

Good to Great: Build strong and vital teams

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Abstract

This empirical study explores the linkages between team conflict, climate, and team effectiveness in research team context. Questionnaire data are collected from research team leaders and members of Chinese universities, and the conceptual model is tested using structural equation modeling method. The findings provide practical implications for managing team conflict in a constructive confrontation approach and stimulating team effectiveness. Research team leaders should reduce the intensity of their emotional reactions to avoid relationship conflict and engage in task conflict to become more effective problem solvers. When every member of the team is engaged in an environment with a free expression of ideas and encourages risk taking, the group as a whole is productive. Unresolved conflict eats up productivity, walking a mile in another's shoes is helpful for team members to understand others, thus facilitating mutual understanding and mutual trust to create a harmonious team climate.

Keywords: *team climate, conflict, team effectiveness, research teams*

1. Introduction

Teams perform their tasks by joining individual competences based on mutually agreed responsibilities (Koster *et al.*, 2007). Research teams of universities, also called project teams or college academic teams, emerge as innovative and efficient organizations which are composed of discipline leaders and interconnected professionals with common research goals. Research teams set up an excellent platform to cultivate excellent talented people, and the construction of innovative and effective research teams has aroused national attention in recent years. Compared with enterprise's R&D teams, research teams of universities which are less affected by authority bring forth more theoretical innovation and possess the characteristic of high content of knowledge (Long & McGinnis, 1981). Most of the recent studies on teams are organized around the areas of work groups, management teams, and enterprise's R&D teams (Bain, Mami, & Pirola, 2001; Pirola-Merlo, Härtel, & Mann, 2002; Sarin & McDermott, 2003), but there is still a dearth of research examining research teams of universities. Previous research suggests that diversified teams with members of different disciplines and backgrounds help identify new innovative opportunities and improve team performance (Jackson, Joshi, & Ethardt, 2003; Hoever, Van Knippenberg, & Van Ginkel, 2012). Multidisciplinary and interdisciplinary collaborative work is generally understood to enhance scientific enquiry and improve productivity (Aboelela, Merrill, & Carley, 2007). Domestic and international researches on research teams mainly discuss from the perspectives of teambuilding and role analysis. Some international researchers use case studies and empirical studies to analyze these problems (Long & McGinnis, 1981; Rey-Rocha, Mart ín-Sempere & Garz ón, 2004). The present study adds to the body of knowledge by examining

the building of strong and vital university research teams. In an effective and high performing research team, the focus is on working together for a common goal, where people are happy, enjoy the work, are committed to each other and can speak the truth and solve problems effectively. This study comprehensively reviews the abundant exiting research literatures of team conflict, team climate, and team effectiveness. This research defines the concept of research teams of universities, which forms a preparatory conception of possible variables and the relationship between task conflict, relationship conflict, task orientation, participative safety, support for innovation and team effectiveness. Finally, this paper puts forth the research hypothesis and tests the research model. This empirical study is set in a Chinese cultural context and it uses questionnaire surveys and interview method to collect data from 6 universities. The relationships are tested in a LISREL model to investigate how conflict and team climate affect team effectiveness.

The main contents of this paper are organized as follows: In Section 2, we review the literature and develop hypotheses regarding conflict, team climate and team effectiveness. In Section 3 and 4, we describe the research method and analyze the data to test the proposed relationships in our model. Then we discuss the theoretical implications and provide managerial insights for structuring teams and stimulating team effectiveness. Finally, we summarize the study, point out the research limitations and give a perspective in future.

2. Review of Literature and Development of Hypotheses

2.1. Conflict

Conflict is an inevitable phenomenon in everyday life. It arises when two people perceive they have different goals, but are dependent upon each other to reach the goals. Just as the glass can be both half full and half empty at the same time, conflict has pros and cons. It can be productive as it generates many solutions and it is often unproductive because the focus is on personalities rather than the issue. It is gradually realized that conflict is a 'double-edged sword' to various team outcomes although it has traditionally been considered detrimental to team performance (Amason, 1996; Jehn & Mannix, 2001; Langfred, 2007). When a person is deeply invested in a conflict, they do not tend to reveal the "real" reasons for their dispute. Often, these participants in a battle will repeat their issues as a slogan or even a mantra. When we focus on issues or positions, we generate conflict. When we focus on interests, we find out what we have in common and lessen conflict.

