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DEMOGRAPHIC DIVERSITY, TEAM PROCESS, AND TEAM PERFORMANCE: ASSESSING MODERATOR EFFECTS OF COGNITIVE CONFLICT MANAGEMENT PRACTICES AND TASK INTERDEPENDENCE

by

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ABSTRACT

Demography scholars suggest including team process in a theoretical framework to fully understand the effects of demographic diversity on team performance. However, prior research shows mixed results regarding the association between team process and performance. Some studies have found effects of team process on performance, but others have not. A primary objective of this study was to specify the conditions under which the effects of team process would hold or not.

Race and organizational tenure diversity were measured to examine the effects of demographic diversity on team performance. Also, cognitive and affective conflict were used to measure team process, and cognitive conflict management practices and task interdependence were measured to assess their moderating effects on the association between team process and performance. To be specific, it was predicted that diversity measures would have a positive impact on cognitive and affective conflict. In turn, the positive impact of cognitive conflict and the negative impact of affective conflict on team performance were predicted. Further, it was predicted that the positive association between cognitive conflict and team performance would be stronger when cognitive conflict management practices are high, and that the negative association between affective conflict and team performance would be weaker when task interdependence is high.

Fifty-nine team-level responses were used to test these hypotheses. The sample included team members and managers of different types of teams. The

results did not support the positive effects of diversity measures on cognitive and affective conflict. While the positive effects of cognitive conflict on team performance were not supported, the negative effects of affective conflict were supported. Moderator effects of cognitive conflict management practices were partially supported, but those of task interdependence were not. These results imply to team managers and organizational leaders that they do not have to be very concerned about diversity effects. However, the effects of cognitive and affective conflict must be carefully addressed. Especially, appropriate cognitive conflict management practices should be developed through hiring and training.

CHAPTER I: INTRODUCTION

Background of the Study

As modern organizations remove the layers of hierarchy that formerly separated workers and adopt to use teams in response to the increased complexity in task environments, both management scholars and practitioners are finding that one of the most challenging human resource issues is the management of demographically diverse teams (Carrell & Mann, 1995). Since individuals are designed into a team whose membership is typically stable and well defined, the dynamics and consequences of their demographic characteristics are particularly robust (Cohen, 1991). Management scholars have devoted their attention to the full understanding of demographic diversity within a team and of its fundamental centrality to the study of team performance (Cohen & Bailey, 1997). Although some new scholarly attempts to investigate indirect effects of demographic diversity on team performance may complement existing direct models, they have found mixed results that cannot serve to guide practitioners to achieve high team performance (Williams & O'Reilly, 1998).

While a few earlier minor contributions can be found (e.g., Kanter, 1977), most contemporary research on demography in organizational settings stems from Pfeffer's (1983) theoretical essay on the topic. Pfeffer (1983) made an ambitious argument that an aggregated composition of individuals within the team in terms of

their attributes, which can be easily accessed and observed by researchers, could explain its consequences in a number of different contexts in a direct manner that subsumes team process mediating the relationship between demographic diversity and its consequences (see Figure 1). Pfeffer's (1983) research framework derived more from a strategy of parsimonious explanation than from an attempt to fully explicate theoretical explanation of the consequences of demographic diversity. Subsequently, most of management scholars studying diversity effects (e.g., Hambrick, Cho, & Chen, 1996; Wagner, Pfeffer, & O'Reilly, 1984; Wiersema & Bantel, 1992) uncritically have adopted this research framework (Carroll & Harrison, 1998).

Figure 1: Explaining Demographic Consequences by Presumably Subsuming Team Process into Diversity

Demographic Diversity (=Team Process) $\Rightarrow$ Consequences

One major problem with Pfeffer's (1983) research framework concerns its empirical standings. While Pfeffer (1983) argued that his research framework could explain diversity effects without regard to different contexts, Lawrence's (1997) review found that there existed inconsistent levels of variation to explain diversity effects across demography studies. Further, Lawrence (1997) analyzed prior research investigating the direct as well as indirect associations between diversity and its consequences, and found that, contrary to Pfeffer's (1983) ambitious claim, diversity measurements have not necessarily subsumed team process measurements,

thereby suggesting that future studies should investigate the team process that can mediate the association between demographic diversity and its consequences (see Figure 2).

Figure 2: Explaining Demographic Consequences through Team Process

Demographic Diversity ⇒ Team Process ⇒ Consequences

Demography scholars (Cohen & Bailey, 1997; Guzzo & Dickson, 1996; Lawrence, 1997; Pelled, 1996; Williams & O'Reilly, 1998) now have come to a consensus that our knowledge of the impacts of demographic diversity can be best promoted by including the team process into a theoretical model. While some notable progresses have been made on the conceptualization of how demographic diversity translates into team performance through team process (Jehn, 1995; 1997; Jehn, Northcraft, & Neale, 1999; Pelled, 1996; Pelled, Eisenhardt, & Xin, 1999), a fuller explication has not been made yet. Particularly absent in the literature is the specification of when certain team process effects may hold or not. It is precisely from the understanding and analysis of the association between team process and performance that may change as a function of moderator that our complete knowledge of diversity effects is likely to emerge.

