RESEARCH REPORTS

A Contingency Model of Conflict and Team Effectiveness

Jason D. Shaw
University of Minnesota

Jing Zhu
Hong Kong University of Science and Technology

Michelle K. Duffy
University of Minnesota

Kristin L. Scott
Clemson University

Hsi-An Shih and Ely Susanto
National Cheng Kung University

The authors develop and test theoretical extensions of the relationships of task conflict, relationship conflict, and 2 dimensions of team effectiveness (performance and team-member satisfaction) among 2 samples of work teams in Taiwan and Indonesia. Findings show that relationship conflict moderates the task conflict–team performance relationship. Specifically, the relationship is curvilinear in the shape of an inverted U when relationship conflict is low, but the relationship is linear and negative when relationship conflict is high. The results for team-member satisfaction are more equivocal, but the findings provide some evidence that relationship conflict exacerbates the negative relationship between task conflict and team-member satisfaction.

Keywords: relationship conflict, task conflict, team performance, team processes

For decades, organizational scholars have debated and investigated the effects of *task conflict* (defined as differences in ideas, opinions, and viewpoints about task content) on team effectiveness dimensions such as performance and team-member satisfaction. Researchers have recently turned to identifying moderators of task conflict–team effectiveness relationships with the goal of clarifying the conditions under which task conflict may benefit or harm team functioning (e.g., Jehn & Bendersky, 2003). This contextual view, or what Behfar and Thompson (2007, p. 13) called a "quasifunctional perspective," has included considerations of how task conflict relates to team effectiveness at different levels of

relationship conflict, defined as tensions, annoyances, disagreements, and personal incompatibilities over matters such as beliefs, values, habits, and personalities (e.g., De Dreu, 2008; Jehn, 1995, 1997).

Despite some progress, this research line has lacked a strong conceptual foundation and supporting empirical evidence. We advance a novel theoretical perspective suggesting that two key issues have yet to be considered when attempting to understand task and relationship conflict contingencies. The first issue concerns how relationship conflict alters the available attentional resources for capitalizing on task-related conflict in teams and for making satisfaction judgments. The second involves how relationship conflict alters the attributions that team members make about others' behaviors in situations fraught with task conflict. In this article, we develop differential predictions from attentional-resource and attribution-based theoretical bases for two dimensions of team effectiveness (team performance and team-member satisfaction) and test the hypotheses in two work-team samples from Taiwan and Indonesia.

We define *team performance* as the extent to which teams meet established quality, quantity, and flexibility objectives (Hoegl & Parboteeah, 2003), and we define *team-member satisfaction* as members' overall evaluations about working in their current team. Team-member satisfaction was conceptualized as an individual-level construct. Following others (e.g., Jehn, Rispins, & Thatcher, 2010; Langfred, 2007), we focused on task and relationship conflicts and excluded process conflict, which involves controversies about task and responsibility delegation (Jehn & Chatman, 2000), partly because of concerns about strong conceptual overlap be-

tween task and process conflicts and because of high intercorrelations between operationalizations of these variables (Klein, 2007). We also viewed task and relationship conflicts as state constructs, that is, the level of disagreements in task-related and relationship domains to the exclusion of temporal or developmental aspects of the constructs.

Task Conflict and Team Effectiveness Dimensions

Task Conflict, Team Performance, and Team-Member Satisfaction

Two views predominate in considering the relationship between task conflict and team performance—the negative and the inverted-U formulations. Supporting the negative relationship view, De Dreu and Weingart (2003) reported a –.23 meta-analytic correlation between these variables. Typically rooted in information-processing theory (De Dreu & Weingart, 2003; Jehn & Mannix, 2001), this view holds that task conflict increases stress and tension, which, in turn, interfere with task performance.

An inverted-U-shaped view has maintained a foothold in the literature as well (e.g., De Dreu, 2006; Jehn, 1995). Low task conflict "leads to inactivity and avoidance, neglect of information, and low joint performance," whereas high conflict reduces the ability to perceive, process, and evaluate information (De Dreu, 2006, p. 86; see also Walton, 1969). Moderate task conflict energizes teams by yielding differing opinions, solutions, motivations, and perspectives. The mix of findings in the literature could be explained by the fact that many researchers failed to test for nonlinearity in the relationship (e.g., De Dreu & Weingart, 2003; Langfred, 2007), that the inverted-U-shaped relationship holds only when tasks are complex and involve problem solving (as with most of the teams in our samples), and/or that other factors such as relationship conflict moderate the relationship (De Dreu, 2008).

The literature has been clearer on the relationship between task conflict and team-member satisfaction, but the evidence has also suggested that undetected moderators lurk in this relationship as well. Researchers consistently have argued that task conflict and team-member satisfaction are negatively related because conflict causes discomfort (Behfar & Thompson, 2007; Hoffman, 1978; Jehn, 1995), which has been shown to decrease team members' desires to participate in team meetings or other collective activities (DeChurch & Marks, 2001; Hackman, 1987; Pelled, 1996; Wageman, Hackman, & Lehman, 2005). Although the meta-analytic evidence has shown a negative relationship (ρ = –.32) between these variables, researchers still know little about this relationship. Indeed, a wide credibility interval has been shown around the literature-level correlation—which suggests whether undetected moderators influence the relationship (De Dreu & Weingart, 2003). Below, we advance a perspective on the important moderating role that relationship conflict plays and how it may improve our understanding of the relationship between task conflict and team effectiveness.

Moderating Role of Relationship Conflict

We propose that relationship conflict moderates the relationship between task conflict and team performance and team-member satisfaction. In terms of team performance, two lines of reasoning inform our arguments and lead to the prediction that an inverted-U shape of task conflict on performance will be observed only when relationship conflict is low. First, teams comprise members who have limited attentional resources that they must allocate between on- and off-task activities (Ellis & Ashbrook, 1989; Kanfer & Ackerman, 1989). To capitalize on the benefits of moderate levels of task conflict, team members must have attentional resources available to process information associated with critical debates of differing perspectives, considerations of alternative views, and vetting of various possible courses of actions. When relationship conflict (e.g., tension, friction, and emotional incompatibilities) is prevalent in the team, each team member must allocate some resources to dealing with these off-task issues, leaving fewer attentional resources to consider, process, and resolve alternative task perspectives. A key underpinning of the attentional-resource model is that depletion and distraction occurs primarily in the presence of negative affect and interactions (Ellis & Ashbrook, 1989). That is, any number of factors may cause interruptions, but attentional-resource interferences are most likely to occur when the situation is charged with emotion and negative interpersonal behavior. Faced with high levels of relationship conflict—which is fraught with negative tension, emotion, and personal friction (indeed, it is sometimes called *emotional* or *affective conflict*; Varela, Burke, & Landis, 2008)—team members are likely to be distracted from task-related activities, which will diminish their ability to interpret and analyze task-related disagreements (Porath & Erez, 2007). High relationship conflict is therefore likely to erase any advantages associated with moderate levels of task conflict.