Teams that have clear goals and purpose have fewer problems with relationships, whereas teams that are dysfunctional or disorderly have more conflicts. The five identified styles of the Thomas-Kilmann Conflict instrument (Thomas & Kilmann, 1974) are competing, avoiding, accommodating, compromising, and collaborating. We find ourselves competing when the issue is more important than the relationship. In this situation, we use our assertive power to stand up for what is right. Generally we accommodate in conflict situations where we have a long term relationship. Avoiding may be a short term tactic to gain time and allow people to cool down. Compromise is dividing the pie in half that no one gets all that they want and we split the difference. While collaboration enlarges the pie and allows more options, both parties are looking to satisfy the other's needs. It is more complex and time consuming to collaborate than compromise. We get beneath the issue to find out the other person's interests and values.

Conflict can be distinguished into task conflict and relationship conflict (Jehn, 1995). Recent studies examining organizational conflict have found positive associations between conflict and team effectiveness rather than focusing only on the negative effects associated with it. Researchers have argued that conflict has considerable potential to contribute to team

and organizational effectiveness (De Dreu & Van de Vliert 1997). However, the impact of conflict on team effectiveness is still a matter of debate and the empirical support for the differential impact of the two types of conflict on team performance is mixed. While many different things labeled (*i.e.*, cognitive conflict, substantive conflict), task conflict refers to opposing opinions, ideas and viewpoints among group members pertaining to the group's task (Amason & Sapienza, 1997). In a study of 88 student teams, Jehn (1994) finds that task conflicts increase team performance on a ten-week class project. In a follow-up study of organizational teams in a Fortune 500 company, Jehn (1995) gets similar results. Task-related conflict is considered to be beneficial to team effectiveness under certain conditions (Amason, 1996; Simons & Peterson, 2000). Although empirical evidence supports a strong positive correlation between task conflict and team performance (Nijdam, 1998), some researchers find a negative correlation between the two variables (Jehn, Northcraft, & Neale, 1999; Lovelace, Shapiro, & Weingart, 2001), or no correlation (Pelled, Eisenhardt, & Xin, 1999). Relationship conflict refers to interpersonal incompatibilities among the team members, which typically includes affective components such as feeling tension, animosity and friction (Jehn, 1995). Although task conflict is often beneficial, relationship conflict impedes decision quality and is detrimental to group performance (Jehn 1995, 1997; Amason 1996). Negative emotions, such as frustration and irritation, are dysfunctional for team performance and the research illustrates moderate negative correlations for both task and relationship conflict with team effectiveness, which opens up an interesting domain for further exploration (De Dreu & Weingart, 2003). Conflict in research teams is worth studying, and it can be beneficial to team innovation and effectiveness if used properly.

2.2. Team Climate

There has been a growing interest by researchers in the concept of team climate over the past decade. One of the most studied models of team climate is West's (1990) four-factor model for work group innovation, which comprises four scales: support for innovation, task orientation, participative safety and vision. The four climate factors are essential for team innovation to occur. The Team Climate Inventory (TCI) developed by Anderson and West (1998), which uses the concepts of organizational climate and shared perceptions to understand the climate of work groups, has been empirically supported to measure climate at the team level in many studies in different types of groups. In some studies (Anderson & West, 1998; Mathisen *et al.*, 2004), a fifth factor named "interaction frequency", is also extracted from the participative safety factor to be added to the TCI.

Participative safety is seen as a means of reducing resistance to change, and encouraging commitment and engagement. Task orientation describes a general commitment to excellence in task performance and high task orientation is characterized by reflexivity, constructive controversy, tolerance of minorities and commitment to excellence. Support for innovation denotes not just team outcomes and products but also creative suggestions regarding changes to team objectives, processes, and strategies. There has been growing interest in how particular types of climate (*e.g.*, for innovation or safety) lead to particular types of work group outcomes (*e.g.*, innovativeness or accident avoidance).

2.3. Team Climate and Conflict

Task orientation, which centers around roles and business strategies, is a measure of team members' motivation toward performing well on team tasks. Task-oriented people take a job and immediately break it down into specific tasks. They measure by their ability to complete as many tasks as possible each day in a given time period. As task orientation describes a

general commitment to excellence in task performance, research team members should strive to set challenging and competitive goals, focus on team effectiveness, assume responsibility and constructively confront and solve problems. Task conflict occurs when two parties are unable to move forward on a task due to differing needs, behaviors or attitudes. When constructive task-oriented conflict is high, task orientation is also high because team members of research teams may arise various viewpoints pertaining to the team's task.