Objective of the Study

A primary objective of this study is the fuller theoretical understanding of team process that mediates the relationship between demographic diversity and team performance. To be specific, by theoretically distinguishing an emergent state from its ensuing interactions between individuals within the team process, this study aims to resolve discrepant findings regarding the association between team process and performance in the literature. The state of interpersonal dynamics emerges because of the social presence of other individuals within the team, and then it may be resolved or not, depending on the nature of ensuing interactions between them. By making these distinctions, this study seeks to specify the conditions for the presence of or the lack of translation of an emergent state into team performance. Such an approach will bring unique, theoretical contributions to the literature. For example, Hambrick (1994) reviewed the developments in top management team studies and argued that future scholars should look at behavioral integration by which the team engages in mutual and collective interaction that enhances the quality of information exchange. Indeed, with the absence of behavioral integration, a team that has rich cognitive resources must operate as a loose constellation of individual members. In a similar vein, Gruenfeld, Mannix, Williams, and Neale (1996) emphasized the theoretical importance of considering the presence of emergent states and their effective resolutions independently. More recently, Marks, Mathien, and Zaccaro (2001) took a detailed look at the concept of team process in team literature and

posited that to intermingle emergent states and interactional patterns within the team process may result in serious construct contamination. In fact, as will be shown in the literature review in the next chapter, recent demography studies have discovered mixed empirical results regarding the association between team process and performance. Following Marks et al.'s (2001: 358p) statement, "Emergent states do not represent team interaction or team actions that lead toward outcomes", this study proposes that the association between team process and its performance will be as a function of moderator effects on the interactions ensuing from an emergent state within the team process (see Figure 3).

Figure 3: Explaining Demographic Consequences as a Function of Moderator Effects on Team Process

Demographic Diversity ⇒ Team Process ⇒ Consequences
(emergent state + ensuing interactions)
⇑
Moderator Effects

Besides contributing to the fuller theoretical understanding of team process effects, this research also has practical value for practitioners who supervise teams in modern organizational settings. Strategic human resource management literature has advocated that, when the team is composed of demographically different individuals that can broaden the bases of informational and knowledge resources that are at themselves rare (Barney, 1991), inimitable (Lippman & Rumlet, 1982), and non-substitutable (Wright, McMahan, & McWilliams, 1994), the increase of demographic diversity within the team will lead to an organization's sustained

competitive advantage (Peteraf, 1993; Winter, 1987). Nevertheless, empirical evidence (e.g., Richard, 2000) does not support it. This study will demonstrate that the increase of demographic diversity within the team does not automatically translate into better team performance if the team lacks the effective practices to leverage the positive impact of cognitive conflict and the appropriate task design to mitigate the negative impact of affective conflict. For team supervisors involved in the efforts to reap gains and alleviate losses that interpersonal actions cause within the team (Hackman, 1987), this study's findings of the conditions in which a team works best will be crucial in leveraging the successful team (Hackman, 1990; Williams & O'Reilly, 1998).

CHAPTER II: THEORETICAL FRAMEWORK

Team

The team is a basic block in contemporary organizational practice. A team is defined as the composition of individuals who both see themselves and are seen by others as an intact social entity; because (1) the tasks they perform are interdependent; (2) they share responsibility for outputs; (3) it is embedded in a larger organization; and (4) its outputs affect others such as customers and coworkers outside the team (Cohen & Bailey, 1997; Hackman, 1987). Since the popular management literature has tended to use the term "team" in order to mean the composition of individuals that meets these four conditions in organizational setting (Cohen & Bailey, 1997), this study uses the word "team" rather than the word "group". When the word "group" is used, it specifically refers to social groups that are the divisions of the social world into distinct classes or categories such as race, gender, religion and the like (Tajfel, 1981).

Three types of teams can be mainly identified in organizational practices today: (1) work team, (2) project team, and (3) top management team (Cohen & Bailey, 1997). Each of these types meets the general definition of the team noted above. Work team corresponds to the production and service team, project team corresponds to the project and development team, and top management team corresponds to the strategic direction making team. This study's theoretical

framework should be applicable across a variety of these types of teams, because the interpersonal dynamics at the core of its framework concerns individuals who take actions in the social presence of others (Edmondson, 1999). This study also will be able to benefit from previous team demography studies at large. This is so because the team demography literature has considered that differences in the type of team have negligible effects on interpersonal actions and team performance (Cohen & Bailey, 1997; Edmondson, 1999; Williams & O'Reilly, 1998).

