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To collaborate or not? The moderating effects of team conflict on performance-prove goal orientation, collaboration, and team performance

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This study examines the effect of team performance-prove goal orientation on team collaboration and team performance by identifying team conflict as a boundary condition. We propose that team conflict plays a moderating role such that high-PPGO team members will work collaboratively when they experience task conflict because they perceive other team members to be valuable for team performance. In contrast, high-PPGO teams will be less likely to work collaboratively when they experience relationship conflict since interpersonal differences will be salient, forcing social comparisons to which high-PPGO team members are predisposed. We test our hypotheses in a field sample of 485 working teams (2,940 individuals). The result shows that team PPGO was positively related to collaboration and team performance under conditions of high task conflict (and low relationship conflict). In contrast, team PPGO was negatively related to collaboration and team performance under conditions of high relationship (and low task) conflict. Team PPGO showed no relationship with collaboration when both task and relationship conflict were either high or low. These results extend knowledge of the multi-faceted effects of team PPGO and represent the first study showing the differential effect of PPGO on team collaborative processes. Implications for future research and practices are discussed.

Practitioner points

- Performance-prove goal orientation (PPGO) improves team collaboration when task conflict is high and relationship conflict is low, while PPGO harms team collaboration when task conflict is low and relationship conflict is high.
- Organizations should stimulate task conflict, and reduce relationship conflict, in teams with a greater degree of high PPGO members to ensure collaboration and high performance. Otherwise, high PPGO teams will be unlikely to collaborate as members may view each other as rivals.

A key reason organizations create teams is to pursue challenging goals (Kozlowski & Bell, 2003). Because complex performance goals in modern organizations are difficult to

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achieve, one managerial strategy for ensuring teams set and accomplish challenging goals is to compose teams with members who are predisposed to doing so. Researchers refer to these individuals as having high performance-prove goal orientation (PPGO), defined as individuals' dispositions towards demonstrating competence in achievement situations (DeShon & Gillespie, 2005; VandeWalle, 1997). High-PPGO individuals, because of their dispositional motivation to prove themselves through high performance, seem to be ideal team members.

Theoretically, teams with higher average levels of PPGO should be motivated by their desire to display competence, so team PPGO should positively relate to team performance. However, empirical investigations of team PPGO composition and team performance have shown mixed results (e.g., Dietz, van Knippenberg, Hirst, & Restubog, 2015). Some studies have shown a positive relationship between team PPGO and team effectiveness because high-PPGO team members plan efficiently, exhibit commitment and have high task efficacy (Bunderson & Sutcliffe, 2003; Dragoni, 2005; Mehta, Feild, Armenakis, & Mehta, 2009; Porter, 2005). Other research has found a negative relationship between team PPGO and team effectiveness because members collaborate insufficiently focussing on individual goals at the expense of team objectives (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004; Dietz et al., 2015). Thus, PPGO presents a conundrum for team composition: People motivated to achieve performance goals also harbour potential to refuse to collaborate in pursuing those goals. Accordingly, there is a need to augment our understanding of the conditions under which team PPGO causes teams to collaborate (or not) and, ultimately, perform better.

We extend goal orientation theory (Dweck & Leggett, 1988) by positing that members of high-PPGO teams are opportunistic: they engage in collaboration only when they perceive others as instrumental to demonstrating competence as a unit (Darnon, Muller, Schrager, Pannuzzo, & Butera, 2006; Dietz et al., 2015; Karau & Williams, 1993; Poortvliet & Darnon, 2010). We propose the 'switch' that activates high-PPGO teams' collaboration is the combination of conflict types they perceive in their team. Because relationship conflict highlights differences between individuals, it activates high-PPGO team members' dispositional tendency to see their teammates as competitors. This will lead team members to focus on 'winning the conflict' at the expense of collaboratively achieving shared goals (Bendersky & Hays, 2012; Darnon et al., 2006). By contrast, task conflict signals to members that working collaboratively can have beneficial outcomes as they can integrate their diverse perspectives into more effective solutions (Levy, Kaplan, & Patrick, 2004). For this reason, high-PPGO teams that perceive their conflict as task-based will see team members as valuable collaborators who have something to offer in terms of helping the team perform at a high level (Porter, Webb, & Gogus, 2010). Given that many teams experience both types of conflict, the combined mix of task and relationship conflict may serve as an important contingency in the link between team PPGO and team outcomes.

Our study's contributions lay in extending goal orientation theory as it has been applied to teams in organizations. First, we contribute to the nascent literature on the link between team PPGO composition and team performance. Some past research has characterized PPGO as facilitating team performance (Bunderson & Sutcliffe, 2003; DeShon et al., 2004), while other research has framed PPGO as detrimental for teams (LePine, 2005; Porter et al., 2010). Dietz et al., (2015) highlighted this inconsistency and examined the role of team task identification in predicting the direction of PPGO's effects on team performance. Our study builds upon this perspective by introducing the team's task and relationship conflict as boundary conditions. In applying a conflict lens, we

expand the theoretical framing of team PPGO and highlight additional conditions whereby PPGO leads to improved (or reduced) performance.

Second, we build upon Dietz et al.'s (2015) foundation by underscoring the mechanism through which PPGO's conditional effects translate to team performance. Specifically, we investigate how perceptions of conflict influence the extent to which high-PPGO teams will engage in beneficial collaborative team processes. Collaboration in teams has yet to be studied as an outcome of PPGO, which is puzzling given that existing research shows high-PPGO individuals are willing to collaborate under the right circumstances (Sommet et al., 2014) and that collaboration is a key team process that relates to team performance (DeChurch, Mesmer-Magnus, & Doty, 2013). Further, by incorporating conflict states (i.e., task and relational conflict) and processes (i.e., collaboration), our study answers conflict researchers' calls for greater theoretical clarity and an examination of how team conflict states and processes jointly predict team outcomes, including how a team's response to conflict is a product of the team's composition and the content of its conflict (Bradley, Klotz, Postlethwaite, & Brown, 2013; DeChurch et al., 2013). In sum, our key insight is that high-PPGO team members' collaboration decisions and the team performance that follows are a function of the combination of task and relationship conflict within the team. Figure 1 depicts our model.

Theoretical background and hypotheses

PPGO and opportunistic collaboration

High-PPGO individuals have a desire to display skills and competence to others because they evaluate their own success or failure in comparison with the performance of others (Elliot & McGregor, 2001; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Janssen & Van Yperen, 2004). This drive makes high-PPGO individuals particularly sensitive to calculations of instrumentality (Vroom, 1964) as they pursue their goals (Levy et al., 2004); they will take actions (such as collaborating with teammates) only when they perceive doing so will help them display competence. By contrast, lower-PPGO individuals, with a weaker competence-display drive, are less sensitive to instrumentality calculations.