The intra-team animosity, resentment and tension associated with relationship conflict (Jehn, 1995) directly reduce a sense of cohesion within the team through undermining group commitment and willingness to work with one another (Beal *et al.*, 2003; Mullen & Copper, 1994). If team members do not get along interpersonally, their anger and frustration is likely to impair team processes such as a shared vision for the team project or a shared sense of direction for the team's tasks. When relationship conflict is high, task orientation is low because team members are angry or emotionally upset and nothing seems to work and reach a stalemate.

Drawing on this logic, we hypothesize:

Hypothesis 1: There is a positive relationship between task conflict and task orientation.

Hypothesis 2: There is a negative relationship between relationship conflict and task orientation.

Participative Safety is highly similar to psychological safety (Edmonson, 1999), which measures how comfortable team members feel in presenting ideas and giving constructive feedback to their team members (Anderson & West, 1998). Research teams with high participative safety often share information, understand each other and listen to everyone's view. Task conflict involves disagreement about ideas and procedures associated with the team's tasks. The different opinions associated with task conflict can potentially undermine participative safety within the team. If team members often disagree with each other, there is a high level of task conflict (Jehn & Mannix, 2001) and the sense that it is safe to introduce new ideas and opinions could be impaired. If team members do not feel comfortable about sharing their ideas or providing constructive feedback, less original and potential solutions may be selected, which could lead to poorer team effectiveness.

When relationship conflict is low, participative safety is high because team members stay calm to approach the other person in a non-threatening manner to understand the other person's point of view and the feelings being communicated. On the contrary, team members who do not like each other and do not get along interpersonally are unlikely to feel comfortable about sharing ideas or proposing plans (West, 1990). This discomfort is expected to result in reduced perceptions of participative safety. Therefore, we hypothesize:

Hypothesis 3: There is a negative relationship between task conflict and participative safety.

Hypothesis 4: There is a negative relationship between relationship conflict and participative safety.

Task conflict can improve organizational performance through enhanced understanding of creative options and various viewpoints (Bourgeois, 1985; Eisenhardt & Schoonhoven, 1990). Task conflict may be beneficial to team performance, especially when working on complex, uncertain and non-routine tasks. This fosters the development of new and creative insights, leading the team to be more effective and innovative (De Dreu & West, 2001; Jehn, 1995). When task conflict is high, support for innovation is high because team members strive to foster innovation and creative thinking. In this team climate, team members listen to all

ideas and viewpoints, learn from successes and mistakes, embrace change and challenge the status quo and encourage risk taking.

When relationship conflict is low, support for innovation is high as team members note areas of agreement and disagreement and consider other options to look for innovative ways. On the contrary, a team composed of members who do not get along is unlikely to perceive that their peers would like to support their novel ideas, resulting in a reduced sense of team support for innovation.

Thus, on the basis of extant theory, we hypothesize:

Hypothesis 5: There is a positive relationship between task conflict and support for innovation.

Hypothesis 6: There is a negative relationship between relationship conflict and support for innovation.

2.4. Team Climate and Team Effectiveness

Bain *et al.*, (2001) says team climate for innovation may be supportive of team performance in general. Ganesh and Gupta's (2006) research indicates that team climate is a crucial factor in determining the team performance. Acuna *et al.*, (2008) indicates that team climate has been identified as an important factor for effective team performance. In a study of 59 members of 13 teams in an oil company, Burningham & West (1995) finds a relationship between team climate and innovative ideas. The research shows that individual innovativeness is superior as a predictor of team innovation to measures of team climate. Team climate variables, such as participative safety, support for innovation and task orientation, have significant relationships with team innovation. Research evidence from a study of 27 hospital top management teams (West & Anderson, 1996) provides support for the proposition that commitment to team goals is associated with high levels of team innovation and support for innovation emerges as a powerful group process predictor of team innovation.

In a research team with good team climate, people strive to be open and direct, work as a team with respect, trust for each other, recognize accomplishments and manage performance fairly. In this way, team members seek the best solution for the team timely when problems arise, before they are overlooked or negatively affect team effectiveness; confront the problem, not the person. A good team climate could help team members fully commit to support the different plan to achieve the goal and keep focus on solving the problem quickly and effectively, thus improve team effectiveness.