In addition to the attentional-resource perspective, we also argue that high relationship conflict will alter attributions that team members make about others' opinions and behaviors. When interpersonal friction is high in team situations, team members have been shown to be more likely to ascribe untoward motives to other members' actions, including their criticisms of task-based suggestions and alternative views (van Kleef, De Dreu, & Manstead, 2004). As Janssen, Van De Vliert, and Veenstra (1999, p. 122) stated, high levels of relationship conflict produce "intolerance and antagonistic attributions concerning each other's intentions and behaviors." Moreover, in the presence of negative emotional exchanges, individuals are more likely to make suboptimal concessions, an effect that is more powerful when personal negativity is directed at specific individuals (e.g., relationship conflict directed at team members) than when it is expressed at situational issues (e.g., frustration with working conditions; van Kleef, 2009). The inverted-U formulation of task conflict and performance is based on the idea that moderate task conflict creates a situation in which teams not only vet ideas thoroughly but also develop new associations and combinations of information. However, when negative emotions and interactions prevail, team members' thoughts become narrow and selective (Varner & Ellis, 1998); they also have more difficulty creating new associations and combining sources of information (Mather, 2009), and they tend to ignore partially relevant information (Easterbrook, 1959).

Because these attentional-resource and attribution-based arguments suggest that the potential advantages of task conflict will be erased under conditions of high relationship conflict, we did not expect to find an inverted-U-shaped relationship under these conditions. Rather, we expected that task conflict and team perfor-

mance would be generally negatively related when relationship conflict was high.

In contrast to high relationship conflict situations, an environment of low relationship conflict allows moderate levels of task conflict—differences of opinion on task-related issues—to benefit performance. Low relationship conflict allows attentional resources to be deployed only on task-related issues; under these conditions, teams should be able to capitalize on the advantages associated with moderate levels of task conflict. In addition, when relationship conflict is low, team members are less likely to question the motives underlying task-based disagreements, a situation that should allow "extensive elaboration that relates new ideas to 'old' information" (Porath & Erez, 2007, p. 1183) and yield performance from moderate levels of task conflict. Thus,

> *Hypothesis 1:* Relationship conflict will moderate the relationship between task conflict and team performance. Specifically, when relationship conflict is low, moderate levels of task conflict will be associated with higher team performance than will low or high levels of task conflict (an inverted-U-shaped relationship). When relationship conflict is high, there will be a negative relationship between task conflict and team performance.

We also argue that relationship conflict will exacerbate the negative relationship between task conflict and team-member satisfaction. Although individuals may be generally uncomfortable with high task conflict, as the meta-analytic evidence suggests (De Dreu & Weingart, 2003), we suggest that high relationship conflict creates two conditions that are likely to strengthen these negative effects. First, the attentional-resource perspective suggests that when relationship conflict is high, team members may find it difficult to focus on sources of task-based disagreements as well as to differentiate between task-related opinions and interpersonal bickering. Thus, when relationship conflict is high, the likelihood is reduced that team members' task-based opinions will be duly considered and deliberated in the team. Researchers have shown clearly that a lack of consideration of input creates intense negative reactions and weakens attachment to the team (Korsgaard, Schweiger, & Sapienza, 1995). When relationship conflict is high, negative emotional interferences are created, and team members are likely to become dissatisfied to the extent that their task-based perspectives are ignored or dismissed.

Second, relationship conflict, because it has strong emotional content, produces strong hostility bias and creates a situation in which task-based suggestions are not only unlikely to be duly considered because of attentional interferences but may also be met with antagonism (Janssen et al., 1999). For example, DeChurch and Marks (2001) found that teams that used an agreeable conflict-management approach showed a weaker negative association between task conflict and satisfaction; when the conflict management was less agreeable, they found a stronger negative relationship between task conflict and satisfaction. Although these authors did not examine the role of relationship conflict, *agreeable conflict management*, defined as the extent to which individuals deal with conflict pleasantly, likely shares conceptual space with relationship conflict.

When relationship conflict is low, task conflict should have a generally negative relationship with team-member satisfaction (De Dreu & Weingart, 2003). When relationship conflict is high, we expect a stronger negative relationship between task conflict and team-member satisfaction because it is less likely that task-based input will be duly considered and may be met with hostility and antagonism.

> *Hypothesis 2:* Relationship conflict will moderate the negative relationship between task conflict and team-member satisfaction such that the negative relationship will be stronger when relationship conflict is high.

Summary and Overview of Studies

We hypothesized that relationship conflict would moderate the relationship between task conflict and two team effectiveness dimensions—team performance and team-member satisfaction. In the following sections, we describe tests of these hypotheses among two samples of work teams in Taiwan and Indonesia. A research team member identified the samples through research contacts and selected from organizations with strong team-based cultures, which helped us ensure that the teams were indeed "real." Teams were eligible if each had a unique supervisor; had three or more team members; had existed for at least 6 months; was collectively accountable for outcomes; and had responsibilities for scheduling, task coordination, and problem solving.

Study 1

Method

Sample and procedure. Participants were 287 employees (87 work teams) and their team supervisors in seven organizations in Taiwan. The organizations included a global accounting company (integrated customer service teams), a midsize regional hospital (nurse teams), a sporting goods manufacturer, a chemical material manufacturer, and three electronics manufacturers (production teams). A member of the research team obtained approval for data collection and a list of teams and their members from a high-ranking human resource manager in each company. Data were collected in two waves. First, during work time, a member of the research team distributed and collected a questionnaire that included measures of task conflict, relationship conflict, and team satisfaction. Six weeks later, the researcher gave team supervisors a questionnaire for collecting ratings of their teams' performance. Supervisor and team-member questionnaires were matched by code numbers. We followed Brislin's (1990) procedures for survey translations across different languages. A member of the research team fluent in Chinese translated the English version and then worked with another researcher to improve the translation through an iterative process. Then, the items were back-translated to ensure that the original meaning was intact.