Existing research has utilized several conceptualizations of team-level PPGO. Some research views collective PPGO as an emergent team state that develops through the course of members' interaction with one another (Bunderson & Sutcliffe, 2003; DeShon

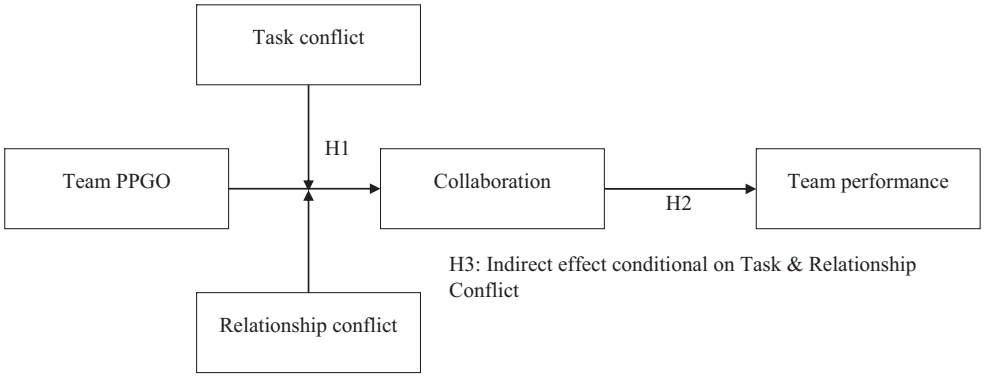

Figure 1. Conceptual model of the research.

et al., 2004). In the emergent state perspective, PPGO is seen as a shared property that emerges from team members' interactions rather than as a characteristic of individuals within the team (Porter, 2005). Other research has applied a team composition lens (LePine, 2005; Porter et al., 2010), viewing team PPGO as a property of team members' individual-level PPGO. Within this view, team PPGO emerges either through the composition or compilation of member attributes (Kozlowski & Klein, 2000). Compositional models of team PPGO often describe the average level of PPGO present in the team, such that higher (or lower) individual members' PPGO leads to a higher (or lower) mean PPGO of the team, which in turn, relates to team processes and performance (LePine, 2005; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Porter, 2005). In contrast, the compilational approach suggests that the pattern of members' PPGO (e.g., skew; standard deviation) is relevant to team processes and performance.

In the current study, we apply a composition lens to team PPGO, focussing on the mean level of PPGO within the team (e.g., Dietz et al., 2015; LePine, 2005; Porter, 2005). Our conceptualization of team PPGO is consistent with Chan's (1998) additive model and what Kozlowski and Klein (2000) refer to as 'pooled unconstrained' emergence (p. 70). In this conceptualization, individual members each contribute some amount of the trait (the amount is not constrained, and therefore, the amount each individual contributes may vary). Our view contrasts with the convergent emergence or pooled constrained approaches to emergence, which focus on members having some similarity in their levels of PPGO. Instead, the pooled unconstrained approach allows individual team members to vary in their levels of PPGO, yet still evaluates team PPGO as a group descriptive variable to refer to the average level of PPGO across team members. For this reason, pooled unconstrained approaches are often operationalized with the sum or the mean; the latter representing the 'typical' level of PPGO across team members and being consistent with past research on team composition of individual attributes[1] (Bell, 2007; Dietz et al., 2015; LePine, 2005).

Team PPGO represents an input within the input-process-output model of teamwork (Cohen & Bailey, 1997). Within this framework, team inputs shape team processes and emergent states, which ultimately result in team outcomes such as performance (Mathieu, Maynard, Rapp, & Gilson, 2008). Relying on this understanding, we theorize that the extent to which high-PPGO teams collaborate, defined as the open discussion of diverse perspectives and the team's commitment to arrive at solutions that are beneficial to the unit as a whole (DeChurch et al., 2013), depends on whether team members perceive each other as valuable collaborators (Porter et al., 2010). This is because high-PPGO individuals typically view social exchanges through an instrumentality lens (Levy et al., 2004). Research has found that high-PPGO individuals determine whether they will collaborate with others by assessing the value that potential partners could provide in facilitating displays of competence (Levy et al., 2004; Sommet, Darnon, & Butera, 2015; Sommet et al., 2014). When high-PPGO individuals see collaboration as a viable route to displaying competence, they are willing to work with peers, whereas when high-PPGO individuals see peers as threats to goal accomplishment, they are reluctant to collaborate because they perceive that collaboration does not offer a route to demonstrating competence. Extending this logic, if high-PPGO team members view one another as valuable, they will move towards (DeChurch et al., 2013) one another in an effort to

[1] *We conducted post hoc analyses examining the standard deviation and skew of within-team PPGO; results (available from the first author) produced no statistically significant effects on collaboration and performance.*

compete against other teams, resulting in higher team performance (Dietz et al., 2015). If high-PPGO team members see one another as rivals, they will move against one another in an effort to establish themselves in the within-team hierarchy, inhibiting collaboration and performance (Dietz et al., 2015).

Team conflict as a boundary condition of the PPGO-collaboration relationship

We suggest that team conflict states offer an explanatory framework for the conditions that facilitate high-PPGO teams' collaboration decisions. Conflict states are often conceptualized in two broad categories based on their content: interpersonal friction (i.e., relationship conflict), and disagreements over goals, tactics or strategies (i.e., task conflict; Jehn, 1995). We expect high-PPGO teams that experience relationship conflict will be less willing to engage in collaboration relative to teams with less relationship conflict for two reasons. First, relationship conflict highlights differences among teammates (Hinds & Mortensen, 2005); it diverts attention away from tasks and onto the social hierarchy within the team (Jehn, 1995). By making the social hierarchy more salient, relationship conflict leads members of high-PPGO teams, who are predisposed to pursuing individual goals at the cost of team goals (Dietz et al., 2015), to see one another as competitors (Levy et al., 2004; Sommet et al., ,,2014, 2015). This will, in turn, reduce their willingness to collaborate. Second, relationship conflict draws attention to social comparisons between team members (Bono, Boles, Judge, & Lauver, 2002). Given that social comparisons are a central component of high-PPGO individuals' cognitions (Dietz et al., 2015; Elliot, 2005), relationship conflict should prompt members of high-PPGO teams to view other members as competitive targets (i.e., relationship conflict acts as a trait-relevant situational cue; Tett & Burnett, 2003). This leads high-PPGO team members to focus on individual performance and reduce collaboration with team members.