Therefore, we hypothesize:

Hypothesis 7: There is a positive relationship between task orientation and team effectiveness.

Hypothesis 8: There is a positive relationship between participative safety and team effectiveness.

Hypothesis 9: There is a positive relationship between support for innovation and team effectiveness.

On the basis of past theorizing and evidence, this paper proposes the following hypothesis according to the linkages between team conflict, climate and team effectiveness:

Hypothesis 10: Team climate will mediate the relation between conflict and team effectiveness.

Above all, we propose the model below:

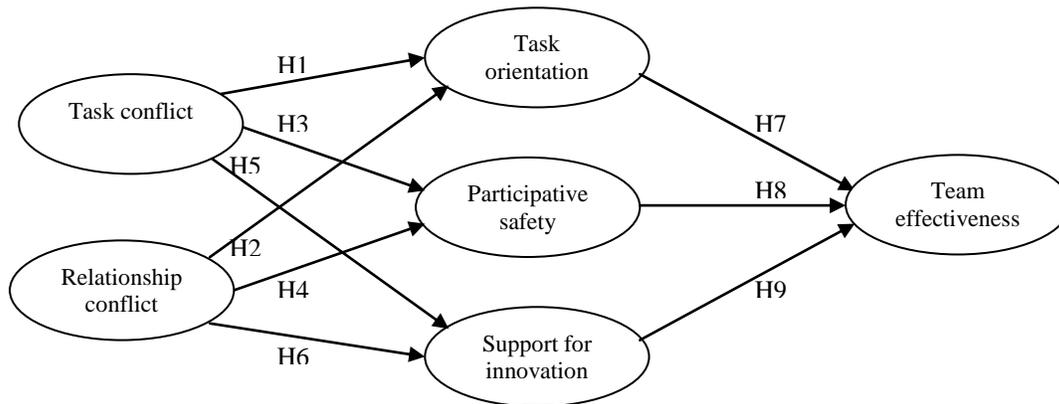


Figure 1. Hypotheses Tested in the Study

3. Method

3.1. Sample

With the support of national natural science foundation of China, members of 150 research teams from 6 Chinese universities participated in this study. A total of 750 member questionnaires and 120 leader questionnaires are distributed. 402 member questionnaires and 97 leader questionnaires are returned. On average, 68 percent of the leaders returns completed questionnaires and 53 percent of the members returns completed questionnaires. All team members and leaders fill in the questionnaire individually and respondents are asked to indicate on a 5-point scale to what extent they agree with each item (“1=strongly disagree” to “5=strongly agree”).

In this study, we minimize the problem of common method variance by using a different data source for the variables. Conflict and team climate are measured by team members, whereas team effectiveness is measured by both team leaders and members.

3.2. Procedure and Measures

A brief description of each measure is provided below.

Two researchers in organizational behavior proficient in both Chinese and English translate the original version into Chinese separately, swap the translated versions, then another bilingual researcher back-translate the Chinese version. Finally the two versions are compared for differences in meaning (Mathisen *et al.*, 2004). No major differences are present.

The within-group agreement index (r_{wg}) can take values between zero and one and a value of 0.70 or higher is generally considered to reflect a reasonable amount of agreement within a team (James *et al.*, 1984). After computing the within-group agreement index, all questionnaire data are aggregated to the team level by using the mean of the individual scores.

Task conflict and relationship conflict are evaluated from an intra-team conflict scale introduced by Jehn (2001). Task conflict consists of items such as different work opinions and different opinions towards cooperation process, *etc.* We use the following items to measure relationship conflict: tense interpersonal relationships of team members, intense debates, contradictions and conflicts. The Cronbach alpha score of task conflict is 0.91, and

the Cronbach alpha score of relationship conflict is 0.89. The mean r_{wg} of relationship conflict is 0.74, and the mean r_{wg} of task conflict is 0.81.