We randomly selected 155 teams and obtained usable data from 87 teams (56% participation rate). Teams ranged from 3 to 18 members ($M = 6.08$, $SD = 2.74$). The average within-team response rate was 61%. Of the team-member participants, 51% were male, 85% had at least a bachelor's degree, and 59% had organizational tenure of 2 years or more. Participating team supervisors were predominantly

male (68%) and had a bachelor's degree or higher (88%). Of the supervisors, 50% had more than 3 years of managerial experience.

Measures.

Task conflict. We used Jehn and Mannix's (2001) three-item measure ($\alpha = .83$): "To what extent are there conflicts about people's different ideas in your team?" The items had response options ranging from 1 (*not at all*) to 5 (*to a very great extent*). Individual responses were averaged and then aggregated to the team level.

Relationship conflict. We used Cammann, Fichman, Jenkins, and Klesh's (1983) four-item measure ($\alpha = .85$): "There are feelings among members of my team which tend to pull us apart"; "People who offer new ideas in my team are likely to get 'clobbered'"; "There is constant bickering in my team"; and "Some of my team members have no respect for others." The items had seven Likert-type response options. Scores were averaged and then aggregated to the team level.

Team performance. We used an adaptation of Sparrowe, Liden, Wayne, and Kraimer's (2001) four-item measure ($\alpha = .91$): "quality of work," "getting work done efficiently," "flexibility in dealing with unexpected changes," and "overall performance." The items had seven response options ranging from 1 (*very poor*) to 7 (*outstanding*).

Team-member satisfaction. We used four items adapted from Cammann et al.'s (1983) global job satisfaction scale ($\alpha = .82$): "All in all, I am satisfied with my team"; "In general, I don't like my team [reverse coded]"; "I am satisfied with the way I was treated by my team members"; and "I am satisfied with the friendliness of my team members." The items had seven Likert-type response options.

Control variables. Team size was controlled because researchers have found that size influences team dynamics and performance (Duffy, Shaw, & Stark, 2000). In addition, we controlled for mean educational level, educational diversity, and percentage of men because team training and ability levels (Edwards, Day, Arthur, & Bell, 2006), educational diversity (Joshi & Roh, 2009; Price, Harrison, & Gavin, 2006), and gender composition (Jackson, Joshi, & Erhardt, 2003) have been shown to influence conflict and team effectiveness (Mohammed & Angell, 2004). Educational level was assessed with six response options ranging from 1 (*junior high school*) to 6 (*doctoral degree*). Individual responses were aggregated to the team-level mean. Educational diversity was operationalized as the team-level standard deviation of education. Gender composition was assessed as the percentage of men in the team.

Analysis approach. We used hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) to test the hypotheses. For team performance, we estimated two-level models with teams (Level 1) nested within organizations (Level 2). The key predictors in the team performance equations were modeled to explain Level 1 variance in team performance. Team-member satisfaction was conceptualized at the individual level, so we estimated three-level models with individuals (Level 1), nested within teams (Level 2), and organizations (Level 3). Task conflict and relationship conflict were standardized prior to creating the interaction terms to account for scaling differences and to reduce multicollinearity. The key predictors in these equations were modeled to explain Level 2 (team-level) variance in team-member satisfaction. In Model 1, we entered team size, mean education level, educational diversity, percentage of men, task conflict, and relationship conflict into the equation. In Model 2, we added the quadratic term of task conflict. In Model 3, we substituted the squared term of task conflict with the interaction term of task and relationship conflict. In Model 4, we added the squared task conflict and its interaction with relationship conflict.

Results

Psychometric and aggregation issues. Before aggregating, we conducted several checks regarding the independence of task and relationship conflicts. For the conflict items, a confirmatory factor analysis showed that a two-factor solution, $\chi^2 = 84.12$, goodness of fit index (*GFI*) $= .93$, comparative fit index (*CFI*) $= .93$, root mean square error of approximation (*RMSEA*) $= .10$, was superior to a single-factor solution, $\Delta\chi^2(1) = 34.54$, $p < .01$. ICC(1) values for task conflict and relationship conflict were .27 and .33, respectively. ICC(2) values for the two measures were .55 and .62. We found high levels of mean $r_{wg(j)}$ for both task conflict (.87; range $=$ .00–1.00) and relationship conflict (.90; range $= .47–.99$); 86% of teams on task conflict and 96% of teams on relationship conflict had $r_{wg(j)}$s $> .70$. Although several teams had $r_{wg(j)}$ values less than the recommended .70 threshold, we followed Chen, Mathieu, and Bliese (2004) and retained all available cases for analysis. Tests of hypotheses after deleting teams with low $r_{wg(j)}$ values on a case-by-case basis yielded substantively identical results.

Hypothesis tests. Tables 1 and 2 show the descriptive statistics and correlations and the HLM results, respectively. In the team performance equation, a null-model test revealed that 99% of the

Table 1

Study 1 (Taiwan Work Teams): Descriptive Statistics and Correlations

Level type	M	SD	1	2	3	4	5	6	7
Team level									
1. Team size	6.08	2.74	—						
2. Mean educational level	3.14	0.54	−.12	—					
3. Educational diversity	0.36	0.33	.08	.01	—				
4. % of men	0.52	0.38	−.17	.12	.20	—			
5. Task conflict	2.91	0.79	.11	−.09	.06	−.29**	—		
6. Relationship conflict	3.55	0.77	.15	−.40**	.03	−.22*	.56**	—	
7. Team performance	5.54	0.73	−.25*	.21*	−.19	.33**	−.39**	−.24**	—
Individual level									
1. Team-member satisfaction	5.4	0.86							

Note. $N = 87$ (team-level correlations); $N = 287$ (individuals).
* $p < .05$.   ** $p < .01$.

Table 2
Study 1 (Taiwan Work Teams): Hierarchical Linear Modeling (HLM) Results

Constant/Variable	Team performance[a]				Team-member satisfaction[b]			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Constant	5.56**	5.60**	5.49**	5.49**	5.40**	5.41**	5.31**	5.51**
Control variables								
Team size	.02	.01	.02	.02	.00	.00	.00	−.01
Mean educational level	.12	.13	.14	.18	.05	.05	.07	.04
Educational diversity	.29	.31	.29	.22	.01	.03	.02	.08
% of men	.39*	.37	.37	.42**	−.11	−.09	−.05	−.04
Independent variables								
Task conflict	−.16	−.09	−.16	−.27**	−.42**	−.43**	−.43**	−.37**
Relationship conflict	−.11	−.17	−.12	−.24*	−.07	−.07	−.09	−.02
Task conflict^2		−.09		−.11		−.05		−.05
Task Conflict × Relationship Conflict			−.04	.07			−.04	−.06
Task Conflict^2 × Relationship Conflict				.14**				−.07*

Note. Predictor variables were standardized prior to analysis. Table entries are lambda coefficients.
[a] Two-level HLM: teams ($N = 87$); organizations ($N = 7$). [b] Three-level HLM: individuals ($N = 278$); teams ($N = 87$); organizations ($N = 7$).
* $p < .05$. ** $p < .01$.

variance in team performance resided within organizations, and 1% resided across organizations. In the team-member satisfaction equation, a null-model test showed that 41% of the variation in team-member satisfaction resided between teams, 58% resided within teams, and 1% resided between organizations.

