

GOAL INTERDEPENDENCE, SUBGROUP FORMATION, AND CONFLICT IN TEAMS

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ABSTRACT. This research investigates subgroup formation as an important mediator in the goal interdependence-intragroup conflict linkage. Specifically, it proposes that subgroup formation will mediate the relationship between cooperative goal interdependence and intragroup conflict, but not for competitive goal interdependence and intragroup conflict. Further, competitive goal interdependence is posited to have direct, positive effects on intragroup conflict. Using structural equation modeling analyses with 79 student project teams, the findings revealed that subgroup formation fully mediated the relationship between cooperative goal interdependence and task and process conflict, but only partially mediated the relationship between cooperative goal interdependence and relationship conflict. As predicted, subgroup formation did not mediate the relationship between competitive goal interdependence and intragroup conflict; however, competitive goal interdependence was negatively, rather than positively, related to intragroup conflict.

INTRODUCTION

Work groups or teams are prevalent and indispensable in most organizations today (Cohen & Bailey, 1997; Mathieu et al., 2008). In order for organizational teams to function effectively and to yield productive outcomes, it is imperative for them to manage their intragroup conflicts, i.e., internal disagreements, tensions or perceived incompatibilities regarding tasks (*task conflict*), interpersonal relations (*relationship conflict*) or task-related

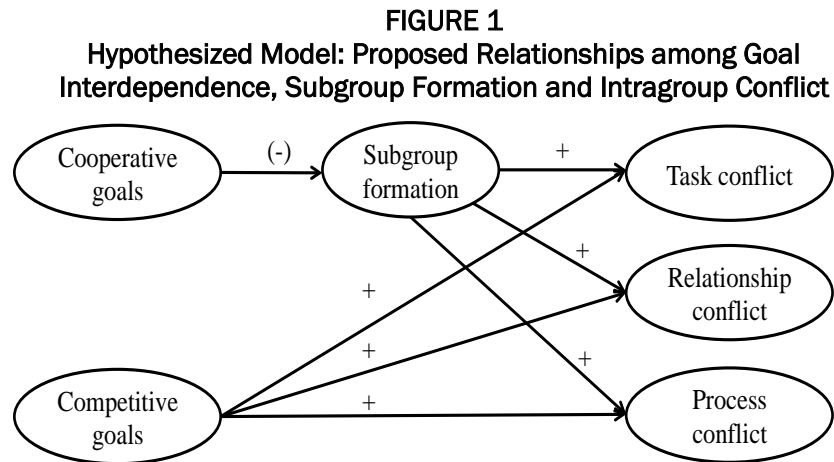
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procedures (*process conflict*) among team members (Jehn, 1994, 1995, 1997), constructively. Past studies (for meta-analyses, see De Dreu & Weingart, 2003; de Wit, Greer & Jehn, 2012) have demonstrated that intragroup conflict can exert significant influence on team functioning (e.g., Griffith, Connelly & Thiel, 2014; Puck & Pregonig, 2014; Rispens et al., 2011) and team effectiveness (e.g., Shaw, Zhu, Daffy et al., 2011; Tekleab, Quigley & Tesluk, 2009).

A considerable amount of research has also examined various factors contributing or relating to intragroup conflict (for reviews, see Jehn & Bendersky, 2003; Jehn, Greer & Rupert, 2008), including goal interdependence. Goal interdependence refers to how team members perceive their goals to be structured or are related to one another (Deutsch, 1949, 1973; Johnson & Johnson, 2005; Tjosvold, 1986), and constitutes an important contextual characteristic of teams. Indeed, organizational researchers have emphasized the need for more research on interdependence in teams (Kozlowski & Bell, 2003; Mathieu et al., 2008). Prior studies have shown that goal interdependence directly affects the level and nature of intragroup conflict (e.g., Chen, Tjosvold & Wu, 2008; Medina, Lunduate & Guerra, 2008). An experimental study conducted by Chen, Tjosvold and Wu (2008), for instance, reported that cooperative goals, relative to competitive and independent goals, resulted in less perceived task and relationship conflict between employees and their managers in China. Medina and colleagues (2008), in a field study with 401 Spanish participants, found that goal interdependence was negatively associated with both task and relationship conflict; they also found that goal interdependence interacted with position power to influence intragroup conflict – participants perceived less task and relationship conflict under conditions of low position power and cooperative goal interdependence.