Whereas relationship conflict creates a team context where PPGO leads to reduced collaboration, we expect task conflict to offer a team context where high-PPGO teams will show higher levels of collaboration. Todorova, Bear, and Weingart (2014) highlighted two benefits of task conflict: a motivational benefit and an informational benefit. Task conflict can be motivating because vigorous debate about tasks demonstrates peers' commitment and engagement with the team's tasks. Following the collective effort model (Karau & Williams, 1993), this display promotes team members' motivation. Research has found that co-workers tend to match each other's level of effort (Jackson & Harkins, 1985) and that individuals who believe their team members are motivated will themselves put forth more effort (Karau & Williams, 1993). High-PPGO team members should be particularly sensitive to this effort-matching process because they allocate their effort according to an instrumentality lens. For high-PPGO team members, peers' higher levels of motivation (manifested through task conflict) signal that collaboration offers a viable route for the team to display competence collectively.

The informational benefits of task conflict rely on the categorization-elaboration model (CEM; van Knippenberg, De Dreu, & Homan, 2004) of team performance. This model suggests that teams' sharing of information about the task and its assumptions benefits team performance because teams that discuss more task-relevant information have a larger pool of knowledge to inform their solutions and choose among alternative strategies. Specifically, task conflict occurs because team members have different perspectives about how to complete team tasks. As members engage in task conflict, they challenge existing beliefs and generate new solutions to problems (De Dreu & West, 2001), and note that team members are valuable to one another in achieving higher levels

of performance (because they provide unique information and perspective). Teams that realize members' perspectives are unique pursue information exchange in order to improve processes (Mell, van Knippenberg, & van Ginkel, 2014). Given high-PPGO team members' propensity to base collaboration decisions on the instrumental benefits of working collectively (relative to low-PPGO peers), they should be particularly willing to collaborate upon recognizing how diverse sets of information can be useful in demonstrating competence collectively.

Our framework implies a three-way interaction between team PPGO, task conflict and relationship conflict in predicting team collaboration. That is, the effect of PPGO on team collaboration depends on the combination of both task and relationship conflict within the team. When relationship conflict is low (and, thus, when the competition-enhancing effects of interpersonal friction are absent), high task conflict will lead team PPGO to be positively related to collaboration because high-PPGO team members will see the instrumental benefits (either motivational or informational) of collaboration. Conversely, when relationship conflict is high, low task conflict will lead team PPGO to be negatively related to collaboration because high-PPGO team members will focus on demonstrating competence against their own team members rather than realizing the instrumental benefits that higher task conflict portends. When the overall amount of conflict is mixed (i.e., task and relationship conflict both occurring at either high or low levels), we suggest that the effects of task and relationship conflict will cancel each other out, leading team PPGO to have no relationship with collaboration. Specifically, when both types of conflict are high, the motivational and informational benefits of task conflict will be counterbalanced by the deleterious effects of relationship conflict. When both types of conflict are low, high-PPGO teams will miss the positive effects of the task conflict conditions that lead them to collaborate; having low relationship conflict as well will remove the negative stimuli but will not be enough to cause high-PPGO teams to see the inherent value in collaboration. Thus, we hypothesize the **following:**

Hypothesis 1. The effect of team PPGO on collaboration is moderated by task and relationship conflict such that PPGO is positively related to collaboration under conditions of high task and low relationship conflict, and negatively related to collaboration under conditions of low task and high relationship conflict.

Collaboration and team performance

Collaboration should positively relate to team performance for three primary reasons. First, collaboration allows teams to effectively leverage team knowledge, skills, abilities and resources towards the pursuit and completion of team goals (Behfar, Peterson, Mannix, & Trochim, 2008; DeChurch et al., 2013). The primary reason that organizations use teams is to realize synergistic relationships among team members that are greater than the sum of the parts. When teams engage in collaboration, they harness the latent abilities and information that exists on the team. Second, collaboration leads teams to resolve conflict in ways that are beneficial to all of the members of the team (Thomas, 1992; Tjosvold, 1991). Collaboration leads team members to feel that their individual voice has an effect on ultimate team outcomes, resulting in increased member satisfaction, perceptions of fairness and enhanced process effectiveness (DeChurch et al., 2013). In addition, collaboration involves integrative behaviours among team members and can

create a situational context where team members see connections between their individual efforts, spurring them to contribute effort in pursuing team goals and success (Crawford & LePine, 2013; Hackman & Oldham, 1975). Third, collaboration enhances team members' concerns for one another, resulting in an increase in helping behaviours, and are associated with a decrease in withdrawal behaviours (Jackson, Colquitt, Wesson, & Zapata-Phelan, 2006), all of which should result in improved performance outcomes. In line with these arguments, meta-analytic evidence has shown a positive relationship between collaboration and team performance (DeChurch et al., 2013). Therefore, we hypothesize the following:

Hypothesis 2. There is a positive relationship between team collaboration and team performance.

Integrated conditional indirect effects model

Together, Hypotheses 1 and 2 suggest a model where the effect of team PPGO on performance is mediated by collaboration, and that these indirect effects are moderated by task and relationship conflict. More specifically, Hypothesis 1 is the 'first-stage', whereby team PPGO positively relates to collaboration, depending on the combined levels of task and relationship conflict. Hypothesis 2 is the 'second-stage', where collaboration will have a positive direct relationship with team performance. Thus, we hypothesize the following:

Hypothesis 3. The indirect effect of team PPGO on performance via collaboration is positive when task conflict is high and relationship conflict is low, and negative when task conflict is low and relationship conflict is high.

Method

Sample and procedures

Data were collected from team members and their leaders of a private sector firm in Korea during a 2-month period. The company is a large organization serving a variety of industrial sectors in markets throughout the world. The teams in this organization were ongoing work teams that performed four primary tasks: research and development (R&D), administrative, production and sales. R&D teams were engaged in tasks related to the long-term planning and development, production teams manufactured the hardware as designed by R&D teams, administrative teams supported other teams with respect to budgeting, clerical assistance and other miscellaneous affairs in the firm, and sales teams carried out marketing and generating new contracts with current and potential customers. Employees in this company earn a base salary and have little performance-based pay (at either the team or individual level), although performance evaluations are given in the context of employees' contributions to their respective teams. Each team conducted their work as a unit with a moderate amount of autonomy and reported to a single supervisor outside the team. Although there was some interaction between members of different teams, the primary focus of individuals' work was on completing tasks and coordinating with members of their proximal team in order to accomplish

shared goals. Our interviews with key HR offices confirmed that teams in this organization worked with sufficient interdependence to be categorized as teams given the academic definition provided by Kozlowski and Bell (2003).