We use the following items to measure participative safety: acceptance level of team goals, information sharing, overall attitude, interaction, fully informed, mutual understanding within team, everyone's views be listened carefully, the will to share information within team, mutual supports within team, *etc.* Task orientation consists of three components: excellence (*e.g.*, "Do you and your colleagues provide useful ideas and practical help to enable you to do the job to the best of your ability?"), appraisal (*e.g.*, "Do you and your colleagues monitor each other so as to maintain a higher standard of work?"), and ideation (*e.g.*, "Are team members prepared to question the basis of what the team is doing?"). Support for innovation consists of components such as articulated support (*e.g.*, "Assistance in developing new ideas is readily available") and enacted support (*e.g.*, "Members of the team provide and share resources to help in the application of new ideas"). Additional details about the factors and components can be found in Loewen and Loo (2004). The Cronbach alpha score of participation safety, task orientation and support for innovation is 0.77, 0.78, 0.85 respectively, and the mean r_{wg} is 0.91.

Team effectiveness is assessed using five items described in Hackman (1987)'s integrative model of team effectiveness rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The Cronbach alpha score of team member questionnaire is 0.81 and the Cronbach alpha score of team leader is 0.79. The mean r_{wg} is 0.86.

4. Data Analysis

To test the proposed relationships in our model, we use measured variable path analysis in LISREL 8.70. Confirmatory factor analysis (CFA) is conducted to determine the validity of our hypothesized factor model. The fit indices are $\chi^2=1234.76$, $df=545$, $RMSEA=0.118$, $CFI=0.96$, $NFI=0.92$, $NNFI=0.95$, $IFI=0.96$.

The means, standard deviations and correlations among all variables are presented in Table 1. From the correlations, we can see that task conflict is negatively correlated with participative safety ($r=-0.340$, $p<0.01$) and relationship conflict is negatively related to participative safety ($r=-0.339$, $p<0.01$). There is a negative relationship between task conflict and support for innovation ($r=-0.217$, $p<0.05$). There is a negative relationship between relationship conflict and support for innovation ($r=-0.268$, $p<0.01$). Task orientation is positively related to team effectiveness ($r=0.793$, $p<0.01$). Participative safety is positively related to team effectiveness ($r=0.801$, $p<0.01$) and support for innovation is also positively related to team effectiveness ($r=0.817$, $p<0.01$). Task conflict is not significantly correlated with task orientation ($r=-0.163$), and relationship conflict is not significantly correlated with task orientation ($r=-0.189$).

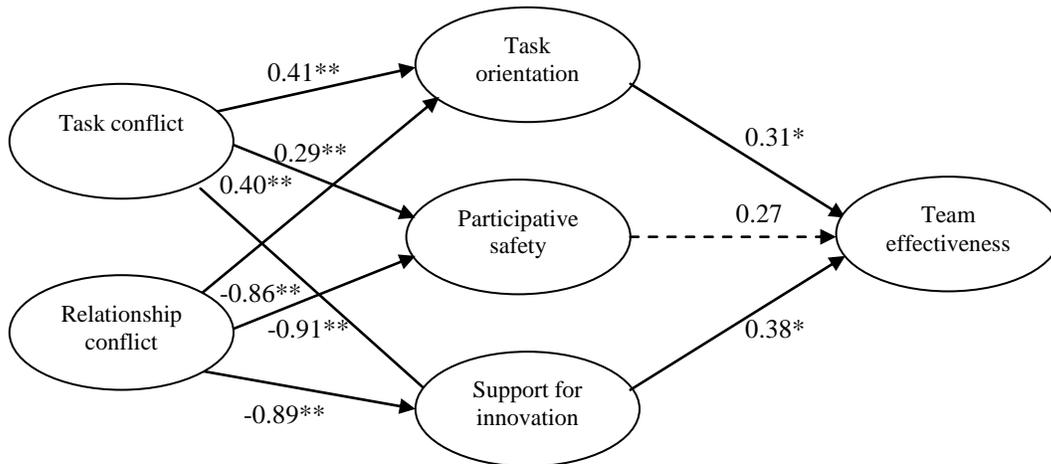
Table 1. Means, Standard Deviations and Correlations

| | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 |
|---------------------------|-------|-------|----------|----------|---------|---------|---|---|
| 1.Task conflict | 2.291 | 0.615 | 1 | | | | | |
| 2. Relationship conflict | 1.986 | 0.569 | 0.697** | 1 | | | | |
| 3.Task orientation | 4.145 | 0.496 | -0.163 | -0.189 | 1 | | | |
| 4.Participative safety | 4.371 | 0.499 | -0.340** | -0.339** | 0.792** | 1 | | |
| 5. Support for innovation | 4.367 | 0.422 | -0.217* | -0.268** | 0.844** | 0.833** | 1 | |

| | | | | | | | | |
|----------------------|-------|-------|---------|--------|---------|---------|---------|---|
| 6.Team effectiveness | 4.453 | 0.497 | -0.227* | -0.200 | 0.793** | 0.801** | 0.817** | 1 |
|----------------------|-------|-------|---------|--------|---------|---------|---------|---|

* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

Next, we compute these correlations via LISREL model, and the overall fit of this model to the data is judged to be acceptable ($\chi^2=1338.83$, $df=551$, $RMSEA=0.08$, $CFI=0.95$, $NFI=0.91$, $NNFI=0.94$, $IFI=0.95$).