Demographic Diversity and Team Performance

Since Pfeffer (1983) had proposed demographic diversity in organizational settings as a new field of study and had suggested that it could explain a variety of organizational behaviors and outcomes across different contexts, a variety of demography research efforts have been made. While a few early studies (e.g., McCain et al., 1983) investigated the consequences of demographic diversity within a social entity (e.g., academic departments) which does not fit into the exact definition of a team, most studies have examined the consequences of demographic diversity in terms of members' attributes within the team, such as tenure in the organization, education, functional background, age, gender, and race (Williams & O'Reilly, 1998).

While demographic diversity has different kinds of its consequences, many of demography studies focused on diversity effects on turnover that Pfeffer (1983)

emphasized in his research agenda. Many studies (McCain et al., 1983; Pfeffer & O'Reilly, 1987; Wagner et al., 1984; Wiersema & Bird, 1993) have consistently found that diversity increased an individual's turnover. Nevertheless, demography scholars have paid relatively scant attention to team performance that is another important consequence of diversity effects (Jackson, 1992). Team performance is a team-level construct that generally refers to the performance on tasks in terms of efficiency of team operations and quality of work produced by the team (Jackson, 1992; McGrath, 1984). Effects of demographic diversity on team performance have found mixed results. Some studies (Bantel & Jackson, 1989; Hambrick et al., 1996; Murray, 1989) found that demographic diversity within the team had positive impacts on team performance. On the other hand, other studies (O'Reilly & Flatt, 1989; Zajac, Golden, & Shortell, 1991) found the negative effects of diversity on team performance.

Team Process

In order to clarify these mixed results regarding the association between diversity and team performance, some studies have begun to examine the mediator effects of team process by which diversity influences the outcomes. In general, mediator effects are said to exist when the inclusion of a mediator between the predictor and the outcome variables can account for their association more strongly

than its absence (Baron & Kenny, 1986). Team process as a mediator speaks how demography effects on team performance occur in this study.

Team process is a team-level construct that is defined as interpersonal actions taking place among members within the team (Hackman, 1987). Team process model has an advantage in the theoretical explication of diversity effects because it can explain cognitive and affective effects (Guzzo & Dickson, 1996) that diversity causes, and, in turn, affects team performance (Cohen & Bailey, 1997; Lawrence, 1997; Pelled, 1996; Williams & O'Reilly, 1998). Demography scholars now have come to a consensus that our knowledge of the impacts of demographic diversity is best promoted by including the team process into a theoretical framework.

Although O'Reilly, Caldwell, and Barnett's (1989) focus was the examination of diversity effects on turnover rather than performance, their study is notable in the sense that they proved the significant role of team process such as interpersonal attraction (Katz & Kahn, 1978; Shaw, 1981) between individuals within the team that mediates the association between diversity and its consequences: diversity is negatively associated with interpersonal attraction, which is in turn positively related with turnover. Later, Smith, Smith, Olian, Sims, O'Bannon, and Scully (1994) examined diversity effects on performance through interpersonal attraction, however, did not find such mediator effects. With respect to the cognitive effects of diversity, studies by Ancona and Caldwell (1992), and Glick, Miller, and Huber (1993) found that diversity increased cognitive resources, however, these resources did not translate into high team performance.

While these studies have investigated either cognitive or affective effects of diversity on team performance separately, recent research (Jehn, 1995; 1997; Jehn et al., 1999; Pelled, 1996; Pelled et al., 1999) has proposed a unified model in which both cognitive and affective effects of diversity are included. They used a multidimensional construct of conflict (Amason, 1996; Amason & Sapienza, 1997; Amason & Schweiger, 1994; Amason, Thompson, Hochwater, & Harrison, 1995) that can capture both cognitive and affective aspects of team process. Conflict is broadly defined as the emergent state that is manifested in incompatibility, disagreement, or dissonance within or between social entities such as individual, group and organization (Smith, 1966; Tedeschi, Schlenker, & Bonoma, 1973). More specifically, cognitive conflict refers to the state of cognitive disagreement among team members over different aspects of the task, including goals, product and service domain, resource allocation, and the appropriate procedures to complete the tasks. Affective conflict is the state of interpersonal incompatibilities characterized by negative feelings such as frustration, anxiety, dislike, and others forms of negative affect. Cognitive conflict is directed toward task content, in contrast, affective conflict is directed toward individuals within the team.

Guetzkow and Gyr (1954) made important distinctions between substantive and affective conflict: the former occurs when two or more group members disagree on their task or content issues, and the latter occurs when they have incompatible feelings and emotions not directly related to team's tasks. More recently, Jehn's (1995) two-factor analysis of eight intragroup conflict items, and Jehn's (1997)

qualitative analysis of team members' experiences of conflict at workplace have discovered the conceptual distinction between task conflict, which is cognitive disagreements among team members about the contents of tasks being performed such as differences in viewpoints, ideas, and opinions, and relationship conflict, which is interpersonal incompatibilities such as tension, animosity, and annoyance among members within the team. Consistently with these studies, Pelled et al.'s (1999) factor analysis has confirmed the same conceptual distinction between task and emotional conflict. Although these researchers have used different labels in order to represent the cognitive and affective dimensions of conflict, they have offered similar definitions for the two dimensions, essentially describing the same constructs (Pelled, 1996; Pelled et al., 1999).