Team performance. Table 2 shows that neither the linear task conflict (Model 1 $\lambda = -.16$, *ns*) nor the squared task conflict term was significant (Model 2 $\lambda = -.09$, *ns*). The interaction of task conflict squared and relationship conflict was significant in Model 4 ($\lambda = .14$, $p < .01$), explaining an additional 7% of the residual Level 1 variance in team performance. Figure 1 shows the form of the interaction. An analysis of simple slopes revealed that both the linear ($\lambda = -.34$, $p < .05$) and the curvilinear ($\lambda = -.26$, $p < .01$) simple slopes of task conflict on team performance were significant when relationship conflict was low. The relationship was such that team

Figure 1. Study 1 (Taiwan work teams): interaction between task conflict and relationship conflict in predicting team performance.

performance increased as task conflict increased from minimum levels to the apex at -0.65 *SD* below the task conflict mean. An analysis of slopes revealed that the relationship was significantly positive from minimal task conflict levels to -0.75 *SD* below the task conflict mean and that there was a sharper and significantly negative relationship to the right of the apex.

When relationship conflict was high, the linear simple slope was significant ($\lambda = -.20$, $p < .05$), but the quadratic term was not ($\lambda = .02$, *ns*). Thus, Study 1 provided support for Hypothesis 1—that is, when relationship conflict was low, the relationship between task conflict and team performance was curvilinear in the shape of an inverted U. When relationship conflict was high, there was a negative relationship between task conflict and team performance.

Team-member satisfaction. The results for team-member satisfaction are shown on the right of Table 2. The relationship between task conflict and team-member satisfaction was negative (Model 1 $\lambda = -.42$, $p < .01$). The main effect of task conflict explained 64% of the residual Level-2 variance in team-member satisfaction beyond relationship conflict and the controls. The interaction of task conflict and relationship conflict was not significant in Model 3, but the interaction of task conflict squared and relationship conflict was significant (Model 4 $\lambda = -.07$, $p < .05$), explaining 13% of the residual Level 2 variance in team-member satisfaction. Figure 2 shows a plot of the significant interaction. The negative relationship of task conflict on satisfaction was stronger when relationship conflict was high (linear simple slope $\lambda = -.43$, $p < .01$) than when relationship conflict was low ($\lambda = -.31$, $p < .01$), although the linear slopes were not significantly different. When relationship conflict was high, the simple slope on the quadratic task conflict term was significant ($\lambda = -.11$, $p < .05$), but the quadratic relationship was not significant when relationship conflict was low ($\lambda = .03$, *ns*). Thus, Hypothesis 2 was not supported. Relationship conflict did not moderate the relationship between task conflict and team-member satisfaction as predicted. The significant quadratic interaction yielded a more qualified pattern. The predicted exacerbating effect of high relationship conflict occurred only at higher levels of task conflict.
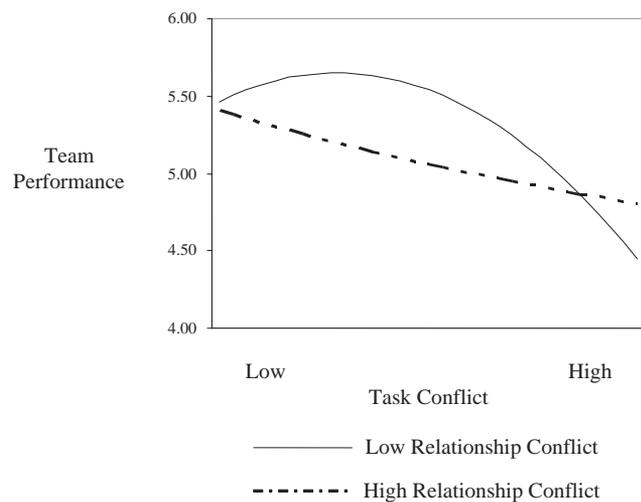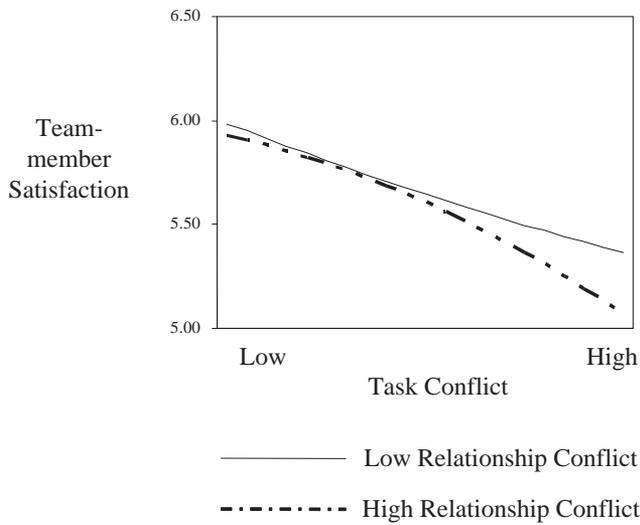
Figure 2. Study 1 (Taiwan work teams): interaction between task conflict and relationship conflict in predicting team-member satisfaction.

Study 2

Method

Context and extensions. The results in Study 1 support our interactive framework but are limited to a specific context (work teams in Taiwan). Although our theoretical extensions were developed to be general, whether other settings will show the same pattern is an open question. In addition, detecting interactions in field settings is difficult, partly because higher order interaction terms are often unreliable. Thus, additional tests are necessary to establish the stability of the effects. In Study 2, we tested our hypotheses again in a different context—teams in Indonesia—in an attempt to replicate our findings and to rule out the possibility that our Study 1 findings were sample specific.