* $p < 0.05$, ** $p < 0.01$ (two-tailed test)

Figure 2. Path Coefficients for the Hypothesized Model

As shown in Figure 2, the results support Hypothesis 1, which predicts positive relations between task conflict and task orientation ($\gamma = 0.41$, $p < 0.01$). As predicted by Hypothesis 2, relationship conflict has a significant, negative relationship with task orientation ($\gamma = -0.86$, $p < 0.01$). Hypothesis 3 is unsupported, task conflict exhibited a surprising positive relationship with participative safety ($\gamma = 0.29$, $p < 0.01$). The results support Hypothesis 4, which shows that there is a negative relationship between relationship conflict and participative safety ($\gamma = -0.91$, $p < 0.01$). As Hypothesis 5 predicted, task conflict is positively related to support for innovation ($\gamma = 0.40$, $p < 0.01$). The results support Hypothesis 6, which shows that there is a negative relationship between relationship conflict and support for innovation ($\gamma = -0.89$, $p < 0.01$). Hypothesis 7 is supported by our data, which predicts positive relations between task orientation and team effectiveness ($\beta = 0.31$, $p < 0.05$). Hypothesis 8 is also unsupported, participative safety exhibited no significant relationship with team effectiveness ($\beta = 0.27$). In addition, consistent with Hypothesis 9, support for innovation is positively related to team effectiveness ($\beta = 0.38$, $p < 0.05$). To test the mediating role of team climate, we add conflict-team effectiveness path and the path of team climate-team effectiveness in the model. The mediating role of team climate between conflict and team effectiveness is significant. According to Baron and Kenny's (1986) framework for mediation analysis, Hypothesis 10 is supported. The implications for theory and practice are discussed below.

5. Discussion

On the basis of past theorizing and evidence, this paper proposes a negative linkage between relationship conflict and task orientation, a negative relationship between

relationship conflict and participative safety and a negative relationship between relationship conflict and support for innovation (Hypothesis 2, 4, and 6). In research teams of Chinese universities, people value interpersonal relations in Chinese context. If the team members have good relationship with other people, they would like to cooperate and there is a climate of trust within the team. Otherwise they dislike each other and will not share information fully. Relationship conflict, fueled by interpersonal difficulties and negative emotion, can undermine the potential benefits of group interaction and have a more detrimental effect on team climate in the relationship-oriented Chinese cultural context. Hence, team leaders should attempt to reduce the frequency and the intensity of relationship conflict. When relationship conflict is high in research teams, team leaders can play an important role in balancing constructive and confrontive in a team and the aim is high constructive and high confrontive to reach a win-win solution. The essence of constructive confrontation is to attack a problem by speaking of it in a direct and positive way, but does not mean being unpleasant or rude. Constructive confrontation is an effective approach to solving problems quickly and objectively while maintaining an effective working relationship and good team climate. The process only focuses on the problems but not on the person. And adapting to this approach can help team members become more effective problem solvers at research teams to improve team climate without causing conflicts. Besides, choosing the right time and place for the confrontation can reduce relationship conflict. Face-to-face is preferable. Avoid making the initial approach via email. In this way, team members can understand each other better to create a harmonious and positive team climate.

