but not affect-based team viability, to produce higher levels of team performance and OCB. This inconsistency suggests that the outcomes of both team in-role performance and team extra-role performance rely more on the task component than on the emotional part of the team process. A possible explanation for this is that even though team viability creates the interpersonal impetus for prosocially motivated members under highly task-interdependent teams to perform well and engage in OCBs, members in groups characterized by low task interdependence face unique obstacles. Specifically, team members under low task interdependence conditions may find it more difficult to produce quality output, help others, and make suggestions to improve team functioning because a lack of task-driven cooperation causes them to obtain insufficient knowledge of other team members' work. Also interesting is the finding that team viability, but not team cooperation, mediates the relationship between

FIGURE 11

Study 2: The Conditional Indirect Effects of Team Prosocial Motivation on Team Voluntary Turnover via Team Viability at High and Low Levels of Task Interdependence



team prosocial motivation and team voluntary turnover, and this indirect effect was moderated by task interdependence. That is, compared with the task-related processes shown here to influence team work outcomes, team members count on their affective experiences within the team to make retention decisions. This finding is consistent with traditional turnover theory, which emphasizes affect-based factors, such as job satisfaction, organizational commitment, and interpersonal ties, as key determinants of employee voluntary turnover (Hulin et al., 1985; Lee et al., 2004; Russell, 2013). The differentiated results between team cooperation and team viability are in line with Balkundi and Harrison's (2006) contention that behavior- and affect-based team processes are two different mechanisms that lead to different team outcomes. Although intuitively appealing, research in different contexts is necessary before concluding that team task processes do not influence team voluntary turnover as strongly as team affect processes, and that team affect processes are less important for team performance outcomes compared to team task processes.

Strengths, Limitations, and Future Research Directions

Unlike most previous studies on team motivation, which have relied on cross-sectional designs (Chen et al., 2009), the current investigation included a field study with three sources of multi-level data collected over four time points from diverse team

TABLE 6
Summary of Results for Studies 1 and 2^a

Hypothesized relationships	Study 1	Study 2
H1a: team prosocial motivation → team cooperation → team performance	Supported	Supported
H1b: team prosocial motivation → team cooperation → team OCB	Partially supported	Supported
H1c: team prosocial motivation → team cooperation → team voluntary turnover	Not supported	Not supported
H2a: team prosocial motivation → team viability → team performance	Supported	Supported
H2b: team prosocial motivation → team viability → team OCB	Not supported	Not supported
H2c: team prosocial motivation → team viability → team voluntary turnover	Supported	Partially supported
H3a: team prosocial motivation*task interdependence → team cooperation → team performance	Supported	Supported
H3b: team prosocial motivation*task interdependence → team cooperation → team OCB	Supported	Supported
H3c: team prosocial motivation*task interdependence → team cooperation → team voluntary turnover	Not supported	Not supported
H4a: team prosocial motivation*task interdependence → team viability → team performance	Not supported	Not supported
H4b: team prosocial motivation*task interdependence → team viability → team OCB	Not supported	Not supported
H4c: team prosocial motivation*task interdependence → team viability → team voluntary turnover	Supported	Supported

^a H = Hypothesis.

contexts in both the United States and China. In addition, the experiment provided the control necessary to rule out alternative explanations and allow for causal inferences to be made.

Although the field and lab studies provided largely consistent results to support our hypotheses, there are some inconsistencies in the findings. Specifically, the mediation between team prosocial motivation and team OCB through team cooperation is partial in Study 1 but is full in Study 2, and the mediation between team prosocial motivation and team voluntary turnover via team viability is full in Study 1, but partial in Study 2. This inconsistency may be due to: (1) the subjective ratings from upper-level managers in Study 1 versus measures of actual team extra-role behaviors in Study 2; (2) the actual turnover data obtained a year later in Study 1 vs. signing up in another team project in Study 2; (3) the permanent work teams from real organizations used in Study 1 versus temporary student project teams in Study 2; or (4) organization-level factors, such as culture or pre-existing events.

In addition to empirically assessing these explanations for inconsistencies between our field and lab results, we recommend future research that delineates alternative task- or affect-based team mechanisms through which team prosocial motivation promotes team effectiveness. For example, a prosocial motivation climate within the team makes team members feel inspired or moved, and then more excited with and engaged in their work (Grant & Patil, 2012), which may create a positive affective tone within the team and lead to better outcomes. Another fertile area for future research pertains to other boundary conditions for the effects of prosocial motivation in teams, such as exploring at the team level the influence of opportunities to contact beneficiaries for amplifying the influence of prosocial motivation on employee behaviors (Grant, 2007).

Practical Implications

In line with our results, management attention should be directed toward enhancing team prosocial motivation, as teamwork is a coordinated action

and showing concern for others may bring about smoother interactions and more effective cooperation within the team. Organizations should capitalize on our finding that when team members are motivated toward promoting the benefits of others, they produce higher performance, more OCB, and stay in their teams for a longer period. Second, the results draw attention to both the behavioral and emotional aspects of team processes as bridges linking team prosocial motivation and team effectiveness. Specifically, in order to build effective team outcomes, management should guide prosocially motivated team members to coordinate their tasks, facilitate smooth task allocation, reduce dysfunctional conflicts, and build strong interpersonal ties. Third, our findings show that team prosocial motivation interacts with task interdependence in relation to team processes and effectiveness outcomes. The highest level of team effectiveness was achieved when team prosocial motivation and task interdependence were both high. Team outcomes suffer when high prosocial motivation teams lack high task interdependence or when high task interdependence teams are not prosocially motivated. Thus, for teams with members who are already prosocially motivated, management should endeavor to establish coordination requirements designed to facilitate interactions and communications within the team. For teams with a high level of task interdependence, it is critical for management to cultivate team members' prosocial motivation. Management interventions, such as increasing the job impact of the team on potential beneficiaries, increasing the opportunities for interactions with potential beneficiaries of their work, leading by example, and introducing members with high prosocial motivation to the team (Grant, 2007, 2012; Grant, Dutton, & Rosso, 2008; Grant & Patil, 2012), are helpful in creating a prosocial culture within the team and promoting effective team outcomes.

In summary, the current studies are among the first efforts to extend prosocial motivation to the team level and endorse the value of team prosocial motivation on team processes and team effectiveness. Furthermore, the current research demonstrated task interdependence as an important contingency for the impact prosocial motivation has for teams. The findings of the current research suggest several promising research directions for further enriching our knowledge of the role of prosocial motivation in teams.

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