Despite these conclusions about the relationship between goal interdependence and intragroup conflict, much less is known about the mechanisms underlying this relationship. How does the interrelatedness of team members' goals affect their perceptions of conflict within the team? Why do cooperative goals discourage intragroup conflict, while competitive goals exacerbate them? To address these questions, I draw upon relevant research and theories from the group diversity and faultlines literatures to propose that perceived subgroup formation, which refers to the extent to which

members perceive subgroups or cliques within the team (Jehn & Bezrukova, 2010), may serve as one important mechanism in explaining the relationship between goal interdependence and intragroup conflict. Specifically, I reason that subgroup formation will act as a conduit through which cooperative, but not competitive, goal interdependence affects intragroup conflict outcomes, i.e., task, relationship and process conflict. The purpose of this paper, then, is to test a hypothesized mediation model of subgroup formation on (cooperative) goal interdependence and intragroup conflict (see Figure 1).



By examining the proposed linkages among goal interdependence, subgroup formation and intragroup conflict, this research contributes to the current literature in several ways. It is one of few, if not the first, studies to focus on intervening variables between goal interdependence and conflict in teams. Past research has largely looked at the interactive effects of goal interdependence and contextual or moderator variables, such as relationship values (Chen, Tjosvold & Wu, 2008) and power bases (Medina, Lunduate & Guerra, 2008) on intragroup conflict. Further, this study broadens our understanding of cooperative and competitive goal interdependence by demonstrating how these concepts may operate using different pathways to influence critical group processes, such as intragroup conflict. This research also addresses recent calls for future

investigations that examine factors or mechanisms contributing to perceived subgroup formation (e.g., Zellmer-Bruhn et al., 2008) in teams.

In the next section, the author will briefly review relevant literature pertaining to the focal constructs of interest, namely goal interdependence and perceived subgroup formation in teams, and then present the arguments leading to the hypotheses examined in this research.

Goal Interdependence

Goal interdependence, as defined in this study, is based upon Deutsch's (1949, 1973) theory of cooperation and competition. In this theory, Deutsch reasoned that goal interdependence is likely to occur in one of three forms: cooperative, competitive and independent. Cooperative goal interdependence (or cooperative goals) describes a situation in which two or more group members perceive their goals as positively linked to one another. Put simply, in order for one member to achieve his or her goal, other members have to achieve their goals as well. This is similar to a "swim-swim/sink-sink" scenario: if one swims, the other swims; conversely, if one sinks, the other sinks. Competitive goal interdependence (or competitive goals), on the other hand, concerns a situation in which two or more group members perceive their goals as negatively linked to one another. In other words, for one member to achieve his or her goals, other members will have to fail to achieve their goals. This is akin to a "swim-sink" scenario: if one swims, the other sinks, or vice versa. Finally, as for independent goal interdependence (or independent goals), this describes a situation whereby group members' goals are unrelated to one another. How and whether one group member achieves his or her goal has no bearing on that of other group members. In this case, other group members are unaffected by whether one group member swims or sinks.

Since Deutsch's (1949, 1973) theorizing, much empirical work has accumulated to test his concepts of goal interdependence across various settings (Johnson, 2003; Johnson & Johnson 2005; Johnson et al., 1981). To date, a considerable body of research exists about the nature, antecedents, and consequences of goal interdependence in organizational contexts (Tjosvold, 1998, 2008). For example, cooperative goals in the workplace have been found to improve

employees' levels of affective attitudes (Lu & Tjosvold, 2013), psychological safety (Chen & Tjosvold, 2012), organizational citizenship behaviors (Wong, Tjosvold & Liu, 2009), and open-minded discussions (Tjosvold, 2002). On the contrary, competitive goals, relative to cooperative goals, have generally been associated with more negative effects for individuals and groups at work: increased quit intentions (Lu & Tjosvold, 2013), less organizational citizenship behaviors (Wong, Tjosvold & Liu, 2009), lower quality leader-member relationships (Chen & Tjosvold, 2008), and less effective decision-making (Chen, Tjosvold & Wu, 2008). As for independent goals, past research has noted that group members often perceive competitive and independent goals simultaneously (Tjosvold & Yu, 2004; Tjosvold, Yu & Hui, 2004). Further, independent goals generally yielded similar, negative effects (to a lesser extent, though) on various outcomes as those of competitive goals (e.g., Chen, Lu, Tjosvold & Lin, 2008; Lu & Tjosvold, 2013; Tjosvold, Peng, Chen & Su, 2008; Wong, Tjosvold & Liu, 2009). Given such relatively similar effects of independent goals to those of competitive goals found in past research, this study thus focuses only on cooperative and competitive goals.

