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Conflict, Value Diversity, and Performance in Virtual Teams

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ABSTRACT

While most studies investigating culture in the context of conflict in teams have been using culture dimensions such as collectivism this study centers on another measurement of culture, namely individual values. In this investigation we examined how individual value diversity influences the relationship between team conflict and performance in virtual teams. Assessing two types of conflict, namely task and process conflict, the results revealed that task conflict had no unique effect beyond the impact of process conflict. Contrary to previous findings relating to group culture, this study found that value diversity has no influence on the relationship between conflict and performance in virtual teams. While individuals come to groups with their own values, they may be less powerful predictors of their behavior in groups where there are strong prevailing group values and norms to act a certain way.

Keywords

Conflict, virtual teams, value diversity, performance.

INTRODUCTION

Work groups or teams, which are three or more individuals who interact in a complex, dynamic, and interactive fashion toward a common goal (Ilgen et al. 2005), are increasingly employed across all levels of organizations in various forms such as production teams, project teams, top management teams. Most recently, organizations have widely adopted virtual teams wherein team members are geographically dispersed and rely on communication technology to coordinate. As organizations have come to increasingly rely on work groups and teams, issues of group process, and in particular of conflict processes have come to the forefront of research in management (De Dreu and Weingart 2003; Jehn and Bendersky 2003). Research on intragroup conflict has demonstrated the powerful and often detrimental effects of conflict for group effectiveness (De Dreu and Weingart 2003; Hambrick 2007).

There is reason to expect that conflict in virtual teams may be particularly disruptive and difficult to manage (Hinds and Bailey 2003; Mannix et al. 2002; Mortensen and Hinds 2001). Despite the growing advances in technology, communication in virtual teams, still requires a great deal of effort (Straus 1996). These communication and coordination difficulties create great potential for misunderstandings and ultimately, conflict (Jarvenpaa et al. 1998).

As cultural values affect cooperation (Chen et al. 1998), teams with certain shared values may experience greater difficulty coping with conflict. As well differences within the team on cultural values may exacerbate conflict and its effects (Korsgaard et al. 2008).

Understanding the role of values in response to group conflict is important not only for managing virtual teams but for understanding and managing the nature of conflict itself. As noted above, the harmful effects of conflict, especially for group performance, are well documented. Yet, theory and occasional empirical evidence suggests that conflict can be beneficial to group performance (De Dreu and Weingart 2003). These inconsistencies may be resolved by identifying contingency factors in the effects of conflict (Korsgaard et al. 2008). Our basic premise is that values - both those shared by the group and the personal values individuals bring to the group – influence whether conflict helps or hinders group performance.

The goal of this investigation is to probe more deeply into the effects of conflict types on performance of teams, specifically focusing on a virtual setting. Moreover, the study is intended to shed light on how values might influence the relationships between conflict and performance. In pursuing these questions, we seek to bring empirical evidence to bear on the virtual team dynamics regarding conflict, values, and performance with the team. In the study, we explored how values may shape responses to group conflict. In this study, we proposed and tested the moderating role of value diversity within the group.

THEORETICAL FOUNDATIONS AND HYPOTHESES

Intra-team Conflict in Virtual Teams

Conflict is defined as the experience between or among individuals that their goals or interests are incompatible or in opposition to one-another (Korsgaard et al. 2008). There are three main types or bases of conflict within groups, relationship conflict, task conflict, and process conflict. Relationship conflict is a perception of personal antipathies and incompatibility between individuals. Task conflict is said to be a perception of disagreements among individuals about the content of their decisions, tasks, objectives and procedures (Jehn 1995). Process conflict concerns disagreements regarding how resources should be allocated to accomplish the group's tasks. The impact of task conflict and relationship conflict has received considerable empirical attention (Jehn and Mannix 2001), while the effect of process conflict on outcomes such as performance is not as clearly established (Hinds and Mortensen 2005). Thus, to gain further insights into these types of conflict, we incorporate process conflict into this study. Although relationship conflict is generally believed to be undesirable, task conflict is thought to be inevitable if not potentially beneficial (De Dreu and Weingart 2003). A close look at the empirical evidence in a recent meta-analysis suggests however, that the issue is more complicated than suggested in the studies. DeDreu and Weingard (2003) in their meta-analysis call into question whether each from of conflict has a unique direct effect on performance. The effect of conflict types may instead be apparent only in more complex interactive or curvilinear relationships (De Dreu 2006; Jehn and Bendersky 2003). Hinds and Bailey (2003) have argued that task, relationship and process conflict are more likely to occur in virtual teams than in traditional face-to-face teams. Reasons for this are effects of distance like different perspectives, inconsistent norms, different temporal rhythms, reduced homogeneity and familiarity (Hinds and Bailey 2003). Besides distance, technology mediation is a source of conflict too, due to its incompetence to transfer specific kinds of information, negative relational effects and coordination problems (Hinds and Bailey 2003).