Sample and procedure. Participants were 582 members (127 work teams) and team supervisors in 14 organizations in Indonesia. The organizations included a bank, a logistics company, a retail shoe company, a cosmetics company, an international tobacco company, two international milk companies (sales and mar-

keting teams), an international hotel (hospitality teams), two hospitals (nurse teams), a furniture company, two paper companies (production teams), and a pest-control company (pest-control teams). We encouraged participation with introductory letters to the top company human resource managers and with follow-up telephone calls. On a site visit, we obtained a list and collected data for team members and their supervisors. Other criteria for team inclusion and procedures were identical to those in Study 1. We obtained usable data from members of 127 of 165 eligible teams (participation rate = 77%). The average within-team response rate was 85%. Teams had 3–10 members ($M = 4.57$, $SD = 1.01$); 50% were women; 70% were high school or college graduates; 59% were 25–55 years of age; and 53% had organizational tenure of 3 years or more. Most team supervisors were male (68%), held high school or bachelor's degrees (69%), and were 33–54 years of age (66%).

Measures. The measures and translation procedures (from Bahasa Indonesia) were identical to those in Study 1: task conflict ($\alpha = .74$), relationship conflict ($\alpha = .76$), team-member satisfaction ($\alpha = .87$), team performance ($\alpha = .76$), and the control variables (team size, mean education level, educational diversity, and percentage of men).

Analysis approach. The HLM analysis approach was identical to the approach in Study 1.

Results

Psychometric and aggregation issues. A confirmatory factor analysis showed that a two-factor model for task and relationship conflict, $\chi^2 = 21.52$, $GFI = .99$, $CFI = .99$, $RMSEA = .03$, was superior to a single-factor solution, $\Delta\chi^2(1) = 219.76$, $p < .01$. ICC(1) values for task conflict and relationship conflict were .35 and .26, respectively. ICC(2) values for the two measures were .72 and .63, respectively. Mean $r_{wg(j)}$ levels were .78 for task conflict (range = .00–1.00) and .75 for relationship conflict (range = .00–1.00); 81% of teams on task conflict and 72% of teams on relationship conflict had $r_{wg(j)}$s >.70.

Hypothesis tests. Table 3 shows the descriptive statistics and correlations, and Table 4 shows HLM results. A null-model test revealed that 90% of the variance in team performance resided within organizations, and 10% resided across organizations. A second null-model test showed that 22% of the variation in team-

Table 3
Study 2 (Indonesia Work Teams): Descriptive Statistics and Correlations

Level type	M	SD	1	2	3	4	5	6	7
Team level									
1. Team size	4.57	1.01	—						
2. Mean educational level	2.57	0.75	−.07	—					
3. Educational diversity	0.42	0.39	.11	.27**	—				
4. % of men	0.53	0.36	−.04	.10	−.14	—			
5. Task conflict	2.67	0.81	−.06	.09	−.11	.01	—		
6. Relationship conflict	2.88	0.70	−.02	.04	.04	.06	.45**	—	
7. Team performance	4.06	0.57	−.13	.00	.13	.05	−.17*	−.06	—
Individual level									
1. Team-member satisfaction	5.56	0.88							

Note. $N = 127$ (team-level correlations); $N = 582$ (individuals).
* $p < .05$. ** $p < .01$.

Table 4
Study 2 (Indonesia Work Teams): Hierarchical Linear Modeling (HLM) Results

Constant/Variable	Team performance[a]				Team-member satisfaction[b]			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Constant	4.46**	4.48**	4.44**	4.48**	5.55**	5.60**	5.62**	5.46**
Control variables								
Team size	−.07	−.08	−.07	−.07	−.05	−.06	−.06	−.04
Mean educational level	−.09	−.07	−.05	−.07*	−.01	.00	.02	−.02
Educational diversity	.18	.16	.13	.12	.04	.02	−.04	−.02
% of men	.15	.16	.15	.14	.18	.16	.16	.22*
Independent variables								
Task conflict	−.07	−.06	−.15	−.08	−.20**	−.19**	−.18**	−.25**
Relationship conflict	.01	.02	.02	−.04	−.21**	−.21**	−.18**	−.16**
Task conflict^2		−.05		−.03		−.02		.11*
Task Conflict × Relationship Conflict			−.06	−.11**			−.09**	−.19**
Task Conflict^2 × Relationship Conflict				.04**				.01

Note. Predictor variables were standardized prior to analysis. Table entries are lambda coefficients.
[a] Two-level HLM: teams ($N = 127$); organizations ($N = 14$). [b] Three-level HLM: individuals ($N = 582$); teams ($N = 127$); organizations ($N = 14$).
* $p < .05$. ** $p < .01$.

member satisfaction resided between teams, 77% resided within teams, and 1% resided between organizations.

Team performance. Table 4 shows that neither the main effect of task conflict (Model 1 $\lambda = -.07$, *ns*) nor the squared task conflict term (Model 2 $\lambda = -.05$, *ns*) significantly predicted team performance. The interaction of task conflict squared and relationship conflict was significant in Model 4 ($\lambda = .04$, $p < .01$), explaining an additional 2% of the residual Level 1 variance in team performance. Figure 3 shows the form of the interaction. When relationship conflict was low, the linear simple slope between task conflict and team performance was not significant ($\lambda = .03$, *ns*), but the simple slope for the quadratic term was significant ($\lambda = -.08$, $p < .01$) in an inverted-U form, as predicted. The zero-slope point of the curve was at 0.18 *SD* above the task conflict mean. To the left of the apex, the relationship was significant and positive from minimal task conflict levels to −0.60 *SD* below the

Figure 3. Study 2 (Indonesia work teams): interaction between task conflict and relationship conflict in predicting team performance.

mean. The slope was positive but not significant from that point until the zero-slope point at 0.18 *SD* and was significant and negative beyond 0.3 *SD* above the task conflict mean.

When relationship conflict was high, the linear simple slope between task conflict and team performance was significant and negative ($\lambda = -.20$, $p < .01$), and the quadratic simple slope was not significant ($\lambda = .01$, *ns*). Thus, Hypothesis 1 was supported—the curvilinear relationship between task conflict and team performance was observed when relationship conflict was low but not when relationship conflict was high.