Cognitive and affective conflict may be seemingly correlated and may shift from one form to the other over time (Deutsch, 1969). When group members attach particularly strong feelings to changing task content, they may become emotional and, subsequently, task conflict may transform into affective conflict. This may occur because both types of conflict have negative emotionality in common as a component (Jehn, 1997). However, several studies have shown that cognitive and affective conflict is distinct and experienced differently by individuals. Amason's (1996) assessment, conducting both exploratory and confirmatory factor analyses, demonstrated that these two dimensions were weakly correlated and that they were conceptually distinct. Also, Jehn's (1997) longitudinal study of work teams showed that transformation of one type of conflict into the other had rarely happened,

because negative emotion which task conflict contained was often present without interpersonal animosity. Negative emotion of task conflict was directed toward task content, hardly to other individuals within teams. Hence, it is conceptualized that cognitive and affective conflict are distinct dimensions within the multidimensional construct of conflict.

Prior research suggests that the effects of cognitive and affective conflict on team performance exist, however, it is not clear when these mediator effects can or not hold. Put it simply, the effects of team process do not automatically translate into team performance. For example, it was found that demographic diversity increased cognitive conflict (Ancona & Caldwell, 1992; Glick et al., 1993; Jehn et al., 1999; Pelled et al., 1999). In turn, some studies (Amason, 1996; Eisenhardt, Kahwajy, and Bourgeois; 1997a; 1997b; Jehn et al., 1999; Pelled et al., 1999) found that the presence of cognitive conflict enhanced team performance, however, other studies (Ancona and Caldwell, 1992; Glick et al., 1993) did not find such a positive impact. On the other hand, it was found that demographic diversity increased affective conflict (Jehn et al., 1999; Pelled et al., 1999). In turn, some studies (Amason, 1996; Jehn, 1997; Jehn et al., 1999) found that affective conflict was negatively associated with team performance. However, other studies (Jehn, 1995; Pelled et al., 1999) found no evidence that affective conflict impairs team performance.

One possible explanation that can account for the inconsistency of these mediator effects on team performance is the lack of distinction between the emergent

state and its ensuing interactions within the team process. After reviewing accumulated studies on top management team, Hambrick (1994) found that they paid little attention to behavioral integration by which the team engages in mutual and collective interaction that enhances the quality of information exchange. Indeed, with the absence of behavioral integration, the team that has rich cognitive resources must operate as a loose constellation of individual members. More recently, Marks et al. (2001) took a detailed look at the concept of team process in a team literature and posited that to intermingle emergent states and interactional patterns within the team process may result in serious construct contamination. Indeed, as is noted above, prior research examining the effects of cognitive and affective conflict has discovered the mixed results. Following Marks et al.'s (2001: 358p) statement, "Emergent states do not represent team interaction or team actions that lead toward outcomes", this study proposes that the association between team process and its performance will be as a function of moderator effects on the interactions ensuing from emergent conflict within the team process

Moderators

Management studies have a tradition of specifying the contingency under which certain effects hold or not. However, demography studies have rarely paid attention to "how and when demographic diversity within teams will be associated with different outcomes" (Williams & O'Reilly, 1998, 117p). Simons, Pelled, and

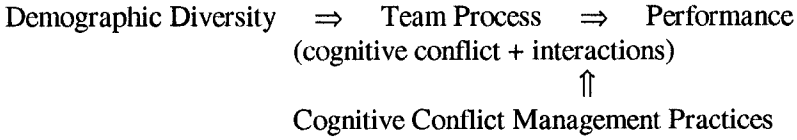
Smith (1999) noted that future research must consider the importance of moderator factors in the effects of diversity on performance. Moderation implies that the causal association between two variables changes as a function of the moderator variable. Moderator effects can be represented as the interaction between a focal variable and a moderator that specifies the appropriate conditions for its operation (Baron & Kenny, 1986). In this study, moderator effects are supported when the conditions in which the effects of team process on performance can hold or not are specified.

In addition to these basic considerations, moderators must have two properties: (a) they are antecedent to team performance, and (b) they strengthen or weaken the association between team process and performance variables. While there may plausibly exist some antecedents to team performance, the literature review identified two important moderators that past researchers have neglected to consider in conjunction with the effects of cognitive and affective conflict: cognitive conflict management practices and task interdependence.