Consistent with our Hypothesis 1 and 5, this research also predicts a significant positive relationship between task conflict and task orientation, task conflict and support for innovation. Chinese culture values harmony as a genuine concern for a sense of intimacy, trust, compatibility and mutually beneficial behaviors (Chen and Tjosvold 2002). Since Chinese value harmony, it may be difficult for research teams in the Chinese cultural sphere to express conflict. Team often avoids challenging and debating with each other especially on important issue that affects the team. Although Chinese people are relationship-oriented and harmony is the core principle of interpersonal interaction, research team members in Chinese universities may still obtain benefits from task conflict. Task conflict is important to improve team effectiveness and team climate, Team members should understand that task conflict can be productive and they should use constructive confrontation to solve conflicts in research teams. Constructive controversy can be beneficial for team effectiveness. Research teams can be trained to express their ideas directly and integrate different points of views. Teams that fear conflict ignore controversial topics that are critical to team success and fail to tap into all the opinions and perspectives of team members. They often create environments where back-channel politics and personal attacks thrive. Teams which engage in conflict extract and exploit the ideas of all team members put critical topics on the table for discussion to solve real problems quickly and minimize politics. Hypothesis 3 is not supported, and we find that task conflict has direct positive impacts on participative safety. When task conflict is high, team members are engaged in conflict about team tasks and they will have neither the time nor the energy left for interpersonal quarrels. In this situation they would like to propose new ideas and participate in decision making and participative safety is high. And when task conflict is high, participative safety is high if the differences among members are recognized by supportive leaders and team communication is open. When teams are similarly high in participative safety, they also have a high level of task conflict. Task-related disagreement will be viewed as constructive (Edmonson, 1999) and will spur team members to integrate these disparate ideas into more original solutions. A recent study by Chen (2006) proposes that psychological safety and task conflict may interact. For example, task conflict may lead

to high levels of team effectiveness when psychological safety is also high. When task conflict is low and the amount of work is light, people would like to turn their attention from task conflict to interpersonal relations and they will focus more on interpersonal relations in this situation. If a person has nothing to do every day, he or she seems to be more sensitive to interpersonal relations and even organizational politics could develop. In this situation, they do not trust each other due to the complexities of interpersonal relations and participative safety is low.

There is also evidence of positive relations between task orientation and team effectiveness, support for innovation and team effectiveness (Hypothesis 7 and 9). These findings are consistent with the strong body of evidence demonstrating the importance of West's (1990) model of team climate for team performance (*e.g.*, Bain *et al.*, 2000; Burningham & West, 1995). Hypothesis 8 is unsupported, participative safety exhibits no significant relationship with team effectiveness. High participative safety means that the team members feel secure to contribute with new ideas and feel involved in the information sharing and decision making process. Therefore, the whole team could be effective. But when participative safety is too high, all the team members participate in decision making and the decision making time may be very long, which hinders team effectiveness. When teams are too high in participative safety, originality and effectiveness will be low due to complacency and a lack of desire to deviate from the status quo. Here we find that participative safety is not significantly related to team effectiveness, which might be the result of the research participants recruited. Additionally, it is found that team climate mediates the relation between conflict and team effectiveness. In a research team with good team climate, team leaders appreciate risk taking, encourage mutual sharing, promote open communication and set clear expectations. With a free expression of ideas in an environment which encourages people to think actively, team members are more likely to proactively seek solutions in a way that allows every member of the team to participate according to his or her strengths and level of skill. When every member of the team is engaged, the group as a whole is productive.

6. Practical Implications

The results of this study have a number of implications for future management practice for structuring teams and stimulating team effectiveness, especially in China and other collectivist cultures. This study encourages us to recognize that conflict which is handled effectively might be a necessary antecedent to teamwork and team effectiveness. It also suggests that developing a cooperative approach to conflict for teams may strengthen their relationships. In addition, our study can carry important practical implications for administrators in helping universities to develop effective teamwork and stimulate team effectiveness. Teachers in universities usually work alone to rely mainly on their personal talents and skills as tasks are often structured for the individual. The transition to teamwork in scientific research teams, which means working with others, might threaten teachers' sense of autonomy and might confront them with conflicts, which they could avoid before. The techniques of formal mediation are very helpful for a team leader when resolving conflict. They can be used when team leaders are resolving conflict between two or more team members, or even when leaders are resolving his/her own conflict with a member. Team leaders could help members see all the issues and arrive at their own solution by fractionalizing the dispute into bite sized pieces and they should reduce the intensity of their emotional reactions to avoid conflict. The leaders should work at adopting more moderate views, try to temper the excess emotions, put the situation in perspective, develop some mutually supportive relationships, always be kind and gentle with the team members and be a friend to them. Constructive confrontation helps team leaders and members quickly confront

problems that affect the bottom line. We are not taking risks if we are not constructively confronting problems with one another, and some of the team's greatest breakthroughs have occurred by constructively confronting tough problems with one another.