In light of the aforementioned research, it is clear that goal interdependence plays a critical role in team functioning and effectiveness. Further, it exerts significant influence on group process variables, such as intragroup conflict, that can facilitate or undermine the productivity and maintenance of teams (e.g., Chen, Tjosvold, & Wu, 2008; Tjosvold, Tang & West, 2004; Tjosvold, Wong, Nibbler & Pounder, 2002; Tjosvold & Yu, 2004). What is less clear in current research, however, are the underlying mechanisms that link goal interdependence to group processes, specifically intragroup conflict. Here, the author proposes subgroup formation as a possible intervening mechanism that may help explain the linkage between goal interdependence and conflict in teams.

Subgroup Formation

Perceived subgroup formation occurs when individuals view the presence of smaller collectives within a larger group, on the basis of one or more perceived similar or shared characteristics (Cronin et al., 2011; Zellmer-Bruhn et al., 2008). Recent studies on perceptions of subgroup formation have shown that it can exert significant effects on team processes and outcomes, such as member satisfaction and

team effectiveness respectively (e.g., Cronin et al., 2011; Homan & Greer, 2007; Jehn & Bezrukova, 2010; Zellmer-Bruhn et al., 2008). Research has also examined factors that can affect subgroup perceptions within groups, e.g., cognitive and affective integration (Cronin et al., 2011) and perceived work style similarity (Zellmer-Bruhn et al., 2008).

Subgroup Formation and Cooperative Goal Interdependence

For this study, I propose that perceived subgroup formation is likely to act as a mediating mechanism through which *cooperative goal interdependence* affects intragroup conflict. Based on the information-elaboration/decision-making perspectives from the group diversity and faultlines literatures (for a review, see van Knippenberg & Schippers, 2007), group members who perceive cooperative goals among them are likely to be motivated to share task-relevant information and perspectives with one another in order to facilitate success of their mutual goal attainment (e.g., Chen, Tjosvold & Wu, 2008; Chen, Tjosvold, Huang & Xu, 2011). Such information exchange and elaboration would, in turn, lead to greater awareness about unique, task-related perspectives, viewpoints, and preferences among members. Applying the attraction-similarity paradigm (Bryne, 1971), the heightened understanding of members' unique and task-related perspectives, ideas and attitudes may also lead team members to interact or identify more with some members who are seen as having similar viewpoints, perspectives or attitudes, relatively to others in the same team. Consequently, such perceptions of subgroups or smaller coalitions, based on members' perceived similarity in ideas, attitudes or viewpoints, may emerge among members in the broader team (e.g., Eisenhardt & Bourgeois, 1988; Murnighan & Brass, 1991).

With the occurrence of perceived subgroups, in-group/out-group distinctions (Brewer, 1999; Tajfel & Turner, 1986) are activated along subgroup lines, and members may come to reduce cross-subgroup interactions and to increase communications within subgroup boundaries instead (e.g., Polzer, Mannix & Neale, 1998). Consistent with past research (e.g., Jehn & Bezrukova, 2010), members who perceive subgroups in their teams would also likely experience more disagreements or tensions over tasks, personal differences, and task-related processes within the entire team. Given the above reasoning, it is therefore hypothesized that:

H1a: Subgroup formation will mediate the relationship between cooperative goals and task conflict, such that cooperative goals will be negatively related to subgroup formation, which will, in turn, be positively related to task conflict.

H1b: Subgroup formation will mediate the relationship between cooperative goals and relationship conflict, such that cooperative goals will be negatively related to subgroup formation, which will, in turn, be positively related to relationship conflict.

H1c: Subgroup formation will mediate the relationship between cooperative goals and process conflict, such that cooperative goals will be negatively related to subgroup formation, which will, in turn, be positively related to process conflict.