Increasingly, team decision-making scholars (Parks & Cowlin, 1995; Stasser & Stewart, 1992; Stasser & Titus, 1985; 1987; Stasser, Taylor, & Hanna, 1989) have found that cognitive conflict is an important antecedent to high team performance, however, their relation may depend on how cognitive conflict is managed within the team. Cognitive conflict management practices are a team-level construct that refers to the patterns of verbal behaviors in the exchange of members' ideas and information by which the team can elaborate and manage an emergent state of cognitive disagreements over different aspects of the task (Innami, 1994; Kuhn &

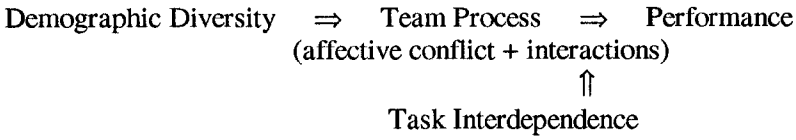
Poole, 2000). These practices are conceptualized to shape members' interactions that ensue from an emergent state of cognitive conflict (see Figure 4). Hence, it is proposed that team's unique patterns of these practices will cause differential impacts on the association between cognitive conflict and team performance.

Figure 4: Cognitive Conflict Management Practices as a Moderator



Also, recent research on task interdependence has found that high task interdependence can shape the patterns of interpersonal actions in a manner that increases the cooperative behaviors between members and thereby favorable team performance (Wageman, 1995; Wageman & Baker, 1997). Task interdependence is a team-level construct that refers to the extent to which members must rely on one another to complete their tasks (Thompson, 1967; Van de Ven & Ferry, 1980). Since emotion scholars identified that cooperative behaviors that directly defer self-interests can enduringly arouse emotional convergence between individuals (Batson, Shaw, & Oleson, 1992; Batson, Turk, Shaw, & Klein, 1995), it is proposed that task interdependence will shape emotional dynamics within the team that may affect the impact of affective conflict on team performance (see Figure 5).

Figure 5: Task Interdependence as a Moderator



Demographic Diversity

Management scholars have addressed different features of the team in order to explain its performance (Gladstein, 1984; Hackman, 1987; McGrath, 1984). Some scholars have directed their attention to the effects of structural features of team's task on team performance. For example, the socio-technical interdependence (Goodman, 1986; Stewart & Barrick, 2000; Wageman, 1995; Wageman & Baker, 1997) and team autonomy (Campion, Papper, & Medsker, 1993; Manz & Sims, 1987; Stewart & Barrick, 2000) were identified as the important predictors of team performance.

Another important feature of the team is the demographic diversity among team members (Pfeffer, 1983). It can occur along several dimensions such as tenure in the organization, education, functional background, age, gender and race (Pfeffer, 1997). Among these attributes, race and organizational tenure are of this study's interests. First, scholars (Cox & Nkomo, 1990; Guzzo & Dickson, 1996; Williams & O'Reilly, 1998) have pointed out that little research has focused on racial impacts in comparison with research on other forms of demographic diversity. Race is defined as an impermeable feature that is related to biological factors, namely skin and

physical features, and thus cannot be altered by moving from one category to another (Thompson & Carter, 1997). Though often confused, ethnicity is rather an inclusive concept of race in the sense that ethnicity is a social boundary that portions a population with distinctions about membership based on impermeable as well as permeable features including religion and nationality. Race is a specific instance of ethnicity, imposed upon person by self and others based on inherited phenotypic characteristics (Olzak, 1992). Thus, racial diversity within the team refers to the distribution of individuals across social groups in terms of a nominal parameter. Although sociologists have restricted the definition of racial minority to include only subgroups that receive unequal treatment in the larger society (Wirth, 1945), this study adopts the concept of racial minority used in social psychological literature on minority influence. Racial minority refers to an individual who has an impermeable feature of pigmentation and is relatively underrepresented within the team (Moscovici & Faucheux, 1972; Nemeth, 1981).

Unlike racial diversity, the relationship between organizational tenure and its consequences has received the most sustained attention among demography scholars (Sørensen, 2000; Williams & O'Reilly, 1998). Organizational tenure refers to the length of service that individuals spend since the time of their entry into the organization. Interest in the distribution of organizational tenure was stimulated by Pfeffer's (1983) seminal essay that suggested that the distribution of organizational tenure could be an important determinant of team process and performance. While most studies on tenure diversity have found the positive impacts on turnover, a

paucity of research investigated the effects of organizational tenure distribution on team performance (Pelled, 1996; Williams & O'Reilly, 1998). Considering the magnitude of previous research on organizational tenure, it is compelling to understand its positive and negative effects on team performance.

Given the importance of racial and organizational tenure compositions in team demography studies, it is proposed that they will have significant effects on cognitive and affective conflict. First, as social network theorists have suggested (Burt, 2000; Gnyawali & Madhavan, 2001; McEvily & Zaheer, 1999), race and organizational tenure may serve for team members as proxies of or their accesses to social contacts outside the team and, in turn, may constrain their entrepreneurial actions in order to take advantage of informational resources from these social contacts. Secondly, as strategic management scholars has suggested (Hambrick & Mason, 1984; Rajagopalan, Rasheed, & Datta, 1993), race and organizational tenure may serve as social categories by which members execute the identification of self and others and, in turn, may cause emotional frictions and tensions among them. These complementary roles that race and organizational tenure may play are proposed to have cognitive and affective impacts on team process and, in turn, team performance.