Task Conflict

Task conflict is thought to be productive, potentially enhancing group decision making and performance. Groups that avoid engaging in disagreements and dissent regarding the task are less likely to undercover information and ideas that enhance complex decision making (Schweiger et al. 1989). Groups may benefit from task conflict when they work on complex tasks, because it can increase the consideration of alternatives and viewpoints (Jehn and Bendersky 2003; Mortensen and Hinds 2001). Empirically, however, the benefits are dubious. For example, a meta-analysis of conflict effects (De Dreu and Weingart 2003) found that overall, task conflict was negatively related to team performance. Some studies have failed to find any relationship between task conflict and team performance (DeChurch and Marks 2001; Jehn et al. 1997). Thus, although task conflict has the potential to be beneficial for outcomes, research suggests it must be managed carefully through open, collaborative communication (Hinds and Bailey 2003). As well, scholars have argued that the impact of task conflict depends on a variety of other factors such as task complexity and group values (Amason and Sapienza 1997; Jehn and Bendersky 2003). Given these issues, we do not hypothesize a direct effect of task conflict on team performance. Instead, we expect the

effect of task conflict on team performance to be moderated by group values, an issue we return to below.

Process Conflict

This type of conflict is the last examined since studies until now concentrated more on task and relationship conflict. Process conflict, although not as widely researched as relationship conflict, has been found to also have a consistent, negative impact on group outcomes (Behfar et al. 2008; Greer et al. 2008), in large part through increasing member emotionality and thereby decreasing members' ability to focus on the task at hand (Jehn et al. 2008). Process conflict has been shown to decrease productivity (Jehn 1992) and foster the likelihood to abandon the team (Jehn and Mannix 2001). One explanation is that when a group argues about responsibilities and duties, individuals are dissatisfied with the uncertainty caused by the process conflict and feel a greater desire to exit the group (Jehn and Mannix 2001). In addition, process conflicts interfere with task quality and often lead focus to irrelevant discussions of member ability (Jehn 1997). Continually discussions about task assignments in groups lead to ineffective work performance (Jehn et al. 1999). Thus, process conflict has been found to have consistent negative effects on performance (Greer et al. 2008). Therefore we hypothesize the following:

> *H1: Process conflict in a virtual team is negatively related to team performance.*

Diversity in Personal Values

While values can emerge as a cultural attribute of a society, organizational or group, individuals also bring their personal values to the group. We expect the composition of the individual values within the group to influence the relationship between conflict and team performance.

Research supports the notion that values diversity in general leads to conflict. Jehn, Chadwick, and Thatcher (1997) showed that divergence on values regarding the workgroup and its goals lead to higher levels of task and relationship conflict. Jehn and Mannix (2001) found a negative relationship between group consensus on values and task and relationship conflict. To examine individual differences in self-other oriented values, we draw on Schwartz's values theory, which is recognized as a comprehensive, widely generalizable and well-validated theory (Parks and Guay 2009). Schwartz (1994: 21) defines values as "desirable trans-situational goals, varying in importance that serves as guiding principles in the life of a person or other social identity." Schwartz proposed and established that values fall along two bipolar dimensions. Openness to change versus conservation, as the first bipolar value dimension, refers to whether the values conform to flexibility, experimentation, and a changing environment, or tend towards tradition, fulfilling certain obligations, and ensuring conformity. The other dimension, self-enhancement versus self-transcendence, determines whether the values are associated with individual or collective interests. For example, values oriented towards power, success, and achievements are individual-oriented values; collective-oriented values, in comparison, emphasize universalism and altruism.

In our study we concentrate on the dimension of self-enhancement versus self-transcendence, which we refer to as self-other oriented values. We expect that self-transcendence leads group members to be open to task conflict and able to suspend their personal concerns to resolve issues in the best interest of the group. In contrast, those who are more oriented to self enhancement will respond defensively to task conflicts, being more likely to evaluate dissent as a threat to their material or psychological status and well-being. In essence, self-other orientation shapes how individuals interpret and respond to conflict. Thus, individuals diverse on this dimension of values are likely to have very different interpretations of the same conflict episodes within the group. These differing interpretations themselves are apt to exacerbate conflicts. Thus, diversity on self-other values makes it difficult to manage or resolve conflicts of any sort, thereby undermining performance. We therefore hypothesize:

> *H2: Self-other values diversity moderates the relationship between task conflict and individual performance such that the negative impact of task conflict on performance will be stronger for groups high in diversity as compared to those low in diversity*
>
> *H3: Self-other values diversity moderates the relationship between process conflict and individual performance such that the negative impact of process conflict on performance will be stronger for groups high in diversity as compared to those low in diversity*
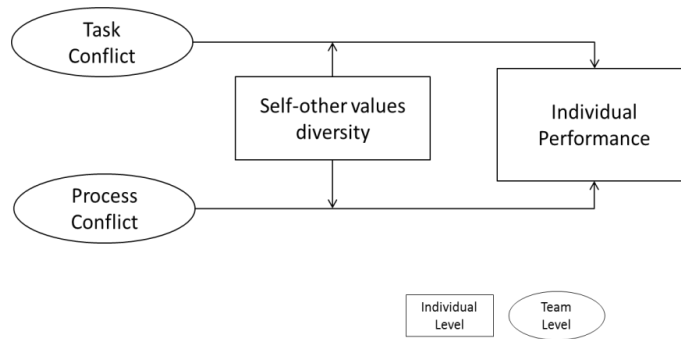
Figure 1 shows the research model of the study.

Figure 1. Research Model

METHOD

The Online Game Context

This study's context is an online strategic game called Travian, where in participations, work in teams, compete against one another a complex and information-rich environment. In particular, the participants' collaborative practices within the game (massively multiplayer online game) world are studied, using data from log files and participant surveys. The virtual world offers a huge advantage of making available a vast amount of users' behavioral data, collected in an unobtrusive way. Furthermore, the context of an online game bears the advantage of being more engaging and psychologically meaningful to participants than laboratory simulations (Williams et al. 2006). Online virtual games, such as this strategic game, provide a rich context in which to study collaboration (Bainbridge 2007; Steinkuehler 2008). Furthermore, this setting has the advantage providing objective performance measures thereby eschewing the bias associated with perceptional performance measures and avoiding possible common method variance (Majchrzak et al. 2005). Another major advantage in this setting is that the simulation is played throughout the world, enabling researchers to conduct truly international and cross-cultural studies at very low costs.

In the game, participants start out as leaders of their own villages and seek to gain natural resources, build armies, and expand their realms. The game lasts approximately one year, after which team is deemed the winner, based on the fastest completion of a certain building called "wonder of the world". Up to 25,000 users play the game on one server with events occurring in real time, using scarce resources. Teams are self-forming and comprise up to 60 participants. While teams are competing against one another, within teams, participants must cooperate with each other to protect their territory and resources, and successfully expand their realm. Teamwork, diplomacy, and negotiation skills play a crucial role in this context, leading to complex team structures and interactions between and among teams.

Sample and Procedure

In our approach, we use data taken directly from the computer server (log-files) and enhance it with a questionnaire which is distributed to subscribed players in virtual teams. Specifically, we obtained the data from two sources: a survey sent to the team members and archival data from the log-files of the game server. We collected data on the virtual teams engaged in the game on one server. A possible population consisted of 2,866 followers in 267 teams. From this population 1,190 players from 76 teams filled out the survey, leading to a response rate of 42%. As mentioned above, we used several sampling criteria. Among this group of respondents some were under 18, were members of teams with only 2 players, or failed to complete the survey. After excluding these cases, the sample consisted of 296 players from 48 teams. The average age of the surveyed players was 35, ranging from 23 to 47 years and 22% of the sample was female. The average ally size was 44 players ranging from 4 to 60 players.

For the analysis of possible response biases, we compared the sample that we used with the possible population on the server. We have to mention that we were mostly interested in the better performing players. These players are more engaged and more involved in the game. So this response bias would be intended. First, to compare the sample to the population on the server (276 possible teams), we used indices like the performance and the teams size of the teams. This data was taken

directly from the log-files. As intended, the teams in the sample were significantly better performing (m sample = 6,155, SD sample = 3,237; m population = 3,392, SD population = 3,249; t = 5.44) but not larger (m sample = 44, SD sample = 14; m population = 30, SD population = 15; t = 6.02) than the population. These findings suggest that our sample excluded the less engaged, causal players, who end up in poorer performing alliances but do not differ in group size.

Measures

Dependent Variable. The data on team performance was obtained directly from the log-files of the game server (in-game scoring system acknowledged throughout the game). The game provides an in-game scoring system which objectively lists the performance of each player. The main advantage is that this ranking and measure is unobtrusive and objective. We measured team performance two weeks after the survey.

Independent Variables. The data on task conflict and process conflict was obtained from the members' survey. The three items for task conflict and three items for process conflict were derived from Jehn and Mannix (2001) and adjusted to the virtual context. The measures showed acceptable reliabilities with Cronbach's α =.83 for task conflict and α =.83 for process conflict. Items were averaged to a single score per individual and the individual scores were aggregated to the team level. Corresponding ICC(1) values of 6% and 2% justified the aggregation.