Subgroup Formation and Competitive Goal Interdependence

By contrast, it is posited that perceived subgroup formation will be unlikely to have a mediating effect on the relationship between *competitive* goal interdependence and intragroup conflict. When members perceive their goals as conflicting or opposing to those for others in the team, they tend to decrease information sharing and limit open-minded discussions with one another (e.g., Chen, Lu, Tjosvold & Lin, 2008; Tjosvold, 1990), and may become motivated to seek alternative ways or options to accomplish their own goals. With a win-lose mentality associated with competitive goal structures, people are likely to be less concerned with forming coalitions with fellow team members or to be aware of any existing or emerging subgroups within the team, thus lowering the occurrence or salience of subgroup formation. Rather, members who view their own goals as competitively linked may take active steps or intentionally engage in attempts to hinder the attainment of fellow team members' goals (Deutsch, 1973; Johnson et al., 1981). As such, teams whose members perceive competitive goals with one another are also likely to experience higher levels of intragroup conflict (Chen, Tjosvold & Wu, 2008).

H2a: Subgroup formation will not mediate the relationship between competitive goals and task conflict; instead, competitive goals will be directly and positively related to task conflict.

H2b: Subgroup formation will not mediate the relationship between competitive goals and relationship conflict; instead, competitive goals will be directly and positively related to relationship conflict.

H2c: Subgroup formation will not mediate the relationship between competitive goals and process conflict; instead, competitive goals will be directly and positively related to process conflict.

METHOD

Participants and Procedures

Seventy nine undergraduate student project teams ($n = 417$ students) from various sections of a core business administration course at a university in the Asia-Pacific region participated voluntarily in this cross-sectional field study. Prior to data collection, the study protocols were reviewed and approved by the Institutional Review Board (IRB) at the university. The participants were between 17 and 27 years old ($M = 21.7$, $SD = 1.65$). 54% of them were identified as female ($n = 179$), 45% as male ($n = 151$), and the remaining 1% as 'other,' e.g., transgender ($n = 2$).

The students worked in the same teams throughout the academic semester, and all teams were required to complete a final project that was consistent across all course sections at the end of the semester. The student project teams consisted of three to eight members each ($M = 4$, $SD = 1.09$). 57 (72%) of the teams sampled were assigned by the instructors, while the remaining 22 (28%) teams were self-organized among the students. A means comparison test was conducted to assess whether significant group differences existed among the teams based on the type of group assignment (assigned vs. self-sorted), and the results revealed no significant differences among the teams based on group assignment.

Data were collected from individual project team members using an online questionnaire at the end of the semester. Participants were provided with either extra course credit or a small monetary compensation for taking part in this study. Participants were also ensured anonymity and confidentiality of their information to encourage candid and honest responses as they complete the questionnaires.

Study Measures

Goal Interdependence

I adapted items from Lu, Tjosvold and Shi's (2010) measure to assess individual perceptions of cooperative and competitive goal interdependence. Participants rated items using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). This measure consisted of two sub-scales: positive goal interdependence and negative goal interdependence. A sample item from the five-item positive goal interdependence sub-scale: "In this team, members want each other to succeed"; Cronbach's alpha = .67). One sample item from the five-item negative goal interdependence sub-scale: "In this team, members like to show that they are superior to each other (reverse-coded)"; Cronbach's alpha = .70).

Subgroup Formation

Adapted items from Cronin, Bezrukova, Weingart, et al.'s (2011) scale were used to assess members' perceptions of subgroup formation in teams. Sample items from this measure included the following: "To what extent has your team split into subgroups?" and "To what extent has your team split into multiple or smaller cliques?" (Cronbach's alpha = .80). The items were scored on a five-point Likert scale (1 = not at all or to a very small extent; 5 = to a very large extent).

Intragroup Conflict

To assess participants' ratings of perceived conflict within their teams, I used Jehn and Mannix's (2001) scale to measure the three types of intragroup conflicts: task, relationship and process conflicts. The nine-item scale comprised three sub-scales to assess each of the intragroup conflict type. Each sub-scale also consisted of three items. Sample items for each of the three sub-scales respectively were: "How much conflict of ideas is there in this team?" "How much relationship tension is there in this team?" and "How often are there disagreements about who should do what in this team?" The Cronbach's alphas were .80 (task conflict sub-scale), .86 (relationship conflict sub-scale), .79 (process conflict sub-scale), and .88 (overall intragroup conflict scale). All items for this measure are rated on a five-point scale (1 = "never/not at all or to a very small extent"; 5 = "always/to a very large extent").