In the following chapters, I will theoretically explicate the impacts of demographic diversity on cognitive and affective conflict and, in turn, their effects on team performance. Further, I will specify the conditions in which the cognitive

and affective conflict effects may hold or not in relation to the moderator effects of cognitive conflict management practices and task interdependence.

CHAPTER III: HYPOTHESES

Demographic Diversity and Cognitive Conflict

A central tenet of the social network perspective is that actors vary in the overall patterns of social relationships that provide access to different sources of information and opportunities, thus emphasizing actors' positions in networks and their social relations as causal explanations of informational benefits (Granovetter, 1973), and both informational and control benefits (Burt, 1992). A network of relationships that actors build may influence the flow of resources that they can draw. Because actors vary in the flow of resources and their ability to control such flows, they have different levels of motivation and ability to undertake the actions or respond to the actions of others (Gnyawali & Madhavan, 2001). Sociologists have extended this insight to the explanation of a variety of individual behavior, such as job-finding (Granovetter, 1973), immigrant enterprise (Portes & Sensenbrenner, 1993), entrepreneurship (Larson, 1992), managerial work (Burt, 1997), gain of informal support in a nonroutine situation (a hurricane) (Hurlbert, Haines, & Beggs, 2000), and of organization's performance, such as creation of competitive advantage (McEvily & Zaheer, 1999; Uzzi, 1997), alliance formation (Gulati, 1999), and uncertainty reduction in a transitional economy (Peng & Luo, 2000).

While individual can access to various forms of tangible capital resources through the social relations, the present study's theoretical interest rests in the team

member's immediate circle of discussion partners surrounding the team. They are defined as a set of individuals who are not coworkers within the team, however, with whom a given team member may discuss team's ongoing task concerns. These individuals have the potential to influence a team member's recognition of the task, as well as the quality of his or her contribution to the team's decision-making and performance. A key characteristic of such social networks, affecting the type and quality of information and interpretive framework that a given team member may obtain, is the relationship heterogeneity with individuals surrounding outside the team (Powell, 1991).

As the seminal work in the social network perspective, Granovetter (1973) postulated that new information is obtained through weak ties (diverse sets of contacts) rather than through strong ties (dense sets of contacts) with individuals because individuals who are weakly connected to each other are more likely to have the heterogeneous patterns of social relations and consequently to have less redundant information. Researchers found that demographic majority and minority members are embedded in the different types of social networks and pointed out that network differences tend to lead to their divergent behavioral and economic consequences (Popielarz, 1999). Team's demographic mix may affect a member's opportunity to form network ties with dissimilar others within the team. For example, compared with racial minority members, the members of a racial majority group within the team are likely to have strong ties with each other in a way to exclude minority members from the exchanges of information (Brass, 1985; Ibarra,

1995; Larkey, 1996). Consequently, the racial majority members who are connected through strong ties with each other are able to have better career mobility chances within the organization than the members of minority groups who could hardly form strong ties across different races, after taking into account the effects of educational background (Friedman & Krackhardt, 1997).

Such structural impediments to the formation of strong ties and subsequent low support provided by the predominantly cross-race ties within the team, in turn, may direct the members of minority groups to seek supportive relationships with the same-race individuals surrounding outside the team (Elsass & Graves, 1997; Thomas & Alderfer, 1989; Thomas & Higgins, 1996) for a wide variety of resource needs including informational as well as emotional support. These recurrent social exchanges may enable the minority members to have a relatively high number of stable social networks with individuals outside the team (Cook, 1991; Ibarra, 1995), potentially providing the accesses to heterogeneous sources of information that majority members could not gain. Multiple sources can provide the minority members with a variety of career enhancement information, as well as different perspectives to the team's task (Cox, 1994; Cox & Blake, 1991; Tsui & Gutek, 1999).

Race is not the only proxy for team members to access to social contacts outside the team. Ancona and Caldwell (1992) noted that the diversity of team member's tenure in the organization is positively related with the external communication beyond the boundary of the team. They argued that the team

members who have entered the organization at different times know different sets of people outside the team and thus tend to have different information and perspectives. These arguments suggest that the individuals who are different from others within the team in terms of organizational tenure may have more external social contacts and new information on, and different perspectives to, the team's task.

While Granovetter (1973) posited that a focal actor who has less redundant information through weak ties would presumably undertake the entrepreneurial actions to exploit them (i.e., informational benefits) in any social settings, Burt (1992) modified this argument by adding that a focal actor may be motivated to do so only when structural holes exist in the focal actor's social network. Structural holes exist in a condition in which a focal actor A has social contacts with both actors B and C, however, B and C do not have social contacts directly each other, in other words, B and C can reach each other only through A. Drawn from Burt's (1992) work, the structural autonomy is a focal actor-level property that indicates the extent to which a focal actor has structural holes between the actors it is connected to but is free of structural holes at its own end. To the extent that a focal actor has structural holes, he or she is referred to as structurally autonomous and being able to exploit them. Structurally autonomous A can exploit structural holes that exit between B and C. In this way, Burt (1992) advanced a social network perspective to that realizing the value of new information from weak ties with other actors (i.e., informational benefits) is contingent on whether a focal actor at the same time can

have control over these actors who can reach each other only through a focal actor (i.e., control benefits).