Team-member satisfaction. Also in Table 4, the relationship between task conflict and team-member satisfaction is significant and negative (Model 1 $\lambda = -.20$, $p < .01$). The main effect of task conflict explained 39% of the residual Level 2 variance in team-member satisfaction beyond relationship conflict and the controls. The Task Conflict × Relationship Conflict interaction was also significant (Model 3 $\lambda = -.09$, $p < .01$), explaining 40% of the residual Level 2 variance. When relationship conflict was high, a significant negative relationship occurred between task conflict and team-member satisfaction (simple slope $\lambda = -.27$, $p < .01$), but when relationship conflict was low, the simple slope was not significant ($\lambda = -.09$, *ns*; see Figure 4). Thus, Hypothesis 2 was partially supported. As expected, the relationship between task conflict and team-member satisfaction was stronger when relationship conflict was high. Contrary to expectations, the task conflict → team-member satisfaction relationship failed to reach significance when relationship conflict was low.

General Discussion

De Dreu and Weingart (2003, p. 748) concluded that "conflict may have positive consequences under very specific circumstances, and we need to detect those circumstances in new research." Our study focuses on one such circumstance—low levels of relationship conflict— and serves as a departure point for future studies on the contingencies of task conflict and team effectiveness.
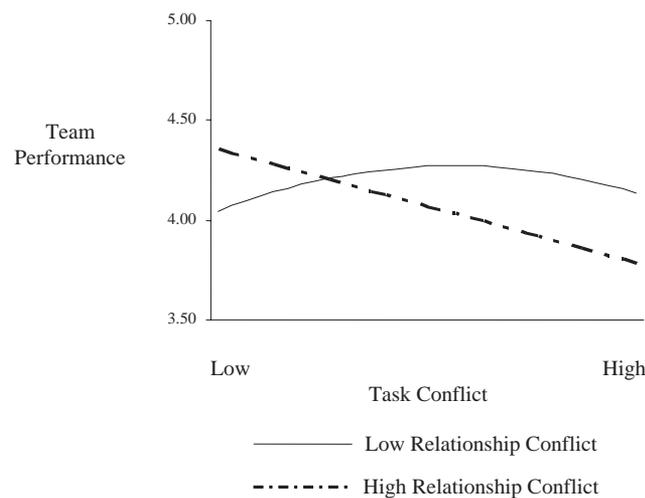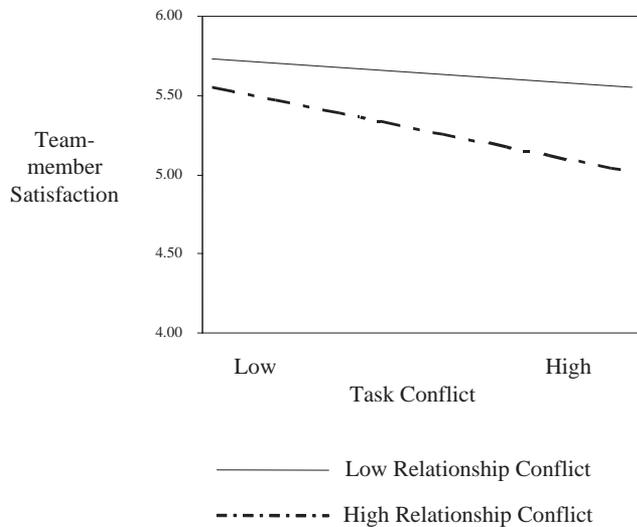
Figure 4. Study 2 (Indonesia work teams): interaction between task conflict and relationship conflict in predicting team-member satisfaction.

In two distinct studies involving work teams in Taiwan and Indonesia, we found that the relationship between task conflict and team effectiveness outcomes varies as a function of the level of relationship conflict in the team. For team performance, we predicted and found that a curvilinear relationship holds when relationship conflict is low but that task conflict is negatively related to performance when relationship conflict is high. The results across the two studies are somewhat more ambiguous for team-member satisfaction. In Study 1, when relationship conflict is high, the predicted exacerbating effect is found only when task conflict levels are also high. In Study 2, a strong negative relationship appears between task conflict and team-member satisfaction when relationship conflict was high, as we predicted, but the negative relationship fails to reach significance when relationship conflict was low.

The team performance findings extend a pattern of evidence supporting the inverted-U formulation in situations in which high-quality performance standards are critical (e.g., De Dreu, 2006; Farh, Lee, & Farh, in press), but our findings also qualify existing research by demonstrating that this pattern is evident only when relationship conflict is low. Although cross-industry, the teams in our samples include professionals (such as chemists, engineers, accountants, and hospitality and health care providers) who have high standards for performance and for whom errors are very costly, both in potential profit loss and in organizational reputation. We find that in these situations, when relationship conflict in teams remains low, moderate level task conflict is associated with better supervisor-rated performance. This finding should be circumscribed, however, by the fact that the turning point of the curve in Study 1 is to the left of the task conflict mean. The significant positive relationship holds in only a narrow window before the negative effects of task conflict on performance prevail. Although the Study 2 curve crests farther to the right, the pattern across the two studies suggests that even when conditions favor positive task conflict effects (e.g., when relationship conflict is low), tenuous advantages may be associated with, for example, challenging

work-related opinions, considering alternatives, and questioning assumptions. The task conflict–team performance results are quite clear in high relationship conflict situations: The effects are negative. Team members who have high relationship conflict and interpersonal tensions are more likely to bicker so intensely that the slightest task conflict is associated with performance declines.

The literature has suggested that team members find work-related disagreements to be uncomfortable, tension-causing, and ultimately dissatisfying, but meta-analytic results show wide credibility intervals (ranging from −.04 to −.72), suggesting that moderators are influencing the task conflict–satisfaction relationship (De Dreu & Weingart, 2003). We find here—across team types—some evidence that relationship conflict moderates the task-conflict–team-member satisfaction relationship, but the nature of the moderation differs across studies. In Study 1, the exacerbating effect occurs only in a quadratic interaction such that the slopes diverge only at high levels of task conflict. In Study 2, the task conflict–team-member satisfaction relationship is stronger when relationship conflict is high, but at low relationship conflict levels, task conflict is not related to satisfaction. Across the two studies, there is a negative relationship between task conflict and team-member satisfaction. Viewed together, there is also some evidence of the joint effects of task and relationship conflict. Consistency across the two studies is found, however, only when task conflict and relationship conflict are both low (satisfaction is higher) and when both are high (satisfaction is lower). The interaction patterns from the two studies differ across moderate levels in terms of slopes and forms (linear vs. quadratic). We encourage future researchers to attempt additional tests of these moderating effects to resolve the areas of inconsistency.