The total number of employees in this firm at the time of the survey was 4,769 in 507 teams (average number of team members was 9.4). The surveys were conducted at two points in time. Team members completed the first questionnaire online that contained items related to individual goal orientation, task and relationship conflict, and team collaboration. The questionnaires were originally written in English then translated to Korean and back-translated according to established translation procedures (Brislin, 1980). Two weeks later, external team leaders completed the second questionnaire, which assessed performance ratings such that each team was rated by one leader. In total, 3,176 individuals (66.6% of total employees) completed questionnaires and were members of teams with at least a 60% response rate (Allen, Stanley, Williams, & Ross, 2007). However, of the 3,176 individuals, 236 employees were not on active teams (i.e., composed of two or more members; Kozlowski & Bell, 2003) and were working individually, so we excluded them from the analyses. Thus, 2,940 employees in 485 teams (average of 6.1 respondents per team) provided data for the study variables. Further, supervisors provided performance ratings for 327 of these teams (composed of 1,995 individuals); in the analyses section below we provide more details on how we dealt with missing data.

Measures

All items were measured on a 7-point Likert scale (1 = 'strongly disagree', and 7 = 'strongly agree'). The directions for the goal orientation questionnaires asked team members to respond in relation to themselves (i.e., 'Please indicate the extent to which you agree with the statement about yourself'), while the directions for the team conflict state and processes explicitly referenced the team (i.e., 'Please indicate the extent to which you agree with the statement about the work you do in your team'). The reliabilities for team-level variables were computed using a nested alpha procedure, whereby we computed the team mean of each item and then calculated coefficient alpha at the team level (Chen, Mathieu, & Bliese, 2004).

Team PPGO

We measured performance-prove goal orientation using Brett and VandeWalle's (1999) four-item measure. Sample items include 'I like to show that I can perform better than my co-workers' and 'I prefer to work on projects where I can prove my ability to others'. We obtained a coefficient alpha of .89 for this measure. Scale scores were aggregated to the team by computing the mean.

Team conflict states

We measured team relationship and task conflict states using Bendersky and Hays's (2012) six-item measure. Sample items include 'Our team members experienced conflict of ideas' (task conflict) and 'Our team members experienced emotional conflict' (relationship conflict). We obtained a coefficient alpha of .88 for the task conflict scale and a coefficient alpha of .89 for the relationship conflict scale.

Collaboration

We measured collaboration using Rahim's (1983) seven-item scale, adapted to the team level. Sample items include 'Our team tries to integrate our ideas to come up with a decision jointly' and 'Our team collaborates to come up with decisions acceptable to us'. We obtained a coefficient alpha of .95 for this scale.

Team performance

Team supervisors rated team performance using the seven-item in-role performance scale developed by Williams and Anderson (1991), which we adapted to refer to the team rather than individuals. Sample items include 'This team adequately completes assigned duties' and 'This team performs tasks that are expected of them'. We obtained a coefficient alpha of .93 for this scale.

Control variables

We controlled for team task type, learning goal orientation and performance-avoid goal orientation in our analyses. First, we controlled for team task type, as different tasks might dictate different team processes (Farh, Lee, & Farh, 2010; Steiner, 1972). Team task type was coded using three dummy variables representing research and development (R&D), administrative and production teams with sales as the referent. Of the 327 teams in our sample, task types were as follows: 63 (19%) were R&D, 83 (25%) were administrative, 99 (30%) were produced and 82 (25%) were service. Second, we controlled for learning goal orientation (LGO) and performance-avoid goal orientation (PAGO), as these additional goal orientation constructs have been shown to relate to PPGO and performance (e.g., Payne, Youngcourt, & Beaubien, 2007). We measured these constructs using five items for LGO (α = .93) and four items for PAGO (α = .87) from Brett and VandeWalle (1999). A sample item for LGO is 'I often look for opportunities to develop new skills and knowledge', and a sample item for PAGO is 'I prefer to avoid situations at work where I might perform poorly'. Given that the inclusion of control variables can substantially affect the interpretation of statistical tests (Breaugh, 2008), best practices in control variables involve controlling only for variables that are both theoretically and empirically (as demonstrated in past research) related to variables under study (Bernerth & Agunis, 2016). Accordingly, we included all control variables in analyses[2].

Aggregation of individual responses to the group level of analysis

Because team members were nested within groups, we computed several statistics to empirically justify the aggregation of the group-level variables (e.g., conflict states and collaboration). Our conceptualization of team PPGO does not expect agreement in individual PPGO and was, therefore, not calculated (Chan, 1998; Kozlowski & Klein, 2000). For the remaining constructs we computed three aggregation statistics: mean $r_{wg(j)}$

[2] *Existing research has found LGO and PAGO to be theoretically and empirically related to PPGO (Payne et al., 2007), and thus normatively controls for these dimensions (e.g., Wang, Wu, Parker, & Griffin, 2018). In line with suggestions from Bernerth and Aquinis (2016) and Breaugh (2008), we analyzed results with different combinations of control variables included. The pattern of coefficients was very similar in all approaches. In a model with both LGO and PAGO excluded, the three-way interaction is statistically significant only when using a one-tailed (vs. two-tailed) test. Given the three-way interaction is a directional hypothesis, this variation does not alter conclusions.*

(based on a uniform distribution) as an index of within-group agreement for relevant measures, mean ICC(1) as an index of within-group variability compared to between-group variability and ICC(2) as an index of the reliability of group means (Bliese, 2000; LeBreton, James, & Lindell, 2005). The $r_{wg(j)}$ values ranged from 0 to 1.00 and the mean $r_{wg(j)}$ was above the recommended cut-off value of .70 for all variables: task conflict ($r_{wg(j)}$ = .79; ICC(1) = .08; ICC(2) = .36), relationship conflict ($r_{wg(j)}$ = .77; ICC(1) = .16; ICC(2) = .54) and collaboration ($r_{wg(j)}$ = .81; ICC(1) = .13; ICC(2) = .48). For all constructs, $r_{wg(j)}$ ranged from 0 to 1.00, though 409 (84%) teams had $r_{wg(j)}$ values over .70 on all constructs. Further, ICC(1) values for all relevant variables were all in the acceptable ICC(1) range of .05 to .20 suggested by Bliese (2000), while the ICC(2) values indicated that differences among groups could be reliably measured (LeBreton & Senter, 2008).