Put it differently, the presence of structural holes in a social network enables a structurally autonomous actor to make less autonomous actors play against each other and, by doing so, ensures to enjoy more effective and efficient flow of informational resources from social contacts. Empirical evidence has shown that a social network rich in the structural holes can translate a positive informational resource asymmetry into a focal actor's competitive advantage (Burt, 2000; McEvily & Zaheer, 1999).

This framework proposed by Burt (1992) is applicable to the present study. Individuals who are significantly similar with others within the team in terms of a certain demographic attribute may implicitly perceive that they have less structural holes in that demographic attribute-based social network (Burt, 2000). The term "implicitly" means that, regardless of whether structural holes actually exist between team members, they tend to infer from the mere presence of others of the same demographic attribute within the team that there may be less structural holes deriving from a demography-based social network (Allport, 1954; Burt, 2000). Suggestive validity of this perception comes from the result of Louch's (2000) analysis of 1985 General Social Survey data discovering that demographically similar individuals who are coworkers, neighbors, team members, or kin are likely to share their social contacts with each other elsewhere.

Taken together, an individual who faces more other individuals of the same demographic attribute within the team may be afraid to exploit the new information and perspective deriving from a demographic attribute-based social network (i.e., informational benefits) in team's discussion over various aspects of the task. When an individual works more with others of the same demographic attribute within the team who may share the social contacts elsewhere, it implies that he or she has less structural holes (i.e., no control benefits), in other words, being less structurally autonomous in a demographic attribute-based social network. The implied presence of less structural holes in a social network means to an individual that demographically similar others within the team could easily offer a competitive frame of references for, and can easily refute the legitimacy of, the information and perspectives that he or she gains from a demographic attribute-based social network (Burt, 1997; 2000). Thus, an individual may be afraid to be easily challenged by the demographically similar others within the team. These arguments are consistent with prior research. Because the members of a demographic majority group feel the pressure toward uniformity of the opinions (Festinger, 1954), they are likely to provide supportive influence, which entails supporting and building on the idea of another majority member, rather than to define and defend opposing arguments that challenge the conventional wisdom that majority members share (Doms & Van Avermaet, 1985; Laughlin, 1992). In a similar vein, Gnyawali and Madhavan (2001) noted that social actors with similar resource endowment tend to avoid initiating direct conflict with each other.

On the other hand, an individual who faces less other individuals of the same demographic attribute within the team may undertake deliberate actions to exploit the new information and perspectives deriving from a demographic attribute-based social network (i.e., informational benefits). With the implied presence of more structural holes (i.e., control benefits) in a demographic attribute-based social network, it is expected that demographically dissimilar others within the team can hardly offer a competitive frame of references for, or can hardly refute the legitimacy of, individual's information and perspectives gained from a demographic attribute-based social network (Burt, 1997; 2000). Without the fears to be challenged by the demographically different others, an individual may feel confident to freely express divergent opinions and perspectives by drawing on a demographic attribute-based social network. Prior research appears to agree with these arguments. To the extent that an individual perceives that others have different opinions, he or she tends to examine his or her own opinions less closely (Festinger, 1954), thus feeling easy to express them. Also, it was found that a top management team that was composed of demographically dissimilar members had the potential to generate original approaches to intellective and decision-making tasks (Bantel & Jackson, 1989; Murray, 1989).

Hypothesis 1:

Demographic diversity will be positively associated with cognitive conflict within the team.

Demographic Diversity and Affective Conflict

Social psychologists have attempted to understand and explain how the attitudes and behavior of an individual are influenced by the actual, imagined or implied presence of others (Allport, 1985) through the self (Markus & Wurf, 1987). Self is a composite view of oneself as an object that is formed through direct experiences and evaluations adopted from significant others (Bandura, 1986). Research on self has originated from James (1890), Cooley (1902), and Mead (1934), all of whom agreed that the society has an important impact on the formation of self which in turn shapes human attitudes and behavior.