Comparing the findings across the studies and the two outcomes helps to illustrate the overall dynamics. Teams that reported moderate task conflict and low relationship conflict performed well, but their team members were not highly satisfied. Teams that reported low overall conflict (low task and low relationship conflicts) were relatively satisfied but did not perform at the highest levels. Our results also suggest that we can expect only moderate levels of satisfaction when relationship conflict is high, and then only when task conflict is low. Our studies underscore the importance of developing differential interaction predictions across effectiveness outcomes. For practitioners, our findings imply that promoting open debate at moderate levels may be useful for team performance if measures are taken to prevent and minimize interpersonal conflict. Team leaders, managers, and other decision makers may realize higher performance and greater satisfaction benefits by fostering respectful attitudes, providing guidelines for recognizing destructive conflict spirals, and communicating the differences between constructive and destructive conflicts during conflict-management training.

Our studies have several limitations. Coefficients may be unstable in smaller samples; replication with larger samples would address the stability issue and help establish consistent effect sizes. The studies were cross-sectional, except for a 6-week lag for team performance in Study 1. The dynamics of conflict types and team effectiveness outcomes may differ considerably across time, and team members likely had indications about their team's performance when they completed the conflict questionnaires. Thus, although our underlying theory suggests a pattern, we cannot disentangle causal dynamics. Future researchers should include

assessments of conflict nearer to the time teams are formed to isolate reverse causal effects. We exclude process conflict because of our theoretical focus on task and relationship conflict and conceptual and empirical problems with process conflict. Into this contingency model, future researchers could incorporate process conflict and other potential moderators such as conflict-management behaviors (DeChurch & Marks, 2001) and team trust (Simons & Peterson, 2000). We use a measure of relationship conflict from Cammann et al. (1983) that conflict researchers have used previously (e.g., Duffy et al., 2000); however, this measure is less commonly used than the measure of Jehn (1995) and Jehn and Mannix (2001). Although the literature has included a variety of conflict measures, future tests that use alternative conflict measures would lend additional credence to these findings. In addition, data limitations preclude us from using specific controls for task type, task interdependence, and individual-level variables, such as affectivity. Some of our ICC(2) estimates fall below the conventional .70 benchmark for reliability of team means, and $r_{wg(j)}$ values are also low for a small proportion of teams. Bliese (1998) showed that low ICC(2) values are more common when team sizes are small and also argued that a likely consequence of low team mean reliability is that actual team-level relationships will be underestimated. Additional studies might rectify these measurement shortcomings; others might extend recent investigations of the predictors and consequences of conflict disagreement and asymmetries (e.g., see Jehn et al., 2010).

Finally, although we develop general rather than cross-cultural predictions, our data come from Taiwan and Indonesia, which are relatively collectivistic settings. Culture influences perceptions, reactions, and expressions of conflict and, in turn, conflict's behavioral and attitudinal outcomes. Two recent studies that found support for the inverted-U formulation with team effectiveness were conducted in greater China (Farh et al., in press) and in the Netherlands (De Dreu, 2006), which are also more collectivistic than the United States. Although certain elements of these samples may be similar to ours (e.g., levels of task complexity), a literature-level pattern may be emerging such that the inverted U between task conflict and team performance outcomes is more common in collectivistic situations. It may be too early to draw this conclusion, but we encourage future researchers to conduct cross-cultural comparisons. In addition, the association between relationship conflict and team performance is not significant in either sample, and the relationship conflict–team-member satisfaction relationship is significant only in Study 2. Although De Dreu and Weingart's (2003) meta-analysis showed significant literature-level relationships between relationship conflict and both performance and satisfaction, the credibility intervals were quite wide in each case (i.e., from .21 to –.65 for performance, and from –.05 to –1.03 for satisfaction). In line with the cultural influences noted above, future researchers should explore whether these findings are anomalies or whether they reflect a cultural difference in terms of relationship conflicts. We urge researchers to interpret our results with these caveats in mind.

Countering these limitations, we study teams in two unique situations (work teams in multiple industries in Taiwan and Indonesia) and demonstrate replications for two different team effectiveness outcomes in multilevel tests with separate source performance data. Our studies, therefore, take significant steps toward clarifying the confusion about the relationships between task con-

flict and team effectiveness outcomes. We find that relationship conflict plays an important interactive role in these relationships and that the effects differ across satisfaction and performance outcomes. We encourage additional research that clarifies and extends our knowledge of the relationships between task conflict and team outcomes.

References

Behfar, K., & Thompson, L. (2007). Conflict within and between organizational groups: Functional dysfunctional and quasi-functional perspectives. In L. Thompson & K. Behfar (Eds.), *Conflict in teams* (pp. 3–35). Evanston, IL: Northwestern University Press.

Bliese, P. D. (1998). Group size, ICC values, and group-level correlations: A simulation. *Organizational Research Methods, 1,* 355–373. doi: 10.1177/109442819814001

Brislin, R. W. (1990). Applied cross-cultural psychology: An introduction. In R. W. Brislin (Ed.), *Applied cross-cultural psychology* (pp. 9–33). Newbury Park, CA: Sage.

Cammann, C., Fichman, M., Jenkins, G. D., & Klesh, J. R. (1983). *The Michigan Organizational Assessment Questionnaire.* New York, NY: Wiley.

Chen, G., Mathieu, J. E., & Bliese, P. D. (2004). A framework for conducting multi-level construct validation. In F. Dansereau & F. Yamarino (Series Eds.), *Research in Multi-Level Issues: Vol. 3. Multi-level issues in organizational behavior and processes* (pp. 273–303). West Yorkshire, England: Emerald Group Publishing.

DeChurch, L. A., & Marks, M. A. (2001). Maximizing the benefits of task conflict: The role of conflict management. *International Journal of Conflict Management, 12,* 4–22. doi:10.1108/eb022847

De Dreu, C. K. W. (2006). When too little or too much hurts: Evidence for a curvilinear relationship between task conflict and innovation in teams. *Journal of Management, 32,* 83–107. doi:10.1177/0149206305277795

De Dreu, C. K. W. (2008). The virtue and vice of workplace conflict: Food for (pessimistic) thought. *Journal of Organizational Behavior, 29,* 5–18. doi:10.1002/job.474

De Dreu, C. K. W., & Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology, 88,* 741–749. doi:10.1037/0021-9010.88.4.741

Duffy, M. K., Shaw, J. D., & Stark, E. M. (2000). Performance and satisfaction in conflicted interdependent groups: When and how does self-esteem make a difference? *Academy of Management Journal, 43,* 772–782. doi:10.2307/1556367

Easterbrook, J. A. (1959). The effect of emotion on cue utilization and organization of the behavior. *Psychological Reports, 66,* 183–201.