LeBreton and Senter (2008) highlighted the sensitivity of $r_{wg(j)}$ to assumptions about the comparison distribution. To address this potential concern, we examined $r_{wg(j)}$ using the random group resampling technique developed by Bliese and Halverson (2002). Random group resampling draws 'pseudo-groups' from bootstrapped samples to determine whether the within-group variance among real groups is significantly lower than within-group variance in pseudo-groups randomly created. This approach is nonparametric and therefore makes no distributional assumptions, offering a more robust test of agreement. Results from random group resampling suggested that within-group variance in relationship conflict and collaboration was significantly lower (at the $p < .05$ level) in real groups than in the pseudo-groups ($Z = -2.85$; $Z = -2.19$, respectively). For task conflict, the within-group variance was significantly lower (at the $p < .10$ level) than the pseudo-groups ($Z = -1.76$). This result, in combination with the statistics reported above, provides sufficient evidence for aggregating variables to the team level.

Measurement model

We performed confirmatory factor analyses to examine the factor structure of our LGO, PPGO, PAGO, task conflict, relationship conflict and collaboration scales. We used the confirmatory factor analysis command in R (using 'lavaan' 0.6-0.7; Rosseel, 2012) to evaluate the fit of the measurement model. Our full measurement model (with six factors: PPGO, LGO, PAGO, task conflict, relationship conflict and collaboration; and a total of 26 manifest variables) was a good fit to the data [$\chi^2(284) = 3860.79$; CFI = .93; SRMR = .044; RMSEA = .065]. We compared this model with two plausible alternative nested models. First, we tested a model where the correlation between PPGO and PAGO was constrained to 1 to test whether respondents distinguished between these two dimensions of performance goal orientation. The results showed this five-factor model was a poorer fit to the data than the full model [$\chi^2(285) = 4410.03$; CFI = .92; SRMR = .13; RMSEA = .07]. Second, we tested a model where the correlation between task and relationship conflict was constrained to 1. Given that both task and relationship conflict are types of conflict states, we wanted to ensure respondents distinguished these two dimensions. This model was also a poorer fit to the data than the full model [$\chi^2(285) = 4547.42$; CFI = .92; SRMR = .17; RMSEA = .07]. The two alternative models' chi-square increases were significant at the $p < .001$ level, supporting the expected six-factor structure.

Analytic strategy

As we noted previously, we had missing team performance data from supervisors for 158 teams for which we had data on the independent, moderator and mediator variables. In order to provide a more powerful test of our hypotheses and avoid losing these data, we decided to impute the missing data. To do so, we began by investigating the pattern of data missingness, as the appropriate procedure for imputing missing data depends on the type of missingness. Thus, we examined whether the supervisor performance ratings were missing completely at random by examining the correlations of a missing-value indicator variable (i.e., 0 = supervisor rating present, 1 = supervisor rating missing) with all other study variables. The missingness of the supervisor rating was not related to any study variables (all correlations were smaller than |.06|). Although these small correlations imply the data were missing completely at random (i.e., the missingness is independent of variables under study), it is not possible to be certain the missingness was indeed at random (Newman, 2014). To reduce the risk of inferential errors associated with non-randomly missing data, we used multiple imputation with full information maximum likelihood within an SEM framework in STATA to conduct the analyses. This technique is more robust to violations in our assumptions about missing data (Newman, 2014).

Our hypotheses are based on a 'first-stage' conditional indirect effect model, whereby conflict states moderate the relationship between PPGO and collaboration, which in turn, predicts team performance. Therefore, we adapted Edwards and Lambert's (2007) path analysis approach to test a first-stage only model in an SEM framework. We began by mean-centring all of our study variables and covariates. Then, we specified a path analytic model using the SEM command in STATA with two equations. The first equation regressed collaboration on control variables, PPGO, task and relationship conflict, and the two- and three-way product terms between PPGO and task and relationship conflict (i.e., Equation 1). This represents the 'first-stage' of our model and the significance of the three-way interaction (and the directionality of the simple slopes) is a test of Hypothesis 1, which stated that the combination of task and relationship conflict would moderate the relationship between PPGO and team collaboration. The second equation regressed team performance on the control variables, PPGO and collaboration (i.e., Equation 2). This is used in conjunction with the previous equation to estimate the second-stage, direct and indirect effects. The second-stage effect (e.g., collaboration → performance) tests Hypothesis 2, while the difference between the indirect effects of PPGO on performance via collaboration at high and low levels of task and relationship conflict, respectively, compared to the indirect effects at low and high levels of task and relationship conflict, respectively, as well as the significance of each conditional simple slope tests Hypothesis 3.

Following these procedures, we used bootstrapping to estimate the coefficients in 1,000 samples. This procedure allowed us to calculate bias-corrected, bootstrapped 95% confidence intervals (CI) for all the paths in our model that account for the non-normal distribution of the indirect effects. We used our bootstrapped confidence intervals in conjunction with the unstandardized coefficients derived from the path analytic regression equations to calculate first-stage (PPGO → collaboration) and indirect (PPGO → collaboration → team performance) path estimates, and the difference between them, at combinations of high and low levels (± 1 *SD*) of task and relationship conflict. Because our theoretical model hypothesized a first-stage mediated moderation model, we constrained the second-stage (collaboration → performance) and direct effect (PPGO → performance) paths to be invariant across conflict levels (Gonzalez-Mulé, Courtright, DeGeest, Seong, & Hong, 2016).

Results

Table 1 displays descriptive statistics, correlations and reliability estimates of all variables. LGO (r = .10), PAGO (r = −.13), relationship conflict (r = −.19) and collaboration (r = .18) all had statistically significant correlations (p < .05) with team performance.