Walking a mile in another's shoes is helpful for team members to understand others. Teamwork requires a full coordination of efforts in a climate of trust and support. Trust is a crucial element to team effectiveness. When research teams of universities will undergo restructuring, it requires the willingness and ability to trust people and team members must be loyal to the team on the assumption that their team members deserve their trust. Acquaintance and friendship make it easier for people to believe that their colleagues will act in a way that will benefit them, and therefore trust emerges. Research team members would like to stay with the team to go through hard times if they trust each other. So research team leaders could help members build friendship with each other to nurture an atmosphere of trust. Try to build a team with good team climate: team communication is open and all members participate in the decision process; leaders are supportive and have high personal performance standards; differences among members are recognized and handled. Open communication is of vital importance in research teams, seminars could be held frequently to promote communication. Leaders could also make good use of informal communication to create a better organizational atmosphere, such as parties and Outward Bound activities. Establish knowledge chain management system within the team. Knowledge sharing and knowledge creation are spread and transferred through the knowledge flow. The knowledge advantages of team members could be integrated into the knowledge advantage of the knowledge chain through optimizing the knowledge flow among teams, facilitating mutual learning and mutual trust among team members, thus promoting communication to create a harmonious team climate. Team leaders should promote a free flow of thoughts, ideas, and questions throughout the team. Team members are encouraged to challenge the status quo and decision makers are encouraged to listen to all ideas and viewpoints. Members are empowered to raise work-related concerns and discuss issues directly with their leader. Team leaders can design one-on-one meetings to promote open communication between the team members and the supervisor besides staff meetings, which is a good way to improve team effectiveness through the mediation of team climate. Face-to-face communication is preferred, as messages are expressed through a combination of body language, tone and words to receivers, whereas relying heavily on non face-to-face communication limits the main sources for message understanding and can give rise to a lot of communication problems with a quick escalation of conflict. Sometimes members do not express their questions or opposite views due to pressure from the group to conform and team leaders should create an environment that encourages people to express their ideas freely. Team leaders may facilitate group activities, such as brainstorming sessions in which teams can work together to resolve conflict. Finally, it is also important for team leaders to develop mechanisms to keep track of members' progress and give timely and specific performance feedback, which will give the team leader opportunities to manage and assess team effectiveness. Timely and substantive feedback is important to let people believe that they get support and involvement from others. Timely recognition is very important for team climate improvement to prevent distant members feeling unnoticed and forgotten. Design Team Recognition Award program to reward individuals for achieving exceptional results in a major program with significant contribution to team success. In this way, it allows any team members to show appreciation of others' accomplishment or support which is beyond and above routine duties.

7. Conclusions and Future Research

This paper discusses the linkages between team conflict, climate, and team effectiveness in university research teams. The model and the data presented here lay some of the groundwork for future research on the resolution of organizational conflict and effective management in research teams. We hope the present research serves as a springboard for further conversations regarding the building of strong and vital research teams. Build the team that is needed to deliver the desired results; establish an environment of mutual trust and respect; foster direct and open communication, diversity of opinions and debate. In an effective research team, team members have close relationship with each other and everyone is open to share knowledge with other team members. Meanwhile, team leaders play important roles to coordinate the whole team, create positive team climate, promote open communication, strengthen mutual understanding, enhance collaboration, lessen conflict and improve team effectiveness. Teamwork requires a full coordination of efforts in a climate of trust and support. A number of methodological limitations should be considered in evaluating the research findings. Firstly, we could increase sample sizes and analyze different types of scientific research teams in future study. Secondly, Hierarchical Linear Modeling (HLM) analysis could be used in future study. Thirdly, additional factors may help conflict boost team effectiveness and these factors should be actively explored in future research. Finally, it is of great value to study from the perspective of social network analysis. It is a promising question that needs to be explored in future research because knowledge communication between members from different research teams is in essence the transition process of cooperating and communicating in networks.

Acknowledgements

The authors thank the anonymous reviewers, and the editors of the journal. Thanks for the support of National Natural Science Foundation of China. We are also grateful to Professor Steve W. J. Kozlowski from Michigan State University for his valuable comments on earlier drafts of this article when he served as faculty advisor for a workshop on research methods sponsored by the International Association for Chinese Management Research (www.iacmr.org) which was held at Xiamen University in July 2011.

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