Edwards, B. D., Day, E. A., Arthur, W., Jr., & Bell, S. T. (2006). Relationships among team ability composition, team mental models, and team performance. *Journal of Applied Psychology, 91,* 727–736. doi:10.1037/0021-9010.91.3.727

Ellis, H. C., & Ashbrook, P. W. (1989). The "state" of mood and memory research: A selective review. *Journal of Social Behavior and Personality, 4,* 1–21.

Farh, J.-L., Lee, C., & Farh, C. I. (in press). Task conflict and team creativity: A question of how much and when. *Journal of Applied Psychology.*

Hackman, J. R. (1987). The design of work teams. In J. Lorsch (Ed.), *Handbook of organizational behavior* (pp. 315–342). Englewood Cliffs, NJ: Prentice-Hall.

Hoegl, M., & Parboteeah, P. K. (2003). Goal setting and team performance in innovative projects: On the moderating role of teamwork quality. *Small Group Research, 34,* 3–19. doi:10.1177/1046496402239575

Hoffman, L. R. (1978). Group problem solving. In L. Berkowitz (Ed.), *Group processes* (pp. 67–100). New York, NY: Academic Press.

Jackson, S. E., Joshi, A., & Erhardt, N. L. (2003). Recent research on team and organizational diversity: SWOT analysis and implications. *Journal of Management, 29,* 801–830.

Janssen, O., Van De Vliert, E., & Veenstra, C. (1999). How task and person conflict shape the role of positive interdependence in teams. *Journal of Management, 25,* 117–141. doi:10.1016/S0149-2063(99)80006-3

Jehn, K. A. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly, 40,* 256–282. doi:10.2307/2393638

Jehn, K. A. (1997). A qualitative analysis of conflict types and dimensions in organizational groups. *Administrative Science Quarterly, 42,* 530–557. doi:10.2307/2393737

Jehn, K. A., & Bendersky, C. (2003). Intragroup conflict in organizations: A contingency perspective on the conflict–outcome relationship. *Research in Organizational Behavior, 25,* 187–242. doi:10.1016/S0191-3085(03)25005-X

Jehn, K. A., & Chatman, J. (2000). New conceptualizations of team conflict: Proportional and relational conflict. *International Journal of Conflict Management, 24,* 292–316.

Jehn, K. A., & Mannix, E. A. (2001). The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *Academy of Management Journal, 44,* 238–251. doi:10.2307/3069453

Jehn, K. A., Rispins, S., & Thatcher, S. M. (2010). The effects of conflict asymmetry on workgroup and individual outcomes. *Academy of Management Journal, 53,* 596–616.

Joshi, A., & Roh, H. (2009). The role of context in work team diversity research: A meta-analytic review. *Academy of Management Journal, 52,* 599–627.

Kanfer, R., & Ackerman, P. L. (1989). Motivation and cognitive abilities: An integrative aptitude–treatment interaction approach to skill acquisition. *Journal of Applied Psychology, 74,* 657–690. doi:10.1037/0021-9010.74.4.657

Klein, K. (2007, Spring). *Group-level measurement.* Center for the Advancement of Research Methods and Analysis (CARMA) presentation, Virginia Commonwealth University, Richmond, VA.

Korsgaard, M. A., Schweiger, D. M., & Sapienza, H. J. (1995). Building commitment, attachment, and trust in strategic decision-making teams: The role of procedural justice. *Academy of Management Journal, 38,* 60–84. doi:10.2307/256728

Langfred, C. (2007). The downside of self-management: A longitudinal study of the effects of conflict, trust, and task interdependence in self-managing teams. *Academy of Management Journal, 50,* 885–900.

Mather, M. (2009). When emotion intensifies memory interference. *Psychology of Learning and Motivation, 51,* 101–120. doi:10.1016/S0079-7421(09)51003-1

Mohammed, S., & Angell, L. C. (2004). Surface- and deep-level diversity in work groups: Examining the moderating effects of team orientation and team process on relationship conflict. *Journal of Organizational Behavior, 25,* 1015–1039. doi:10.1002/job.293

Pelled, L. H. (1996). Demographic diversity, conflict, and work group outcomes: An intervening process theory. *Organization Science, 7,* 615–631. doi:10.1287/orsc.7.6.615

Porath, C., & Erez, A. (2007). Does rudeness matter? The effect of rudeness on task performance and helpfulness. *Academy of Management Journal, 50,* 1181–1197. doi:10.2307/20159919

Price, K. H., Harrison, D. A., & Gavin, J. H. (2006). Withholding inputs in team contexts: Member composition, interaction processes, team structure, and social loafing. *Journal of Applied Psychology, 91,* 1375–1384. doi:10.1037/0021-9010.91.6.1375

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.

Simons, T. L., & Peterson, R. S. (2000). Task conflict and relationship conflict in top management teams: The pivotal role of intragroup trust. *Journal of Applied Psychology, 85,* 102–111. doi:10.1037/0021-9010.85.1.102

Sparrowe, R. T., Liden, R. C., Wayne, S. J., & Kraimer, M. L. (2001). Social networks and the performance of individuals and groups. *Academy of Management Journal, 44,* 316–325. doi:10.2307/3069458

van Kleef, G. A. (2009). How emotions regulate social life: The emotions as social information (EASI) model. *Current Directions in Psychological Science, 18,* 184–188. doi:10.1111/j.1467-8721.2009.01633.x

van Kleef, G. A., De Dreu, C. K. W., & Manstead, A. S. R. (2004). The interpersonal effects of anger and happiness in negotiations. *Journal of Personality and Social Psychology, 86,* 57–76. doi:10.1037/0022-3514.86.1.57

Varela, O. E., Burke, M. J., & Landis, R. S. (2008). A process model of emotional conflict: Emergence and dysfunctional effect in groups. *Group Dynamics: Theory, Research, and Practice, 12,* 112–126. doi:10.1037/1089-2699.12.2.112

Varner, L. J., & Ellis, H. C. (1998). Cognitive activity and physiological arousal: Processes that mediate mood-congruent memory. *Memory & Cognition, 26,* 939–950.

Wageman, R., Hackman, J. R., & Lehman, E. V. (2005). The Team Diagnostic Survey: Development of an instrument. *Journal of Applied Behavioral Science, 41,* 373–398. doi:10.1177/0021886305281984

Walton, R. E. (1969). *Interpersonal peacemaking: Confrontations and third party consultation.* Reading, MA: Addison-Wesley.