Tests of hypotheses

Tables 2 and 3 provide results for the path analysis results and the conditional indirect effects analysis, respectively. Table 2 reports coefficients for models with control variables only (Models 1 and 4) and with control and substantive variables (Models 2, 3, and 5). Hypothesis 1 suggested that PPGO would be positively related to collaboration under conditions of high task and low relationship conflict, and negative related to collaboration under conditions of low task and high relationship conflict. As shown in Model 3 of Table 2, the three-way interaction between PPGO, task conflict and relationship conflict predicting collaboration was statistically significant (b = .12, p < .05). As shown in Table 3, our conditional effects analyses indicated that PPGO had a positive relationship with collaboration under conditions of high task and low relationship conflict (b = .19; 95% CI: .02, .37) and a negative relationship with collaboration under conditions of low task and high relationship conflict (b = −.28; 95% CI: −.52, −.03), with a difference of .47 (.11,.77). Thus, Hypothesis 1 was supported. These results are depicted graphically in Figure 1, which shows a plot of the relationship between PPGO and collaboration at different combinations of low (−1 *SD*) and high (+1 *SD*) levels of each moderator (Figure 2).

Table 2 also reports a significant second-stage relationship between collaboration and team performance (Model 5: b = .17, p < .05), providing support for Hypothesis 2. With respect to testing our hypothesized conditional indirect effects (Hypothesis 3), Table 3 shows that when task conflict is high and relationship conflict is low, the indirect effect of PPGO on team performance via collaboration was positive (b = .03; 95% CI:.003, .09). Conversely, when task conflict is low and relationship conflict is high, the indirect effect of PPGO on team performance via collaboration was negative (b = −.05; 95% CI: −.13, −.01). Furthermore, the 95% CI for the difference between the indirect effects across high and low levels of task conflict did not include zero (b=.08; 95% CI: .01, .20). This provided support for Hypothesis 3.

Discussion

Composing teams on the basis of PPGO presents a conundrum for managers. On the one hand, teams with a high mean level of PPGO have an orientation towards setting and accomplishing difficult goals and thus have an increased potential for high performance. On the other hand, members of high-PPGO teams may have difficulty working together, because their shared focus on demonstrating competence may dissuade them from engaging in the collaboration necessary for teams to meet shared objectives. To guide both theory and practice, we developed and tested a model proposing that task and relationship conflict act as situational cues that, when present in the right combination, lead high-PPGO teams to view team members as collaborators in shared goal accomplishment, or as antagonists that are best to avoid. In line with this model, we found that PPGO is beneficial to team collaboration and, ultimately, performance when task conflict is high and relationship conflict is low, and harmful to team collaboration and

Table 1. Means, standard deviations, correlations and scale reliabilities among variables

	M	*SD*	1	2	3	4	5	6	7	8	9	10
1. R & D	0.19	0.39	–									
2. Administrative	0.28	0.45	−.30*	–								
3. Production	0.29	0.45	−.30*	−.39*	–							
4. LGO	5.16	0.50	.04	−.00	−.06	(.93)						
5. PAGO	3.15	0.60	−.05	.00	−.04	−.35*	(.87)					
6. PPGO	4.64	0.57	−.06	.02	−.05	.43*	.21*	(.89)				
7. Task conflict	4.08	0.52	.07	−.03	.03	−.03	.07	−.09*	(.88)			
8. Relationship conflict	3.46	0.66	.09*	.02	.05	−.09*	.10*	−.09*	.59*	(.89)		
9. Collaboration	4.82	0.54	−.13*	.01	.05	.30*	−.12*	.18*	−.24*	−.51*	(.95)	
10. Team performance	5.70	0.56	−.08	−.04	.05	.10	−.13*	.05	−.09	−.19*	.18*	(.93)

Note. $N = 485$ teams for all correlations except performance, where $N = 327$ teams.
R & D = research and development; LGO = learning goal orientation; PAGO = performance-avoid goal orientation; PPGO = performance-prove goal orientation. Team task types were coded with sales teams as the referent. Coefficient alpha reliability is given in parentheses on the diagonal.
*$p < .05$.

Table 2. Path analysis results relating collaboration and team performance to PPGO, conflict and their interactions

	DV: Collaboration			DV: Team performance	
	Model 1	Model 2	Model 3	Model 4	Model 5
R & D	−.21* (.07)	−.08 (.06)	−.08 (.06)	−.20 (.10)	−.14 (.10)
Administrative	−.04 (.06)	.05 (.06)	.06 (.05)	−.11 (.10)	−.09 (.09)
Production	−.01 (.06)	.10 (.06)	.09 (.05)	−.03 (.09)	−.00 (.09)
LGO	.32* (.05)	.26* (.05)	.25* (.05)	.08 (.08)	.01 (.08)
PAGO	−.02 (.04)	.00 (.04)	.01 (.04)	−.12* (.06)	−.14* (.07)
PPGO	–	.04 (.04)	−.00 (.05)	–	.05 (.07)
TC	–	.09 (.05)	.08 (.05)	–	–
RC	–	−.44* (.04)	−.42* (.04)	–	–
TC × RC	–	–	.09 (.05)	–	–
PPGO × TC	–	–	.26* (.07)	–	–
PPGO × RC	–	–	−.15* (.05)	–	–
PPGO × RC × TC	–	–	.12* (.06)	–	–
Collaboration	–	–	–	–	.17* (.05)
R^2	.11	.34	.37	.04	.06
ΔR^2	–	.23	.03	–	.02

Note. $N = 485$ teams. Values are unstandardized regression coefficients. ΔR^2 represents the changed in R^2 accounted for by the new variables in the equation compared to the previous equation. Standard errors are reported in parentheses. R&D = research and development; LGO = learning goal orientation; PAGO = performance-avoid goal orientation; PPGO = performance-prove goal orientation; TC = task conflict; RC = relationship conflict. Model fit statistics (for Equations 3 and 5) were: $\chi^2(6) = 6.77$; CFI = .99; RMSEA = .02.
*$p < .05$.

performance when relationship conflict is high and task conflict is low. The findings of our study extend our understanding of the nature of team conflict states and team processes generally (DeChurch et al., 2013), and of the contextual circumstances of the PPGO-collaboration relationship more specifically (Dietz et al., 2015).

Theoretical implications

Our research offers several contributions to theory. First, our study contributes to the team composition literature by examining the question of when and how goal orientations lead to beneficial outcomes for teams. Although studies have demonstrated the value of learning goal orientation to team performance (e.g., Porter, 2005), significantly less research has been conducted on the effects of team PPGO. Researchers have posited inconsistent effects of team PPGO; suggest the effect should be positive (Bunderson & Sutcliffe, 2003; DeShon et al., 2004) or negative (LePine, 2005; Porter et al., 2010). We argue that this conundrum is inherent to high-PPGO team members, who seek to demonstrate competence and are attentive to various avenues (i.e., individual- and team-level) for doing so.