Self-other value diversity was measured using a scale developed by Schwartz (Schwartz 1992). The scale consists of ten items measuring each of the major values underlying the self-enhancement versus self-transcendence. The respondents were asked to rate each value through questions on a scale of -1 (opposed to our values) to 7 (supreme importance). Items were then combined to create an overall score (α = .93). We used the common formula to build the measure (self-enhancement = −.60−(.19*power)−(.14*achievement)−(.09*hedonism)−(.11*stimulation)+(.01*selfdirection)+(.10*universalism)+(.13*benevolence)+(.07*tradition)+(.06*conformity)+(.02*security)). To create an index of diversity of values, we computed the coefficient of variation (standard deviation/mean) for each team.

Control Variables. Data on group size was obtained directly from the log-files of the game. The three items for relationship conflict were adapted from Jehn and Mannix (2001). The measure showed acceptable reliability with Cronbach's α = .87.

RESULTS

Table 1 shows means, standard deviations and correlations for variables of the study.

Variable	N	Mean	SD	1		2		3		4	5
1 Size	46	44.96	13.71								
2 Task Conflict	46	2.22	.30	.16							
3 Process Conflict	46	1.93	.34	-.25	*	.48	*				
4 Relationship Conflict	46	1.96	.36	-.28	*	.55	*	.66	*		
5 Performance	46	6662	3467	.27	*	.04		-.33	*	.01	
6 Self-other values diversity	46	-99.46	268.16	.01		-.24		-.15		-.10	.01

* p < .10

Table 1. Means, Standard Deviations and Correlations for Variables of the Study

Table 2 shows the results of GLM analyses for the predictors of team performance. Hypothesis 1, which predicted a negative relationship between process conflict and performance, was supported (B = -2114, t = -3.10, p < .01). Hypotheses 2 and 3

stated that the relationships between task conflict and process conflict with performance are moderated by value diversity. Neither of these interactions was significant.

	Performance					
	Model 1		Model 2		Model 3	
Intercept	6606 (499)	****	5695 (4740)		6505 (4763)	
Size	966 (518)	*	873 (558)		635 (567)	
Relationship Conflict			1521 (710)	**	1658 (705)	**
Process Conflict			-2114 (682)	***	-2334 (684)	***
Task Conflict			358 (2126)		61 (2133)	
Self-other values diversity			-68 (487)		-896 (7331)	
Task Conflict*Self-other values diversity					547 (3378)	
Task Conflict*Self-other values diversity					841 (1793)	
R^2	.07		.26		.32	
F-Value	3.48	*	2.86	**	2.55	**

N = 46
Note. Unstandardized parameter estimates are reported in the body of the table, with standard errors reported in parentheses;
*$p < .1$; ** $p < .05$; *** $p < .01$; **** $p < .001$

Table 2. Results of GLM analyses on performance

DISCUSSION

The purpose of this study was to examine the role of values diversity in reactions to conflict. As hypothesized, we found a negative relationship between process conflict and performance. The hypothesized interactions with values diversity were not significant, however. Thus, there was no evidence that diversity on self-other values exacerbates groups' reaction to either task or process conflict. In fact, task conflict had no unique effect beyond the impact of relationship conflict and process conflict. In contrast, the negative impact of process conflict was unqualified by values diversity.

There are a number of reasons why values diversity did not influence the conflict performance relationship. First, the sample size (46 teams) was relatively small, resulting in a low power. However, the magnitude of the effects of the interactions was sufficiently small to suggest that a larger sample would not have yielded significant results. Another explanation for these findings pertains to the role of individual values versus group influences. While individuals come to groups with their own values, they may be less powerful predictors of their behavior in groups where there are strong prevailing values and norms to act a certain way. Thus, an individual who is high in self-enhancement value and thus should react negatively to task conflict may be open to such conflict if the group's norms and practices involve tolerance or even promotion of such conflict.

One unanticipated finding was the positive relationship between relationship conflict and performance. This is a quite counterintuitive result since most research claims relationship conflict to be negatively related to team outcomes. One potential explanation of this finding is that relationship conflict reflected more close personal relationships. Social bonding and familiarly is a perquisite of collaborative interaction which would positively influence performance (Jehn and Shah 1997; Shah and Jehn 1993). Yet, groups of friends can experienced higher levels of emotional conflicts on decision making tasks than in groups of people that do not know each other (Hinds and Bailey 2003; Shah and Jehn 1993). Thus, relationship conflict in this case might reflect the familiarity and intimacy among team members that otherwise benefits performance.

The findings call for future research. Investigating the observed relationship in traditional teams is one important direct. New work by Jehn et al. (2010) changes the direction in measuring conflict. Instead of looking at mean levels of conflict, she looks at conflict asymmetry. This approach seems to have great promise in the area of conflict research. Conducting cultural studies in conjunction with new ways of looking at conflict could also yield interesting results and insights. Overall the investigation provides verification of the potentially deleterious influence of conflict as well as insight into when conflict is less harmful or even beneficial.

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