ANALYSIS

Data Aggregation

Since this study was concerned with team-level constructs, sufficient levels of within-team agreement and between-team variability were needed in order to justify data aggregation for the study variables. To do so, I calculated the within-group interrater agreement indices or r_{wgs} (James, Demaree, & Wolf, 1984, 1993) and intraclass correlations (Bliese, 2000) using the aggregated team-level data for each measure. The r_{wg} measures the degree to which individual ratings within a group are interchangeable, and values of r_{wgs} that are greater or equal to .70 are considered good indicators of sufficient within-team agreement (George & Bettenhausen, 1990). As for intraclass correlations, these are measured in two forms: ICC (1), which assesses the extent to which variability in individual ratings is explained by group membership, and ICC (2), which is concerned with estimating the reliability of group means. ICC (1) values of .12 or higher and ICC (2) values of .70 or higher would indicate sufficient support for within-team agreement and between-team variability respectively (Bliese, 2000).

Table 1 shows the data aggregation indices for all the team-level measures. The median r_{wgs} for all measures were .70 or greater, thus

TABLE 1
Data Aggregation Indices for All Team-Level Measures (N = 79)

Variable	Median $r_{WG(J)}$	ICC (1)	ICC (2)
1. Goal interdependence	.96	.17	.68
Cooperative	.95	.40	.77
Competitive	.89	.16	.49
2. Subgroup formation	.80	.45	.76
3. Intragroup conflict	.96	.31	.80
Task conflict	.96	.56	.80
Relationship conflict	.96	.73	.89
Process conflict	.96	.60	.82

Note. ICC (1) = intra-class correlation for individual ratings based on a one-way random effects ANOVA. ICC (2) = intra-class correlation for team mean ratings based on a one-way random effects ANOVA.

indicating acceptable levels of within-team agreement. The ICC (1) values for all the measures also met the recommended value of .12 or higher. The ICC (2) values for all measures were also .70 or greater, except for competitive goal interdependence (.49) and overall goal interdependence (.68). Nonetheless, since the other data aggregation indices, i.e., r_{wgS} and ICC (1) values, for all the team measures were acceptable, it was justified to aggregate the data for all variables to the team level.

Scale Validation

The author conducted a series of confirmatory factor analyses (CFAs) using Mplus 7.3 (Muthén & Muthén, 1998-2012) to examine whether the participants' ratings would load onto six distinct factors, namely, cooperative goals, competitive goals, subgroup formation, task conflict, relationship conflict, and process conflict. Specifically, the author compared the proposed six-factor model to two alternative models: a three-factor model and a one-factor model. The three-factor model was selected as an alternative solution as it might be possible that the subscales for goal interdependence (cooperative and competitive) and for intragroup conflict (task, relationship and process) may not be empirically distinct. The CFAs were conducted using the individual ratings from 410 participants.

Results (see Table 2) indicate that the proposed six-factor model fits the data best, relative to the other two alternative models, with CFI = .94, RMSEA = .05, SRMR = .04. The chi-squares of both the three-factor and one-factor models were significantly greater than that of the six-factor model solution. As such, it is reasonable to conclude that there are six distinct factors measured in this study.

TABLE 2
Confirmatory Factor Analyses (N = 410)

	d.f.	Model χ^2	$\Delta\chi^2$	Δ d.f.	RMSEA	CFI	SRMR
Baseline 6-factor model	215	430.87**			.05	.94	.04
3-factor model ^a	227	769.72**	338.85	12	.08	.85	.06
1-factor model	230	1329.23**	559.51	3	.11	.70	.08

Note. ^a M2 combines cooperative and competitive goals into one factor (goal interdependence), and combines task, process and relationship conflict into another factor (group conflict). ** $p < .01$.

Hypotheses Testing

Zero-order correlational analyses were used to provide initial tests of the study hypotheses. Structural equation modeling analyses were then applied to assess the underlying covariance structure of the relationships among cooperative goal interdependence, competitive goal interdependence, subgroup formation, task conflict, relationship conflict, and process conflict in the hypothesized model. As past research has demonstrated, structural equation modeling is an appropriate and preferred analytical tool to use in this research, as it is a powerful and sophisticated technique that enables researchers to specify and test complex “path” or mediation models, particularly in examining predictive relationships among constructs.