Second, we found that the content of conflict determines whether members of high-PPGO teams are willing to collaborate with team members. Specifically, the combination of task and relationship conflict moderated the effect of team PPGO on collaboration, such that team PPGO related to collaboration positively under conditions of high task and low

Table 3. Conditional indirect effects of PPGO on team performance

Path	High task / Low relationship conflict	Low task / high relationship conflict	Difference
First-stage effects on collaboration			
PPGO × Task × Rel. → Collaboration	.19* (.02, .37)	−.28* (−.52, −.03)	.47* (.11, .77)
Conditional indirect effects on performance			
PPGO × Task × Rel. → Collaboration → Performance	.03* (.003, .09)	−.05* (−.13, −.01)	.08* (.01, .20)

Note. Parameter estimates are path estimates at low and high levels of the moderator. Values in parentheses are bias-corrected 95% confidence intervals from 1,000 bootstrapped samples.
PPGO = performance-prove goal orientation; task = task conflict; rel. = relationship conflict.
*95% confidence interval did not include zero.

relationship conflict and negatively under conditions of low task and high relationship conflict. In the presence (or absence) of both types of conflict, the benefits of task conflict and constraints of relationship conflict should be offsetting. Consistent with this notion, we found virtually no relationship between team PPGO and collaboration when *both* task and relationship conflict was high or low.

In sum, team PPGO research has shown inconsistent relationships between team PPGO and team performance (DeShon et al., 2014; Dietz et al., 2015; Porter et al., 2010). This study augments our understanding of this issue by demonstrating how the combination of task and relationship conflict moderates the effect of team PPGO on team performance. Further, the findings with respect to collaboration provide insight into the mechanism by which PPGO may influence team performance. This result helps to

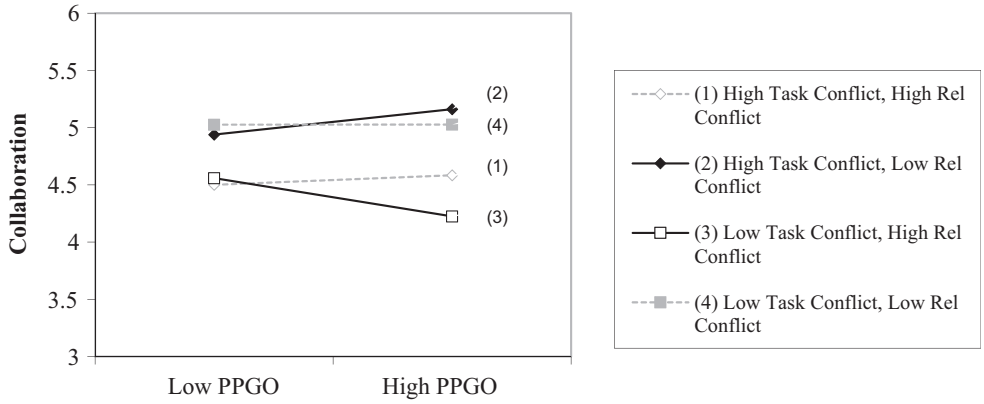

Figure 2. Interaction of PPGO, Task Conflict, and Relationship Conflict Predicting Collaboration. *Note*. PPGO = performance-prove goal orientation. Slopes displayed at ±1 *SD* of PPGO and task conflict. Simple slopes of PPGO effect at: a) high task and low relationship conflict, $b = .19$ (95% CI: .02, .37), b) low task and high relationship conflict, $b = -.28$ (95% CI: −.52, −.03), c) low task and low relationship conflict, $b = .01$ (95% CI: −.12,.12), and d) high task and high relationship conflict, $b = .07$ (95% CI: −.08, .23).

unravel the black box between PPGO and team performance outcomes and offer new lenses for thinking about the role of PPGO in teamwork.

Practical implications

Our findings provide several implications for managers. From a staffing perspective, managers could consider selecting individuals high on PPGO into teams while being mindful that for the members of these teams to engage with one another in a collaborative manner there should be some level of task conflict present, and low relationship conflict. Given that task conflict often manifests itself in the context of complex and creative tasks (Hülsheger, Anderson, & Salgado, 2009), managers staffing teams that require extensive exchanges of ideas may benefit most from selecting high-PPGO individuals. This will allow the parent organization to reap the motivational and performance benefits associated with PPGO and take into account the collaborative processes that occur when high-PPGO teams face task conflict. Given that high relationship conflict can either nullify or reverse the positive effects of PPGO, our findings also underscore the importance of de-emphasizing personal differences and minimizing interpersonal friction in order to spur high-PPGO team members to collaborate with one another.

Our findings also suggest there may be benefits to stimulating task conflict in teams composed of high-PPGO individuals. For example, managers might encourage dissenting opinions on a team, encourage all individuals to suggest solutions and emphasize that team performance will be optimal when members collaborate in order to solve problems. Managers might also benefit from reinforcing to high-PPGO teams that team performance is being evaluated relative to other teams, not based on individual performance (Dietz et al., 2015). Organizations could make this more salient by instituting team-level reward systems. These efforts should prompt high-PPGO teams to focus on finding collaborative solutions as opposed to competing with one another for relative standing. Further, our findings add to this work by demonstrating that not only does relationship conflict inhibit collaboration, but it also disrupts the potential gains that task conflict can encourage. Relationship conflict can suppress team co-operation (Griffith, Mannix, & Neal, 2003) and disrupt team performance, member satisfaction and a host of other critical team outcomes (De Dreu & Weingart, 2003). Our work reinforces existing recommendations for teams to avoid or quickly resolve relationship conflict, or to take steps to convert that relationship conflict into disagreement about tasks, which are more likely to benefit team performance.

We make these recommendations with the knowledge that it is unusual for teams to have solely task or relationship conflict, as they are highly correlated and hence often appear simultaneously in the workplace (De Dreu & Weingart, 2003). Thus, teams can rarely reap the potential benefits that the combination of higher task conflict and lower relationship conflict might produce (Peterson & Behfar, 2003). To address this challenge, researchers have examined managerial strategies to reduce the risk of task conflict manifesting in relationship conflict (e.g., Guenter, Emmerik, Kuypers, Iterson, & Notelaers, 2016), showing that contingency factors like team trust and communication might reduce the relationship between task and relationship conflict (e.g., Choi & Cho, 2011; Gamero, Gonzalez-Roma, & Peiro, 2008). We encourage managers to attend to such contingent factors to reap the benefits of task conflict and lessen the deleterious effects of relationship conflict.

Finally, our study also presents practical implications to *members* of high-PPGO teams. Employees who find themselves as teammates with high-PPGO individuals may be

tempted to focus on their own goals at the expense of the team's shared goals or to keep quiet about their perspectives in order to maintain harmony with team members. Our results suggest these courses of action are not optimal. Members of high-PPGO teams can capitalize on teams' achievement tendencies by emphasizing the value of pursuing shared, team-level objectives as a path to high performance. Members of high-PPGO teams should voice their dissenting opinions about tasks. Ironically, by keeping silent about task conflict in an effort to maintain harmony, individuals hide their unique value and neutralize the possible benefits of task conflict for high-PPGO teams. Additionally, and in line with our previous recommendations, members of high-PPGO teams are encouraged to tamp down or resolve relationship conflict, or to use epistemic conflict regulation (Darnon et al., 2006) to refocus conflict towards team tasks and assumptions.

Limitations and future research directions

Our study suffers several limitations that provide directions for future research. First, PPGO, team conflict states and team collaboration were measured by the same source (team members) on a single survey. This limits the causal inferences we can draw from our results. To address this concern, an anonymous reviewer suggested that we conduct a robustness check to separate the raters of team conflict states and of team collaboration. To conduct this analysis, we randomly split all teams in half, then used the ratings from one-half of members to evaluate team conflict states, and the ratings from the second half to rate team collaboration (all members were included for PPGO given this measure was not referent-shifted according to our team PPGO composition model). Substantive conclusions were identical, reducing the concern about common source bias[3]. However, his/her robustness check does not address the concern about potential alternative causal orderings of our theoretical model. Empirically, our one-time survey offers a limited test of the causal ordering of our theory. The extensive research and theory consistent with our causal ordering (i.e., the input-process-output framework; Cohen & Bailey, 1997) to some degree ameliorates this concern. Additionally, our focus on the trait form of PPGO is an important consideration; it is unlikely that team processes or team performance cause employee dispositions in PPGO. Alternative causal orderings remain plausible, however.

A second limitation stems from our use of a sample in a specific organizational, industrial and cultural context that may limit the generalizability of our results. To some degree, this problem is mitigated by our broad use of teams across corporate functions, which gives some confidence that the results will apply to teams of many different types. Yet teams are formed for many different purposes in organizations (Hollenbeck, Beersma, & Schouten, 2012), and they are nested in different industries and cultural contexts. Further, given that our study was conducted in South Korea, it could be that some relationships may not generalize to Western samples. For example, because socio-cultural norms about team and group identities in South Korea differ from most Western countries, teams in South Korea may be more likely to collaborate overall. To some degree, this concern is mitigated by the fact that the organization in this study is a global corporation with organizational systems comparable to Western companies. At the same time, we are cautious not to present Western companies as the gold standard to which findings ought to apply. In fact, the goal-setting literature has been criticized for its focus on American and Northern European samples (Sue-Chan & Ong, 2002), and our research presents some

[3] *Detailed results are available by request of the first author.*

much-needed diversity to the literature by highlighting PPGO as a factor in teamwork even in a national culture that is relatively collectivistic and high in power distance.

Our broader point is that care should be taken when applying our results to teams that differ significantly in their surrounding environment, and future research should examine whether our findings generalize to different organizational and cultural contexts. This pertains not only to national culture, but also to the tasks, work settings and alternative operationalizations of performance (e.g., Sinha, Janardhanan, Greer, Conlon, & Edwards, 2016). In particular, task type has been described as a critical situational factor that can influence team processes and outputs (De Dreu & Weingart, 2003; Stewart & Barrick, 2000), and our results may depend in part upon the specifics of the tasks each team is engaged in. Although we control for broad team tasks (e.g., R&D, sales, administration), we did not specifically assess more specific types of tasks, such as creativity, decision-making, or execution emphases. Given that these different tasks impact teams' processes and outcomes (Farh et al., 2010; Puck & Pregernig, 2014), future work examining the moderating role of team tasks is warranted. We advocate for further explorations of team tasks and also for a broader set of boundary conditions that may moderate the linkage between team PPGO and team outcomes.

Third, future research is needed to further examine the underlying psychological mechanisms explaining the reported relationships. We applied task conflict theory (e.g., Todorova et al., 2014) to suggest that high-PPGO team members respond to task conflict by recognizing its informational and motivational benefits. These responses are rooted in the categorization–elaboration model (van Knippenberg et al., 2004) and the collective effort model (Karau & Williams, 1993). Though our research applies these ideas in a new way to team PPGO, we were not able to empirical test whether high-PPGO individuals recognized or responded more strongly through an informational or motivational mechanism. Future research may delve more deeply into these unmeasured mediators, and may also incorporate similar ideas from research on collective leadership (e.g., Moregeson, DeRue, & Karam, 2010), team members' motivation (e.g., Weaver, Bowers, Salas, & Cannon-Bowers, 1997), social loafing (e.g., Karau & Williams, 1993) or diversity beliefs (e.g., van Dick, van Knippenberg, Hagele, Guillaume, & Brodbeck, 2008). Such additional viewpoints, among others, may augment our understanding of how PPGO relates to team performance under different combinations of team conflict.

Finally, we advise caution in interpreting our results in light of the relatively small effect sizes we found. Namely, the interaction effects were all statistically significant but lie at the boundary between small and medium effects (Bosco, Aguinis, Singh, Field, & Pierce, 2015). Further, the best predictor of team collaboration was relationship conflict, accounting for 23% of the variance explained by our model, while the interaction effects added an additional 3% to the explanatory power of the model. As others have noted, interaction effects have notoriously small effect sizes when compared to conventional effect size standards (Aguinis, Beaty, Boik & Pierce, 2005). This is in a part a mathematical limit that main effects place on interactions computed from those effects. However, we suggest that from a practical standpoint even these small effects are worth attending to given their potentially large implications for team performance over time.

Conclusion

Composing teams with high-PPGO members offers an avenue for effective team composition, provided that the team members find ways to collectively capitalize on their predisposition to demonstrate competence relative to others. Our study finds that

one way to increase the chances that high-PPGO teams will come together is to experience conflict about tasks, rather than relationships, as they engage in teamwork. By highlighting team members' unique perspectives on tasks while minimizing interpersonal differences, members begin to see one another as valuable collaborators, setting the stage for high-PPGO teams to work collaboratively and capitalize on their motivational disposition for high performance.

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Conflicts of interest

All authors declare no conflict of interest.

Data availability statement

The authors pledge to make the data publicly available if the paper is accepted.

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