Since it is unclear from the existing literature whether subgroup formation would partially or fully mediate the relationship between cooperative and/or competitive goal interdependence and intragroup conflict, I conducted a nested model test by comparing three alternative models to the proposed model (M_2): The three alternative models were a non-mediation model (M_1) and two partial mediation models (M_3 and M_4). Specifically, M_1 posits an indirect-effects model whereby subgroup formation fully mediates the relationship between both types of goal interdependence and all three intragroup conflict types. The first partial mediation model, M_3 , proposes that subgroup formation fully mediates the relationship between cooperative goal interdependence and task/process conflict but partially mediates the relationship between cooperative goal interdependence and relationship conflict, and that competitive goals are directly linked to all three intragroup conflict types. The second partial mediation model, M_4 , proposes that subgroup formation partially mediates the relationship between cooperative goals interdependence and all three intragroup conflict types, and that competitive goals are directly linked to all three intragroup conflict types.

In terms of sample size considerations, it should be noted that while the sample of teams ($n = 79$) examined in this study would be considered relatively small, it would still be within acceptable levels based on known guidelines, e.g., 10 cases for each variable (Nunnally, 1967) and 5 or 10 observations for each estimated parameter (Bentler & Chou, 1987; Bollen, 1989), in the literature involving SEM analyses.

RESULTS

Correlational Findings

Table 3 reports the means, standard deviations, group reliability scores based on the teams' means (Snijders & Bosker, 1999, p. 26), and zero-order correlations among the study variables. Findings from the correlational analyses indicate preliminary support for Hypotheses 1a-c: cooperative goal interdependence is negatively associated with subgroup formation ($r = -.46, p < .01$), and subgroup formation is, in turn, positively associated with all three intragroup conflict types: task ($r = .42, p < .01$), relationship ($r = .52, p < .01$) and process conflict ($r = .51, p < .01$). By contrast, the correlation results did not offer preliminary support for Hypothesis 2a-c: competitive goal interdependence was negatively related, rather than unrelated, to subgroup formation ($r = -.32, p < .01$); competitive goal interdependence was also negatively, rather than positively, related to task conflict ($r = -.41, p < .01$), relationship conflict ($r = -.58, p < .01$), and process conflict ($r = -.44, p < .01$).

TABLE 3
Means, Standard Deviations, and Correlations among Study Variables (Team Level, N = 79)

Variable	M	SD	1	2	3	4	5	6
1. Cooperative goal interdependence	19.68	1.47	(.78)					
2. Competitive goal interdependence	17.84	1.65	.49**	(.73)				
3. Subgroup formation	7.67	1.92	-.46**	-.32**	(.82)			
4. Task conflict	7.35	1.38	-.35**	-.41**	.42**	(.86)		
5. Relationship conflict	4.99	1.53	-.58**	-.58**	.52**	.69**	(.92)	
6. Process conflict	5.25	1.25	-.37**	-.44**	.51**	.45**	.61**	(.83)

Notes. Numbers in parentheses are team-level reliability coefficients for the measures. ** $p < .01$.

Structural Equation Findings

Structural equation analyses through Mplus 7.3 were used to test the hypothesized model by exploring the underlying relationships among the six study variables. Table 4 reports the fit indices for the hypothesized model (M_2) as compared to those for the three alternative models (M_1 , M_3 and M_4). The hypothesized model, M_2 , provided a significantly better fit to data ($\chi^2 = 11.07, df = 4, p < .05$)

compared to M_1 , the non-mediation model ($\chi^2 = 35.64$, $df = 6$, $p < .01$). The χ^2 difference between M_1 and M_2 was also significant ($\Delta\chi^2(2) = 24.57$, $p < .01$), indicating that the omission of direct links between competitive goals and intragroup conflict and the inclusion of a direct link between competitive goals and subgroup formation significantly deteriorated the hypothesized model.

When the two partial mediation models, M_3 and M_4 , were tested against the hypothesized model, M_2 , both M_3 and M_4 showed significant decreases in the model χ^2 ($M_3\Delta\chi^2(1) = 9.36$, $p < .01$; $M_4\Delta\chi^2(3) = 9.87$, $p < .01$), thus suggesting that the addition of direct links between cooperative goals and intragroup conflict significantly improved model fit to data. Based on the parsimony principle, M_3 also provided a slightly better fit to data compared to M_4 , given the former's more favorable RMSEA and TLI/NNFI values (see Table 4).

TABLE 4
Fit Statistics for the Structural Equation Modeling Analyses

	<i>df</i>	Model χ^2	$\Delta\chi^2$	TLI/NNFI	CFI	RMSEA	SRMR
Null model (M_0)	14	175.25**					
Non-mediation model (M_1): Cooperative/competitive goals have direct links to subgroup formation; subgroup formation has direct links to all three intragroup conflict types	6	35.64**	139.61**	.57	.82	.25	.14
Hypothesized model (M_2): M_1 , with deleted link from competitive goals to subgroup formation, and added links from competitive goals to all three intragroup conflict types	4	11.07*	24.57**	.85	.96	.15	.05
Partial mediation model (M_3): M_2 , with added link from cooperative goals to relationship conflict	3	1.71, <i>ns</i>	9.36**	1.04	1.00	0	.03
Partial mediation model (M_4): M_3 , with added links from cooperative goals to task and process conflict	1	1.20, <i>ns</i>	9.87**	.98	1.00	.05	.03

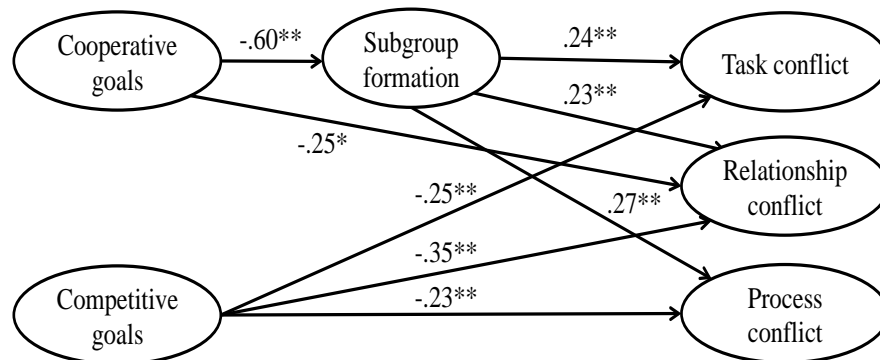
Notes. * $p < .05$, ** $p < .01$.

M_3 , which adds a direct link between cooperative goals and relationship conflict to the hypothesized model, M_2 , was therefore accepted as the final model in the model comparison analyses.

Path estimates for the final partial mediation model, i.e., M_3 , are depicted in Figure 2. In support of Hypotheses 1a-c, cooperative goal interdependence has a negative effect on subgroup formation ($\beta = -.60, p < .01$), and subgroup formation has positive effects on task conflict ($\beta = .24, p < .01$), relationship conflict ($\beta = .23, p < .01$), and process conflict ($\beta = .27, p < .01$). Cooperative goal interdependence also has a direct negative effect on relationship conflict ($\beta = -.25, p < .05$).

Hypotheses 2a-c, on the other hand, were partially supported; further, significant opposite findings were observed. Subgroup formation is unrelated to competitive goal interdependence ($\beta = .15, n.s.$), and competitive goal interdependence is found to exert negative, rather than positive, effects on task conflict ($\beta = -.25, p < .01$), relationship conflict ($\beta = -.35, p < .01$), and process conflict ($\beta = -.23, p < .01$).

FIGURE 2
Final Model: Path Coefficients among Goal Interdependence, Subgroup Formation, and Intragroup Conflict



Notes. * $p < .05$; ** $p < .01$.

DISCUSSION

While considerable research has been conducted on goal interdependence and intragroup conflict in teams, much less attention has been directed at investigating the mechanisms through which cooperative and competitive goal interdependence affect intragroup conflict. This study proposes that perceived subgroup formation serves as an important intervening variable in the goal interdependence-intragroup conflict linkage, particularly as it relates to cooperative goal interdependence; on the other hand, subgroup formation is posited to have no mediating effect between competitive goal interdependence and intragroup conflict.

As such, the main goal of this study was to examine whether perceived subgroup formation acts as an intervening mechanism between cooperative, and not competitive, goal interdependence and various forms of intragroup conflict, i.e., task, relationship and process conflict. The study's findings provided support for this hypothesized relationship: Subgroup formation fully mediated the relationship between cooperative goals and task and process conflict, and partially mediated the relationship between cooperative goals and relationship conflict. On the other hand, subgroup formation did not mediate the relationship between competitive goals and all three forms of intragroup conflict. However, contrary to prior research, competitive goals were also found to have direct negative, rather than positive, effects on all three intragroup conflict types.

By demonstrating that subgroup formation acts as a mediator between *cooperative* goal interdependence and intragroup conflict, but not between *competitive* goal interdependence and intragroup conflict, this research suggests that the two goal interdependence types do not affect important team processes, such as intragroup conflict, through identical or similar mechanisms or pathways. In other words, the findings convey the importance of "uncoupling" cooperative and competitive goal interdependence in future investigations so we can better understand how they may impact critical team processes or outcomes differently. More research is needed to identify and examine other mechanisms through which cooperative and competitive goals influence intragroup conflict differently.

Findings from this study also indicate that the mediating effects of subgroup formation between cooperative goal interdependence

and intragroup conflict varied, depending on the type of intragroup conflict involved. Specifically, members' perceptions of subgroup formation in their teams fully drive the impact of their perceptions of cooperative goal interdependence with one another on the conflicts they experienced, as these relate to the tasks involved (task conflict) or to how the tasks are handled (process conflict); members' perceptions of subgroup formation, however, only, account for part of the relationship between their perceived cooperative goal interdependence and perceived conflicts that are based on interpersonal relations or personal differences (relationship conflict). These results suggest that the relationship between cooperative goal interdependence and relationship conflict is relatively more complex, and that perceived cooperative goal interdependence itself can mitigate conflict based on interpersonal differences or relational tensions.

Another interesting conclusion drawn from this research concerns the unexpected direction of the relationship between competitive goals and intragroup conflict. In this study, members' perceptions of competitive goals with one another led to *lower*, rather than *higher* levels of perceived task, relationship and process conflict in their teams. This finding contradicts prior research that has generally reported positive associations between competitive goals and intragroup conflict (e.g., Chen, Tjosvold & Wu, 2008; Medina, Lunduate & Guerra, 2008). One possible explanation for this finding could be that team members may have perceived competitive and independent goals with one another at the same time (Tjosvold & Yu, 2004; Tjosvold, Yu & Hui, 2004). Consequently, they may have engaged in more independent activities or have sought out resources outside the team to accomplish their goals. Such behaviors or activities would then have limited the amount of communication or the number of interactions with their team members, thus lowering the likelihood or incidences for intragroup conflict to occur.

Limitations and Future Research Directions

Since this study is cross-sectional in nature, we cannot conclude causal relationships among the variables studied. Nonetheless, the use of advanced statistical techniques, such as structural equation modeling, in this study provides a helpful initial examination of the possible causal structure of relationships underlying goal interdependence, subgroup formation, and intragroup conflict

variables. Future research should consider other study designs, such as experimental and time-series designs, which could help us further unpack the causal linkages among these variables.

Given that the participants worked in teams that were distributed across various sections of the same course, it was also possible for class-specific effects to have influenced the findings. As such, the conclusions from this research should be interpreted with caution, and that future investigations should take into account potential multilevel issues with clustered samples, and to use multilevel modeling, such as hierarchical linear modeling, to account for such effects.

Another key limitation of this research relates to the use of self-reported data. Self-reported data are subject to biases; however, past research has found that the use of self-reported data may not be as problematic as expected (Crompton & Wagner, 1994; Specter, 1992). Future investigations are encouraged to use other forms of data, such as behavioral observations or other-reported scores, to overcome self-report biases or recall issues. The use of student teams in this study may also have limited the relevance and generalizability of the findings, thus pointing to the need for future research using actual or realistic team samples in organizational settings.

As data for all measures were collected from the same source, common method variance could also bias the study conclusions. However, given the findings from the confirmatory factor analyses conducted, the conclusion that a six-factor model fits the data best suggests that common method variance is unlikely to be an issue in this case (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Nevertheless, future research should use different data sources and methods to limit the possibility of common method variance as an alternative explanation for the results.

Practical Implications

Findings from this research suggest that managers or team leaders need to be aware of or better understand how members' perceptions of subgroups or cliques within their teams could contribute to higher levels of intragroup conflict, particularly if the team members perceive their goals as cooperatively linked. In these scenarios, it might be helpful for managers or team leaders to actively "disrupt" the subgroups by altering members' communication

patterns or re-organizing tasks that reinforce those subgroup structures. Teams whose members perceive their goals as competitively linked, on the contrary, could be provided with specific training or developmental opportunities to enhance their communication, active listening and problem-solving skills, as one possible strategy for mitigating the direct negative effects of competitive goals on intragroup conflict.

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