Self-identity or self-concept is made up of individual's cognitions about "who I am" (Hogg & Abrams, 1988) that is formed through the ecological processes of making attributions (Kelley, 1971; Ross, 1977) of others' reactions relative to one's characteristics to the social meanings of these characteristics (Leonard, Beauvais, & Scholl, 1999). An individual possesses the structurally discontinuous components of self: personal identity and collective identity (Trafimow, Triandis, & Goto, 1991). Personal identity is the idiosyncratic part of an individual's self-identity that often derives from the experiences of interpersonal competition being motivated by self-interest. An individual conceives oneself primarily in terms of individual traits and characteristics, and utilizes comparisons with other individuals as a frame of reference to establish the personal identity. In contrast, collective identity is the part of individual's self-identity that derives from one's knowledge of

membership in a social group. Social group refers to the divisions of the social world into distinct classes or categories such as race, age, gender and religion (Tajfel, 1981). Collective identity is considered as an enduring, global self-concept that is carried across situations, thus when it is primed, having fundamental impacts on human attitudes and behavior (Brockner, 1988; Erez & Earley, 1993; Judge, Locke, & Durham, 1997; Weiss & Adler, 1984).

Scholars have identified that an individual has a motivation to reduce subjective uncertainty about one's perception of self and the surrounding social settings. Festinger (1954; 1957) found that an individual has a fundamental need for a consistent state of cognition regarding an evaluation of one's opinions and abilities that, in turn, motivates human behavior in a manner that reduces or eliminates cognitive dissonance. Weick's (1964) study on the effect of cognitive dissonance showed that individuals, who had felt more severely deprived of expected rewards from task, later reevaluated that task more interesting and intrinsically rewarding than those who had felt less deprived. Adams (1965) argued, on the principle of human's retrospectively rational nature (Aronson, 1972; Staw, 1980), that individuals are motivated to act in such a manner to reduce the inequalities which they perceive in terms of the ratio of their received rewards to made efforts, when referring to the members of comparison group that they select (Goodman, 1977). Staw (1976) showed that individuals are apt to escalate their commitment to a course of actions, because they seek to appear to others and themselves to be acting consistently, to make their past decisions appear well, and to avoid the political costs

of being discovered as having made a mistake. Further, Korman (1970) made an explicit emphasis on the self-concept and found that individuals are motivated to act in a manner to consistently maintain the internalized view of self across situations.

Also, research has shown that individuals adopt various strategies when the self-concept is threatened. Individuals may flatly deny information that is inconsistent with the self-concept maintained by external environments, and/or seek to interact with others who provide support for the self-concept that individuals have held (Markus & Wurf, 1987). Individuals may achieve to maintain a consistent image of oneself through a more elaborate process in which they selectively evaluate the information and then attempt to integrate with the existing image of oneself (Kulik, Sledge, & Mahler, 1986). More importantly, even in the absence of a direct challenge or threat to self, there exists in the human organism a drive to aggressively enhance the positive view of self (Tesser & Martin, 1996). The preference to see oneself in a self-enhancing fashion is one of the most widely documented effects in social psychology (Pfeffer, Cialdini, Hanna, & Knopoff, 1998). Some data shows that approximately ninety percent of manager and workers view themselves as superior to their peers (Headey & Wearing, 1987). Tesser and his colleagues (Tesser, 1986; Tesser & Campbell, 1983; Tesser & Paulus, 1983; Tesser, Campbell, & Smith, 1984), for example, demonstrated that individuals tend to choose other persons as interaction partners in a manner that enhances their self-evaluations, particularly relative to perceived similar peers. Lewicki (1983) showed that people prefer to judge others that enhance the probability that oneself is viewed relatively

superior. As a rule, people assign more intelligence to one who accepts rather than derogate their persuasive arguments (Cialdini & Mirels, 1976).

Taken together, an individual has two basic psychological needs, that is, to reduce subjective uncertainty about one's perception of self-concept, and to enhance one's self-concept somehow (Hogg & Terry, 2000). According to social identity perspective (Tajfel, 1978; 1981; Tajfel & Turner, 1986; Turner, 1982; 1987), the pursuit of these needs guides an individual to derive the self-concept from one's knowledge of a membership in a social group in a manner to attach some value significance of and emotional commitment with it.

First, in order to reduce perceptual uncertainty, an individual subconsciously categorizes self and others into social groups, often on the basis of demographic attributes (Hogg & Terry, 2000). This categorization is more than a mere cognitive classification in that it carries emotional significance as well (Brewer & Brown, 1998). Next, through the process of social categorization, an individual satisfies another basic need for self-enhancement by establishing the positive evaluations for one's own social group (i.e., in-group) and degrading negative evaluations for other social groups (i.e., out-groups) (Tajfel, 1978; Turner, 1982). An individual is apt to attribute positive personality characteristics, such as honesty and trustworthiness, to the fellow in-group members. On the other hand, he or she may be inclined to form less favorable impressions of colleagues who are demographically different (Brewer, 1996; Kanter, 1977; Kramer, 1999). Further elaboration of in-group favoritism often entails the depersonalization of individual self-perception whereby an individual

perceives oneself as a representative of the in-group category possessing its defining characteristic that distinguishes the in-group from out-groups. This underlies the basic collective phenomena, including ethnocentrism, emotional contagion, and conformity to group norms (Turner, 1987).

Affective conflict, characterized by a state of interpersonal incompatibilities such as frustration, anxiety, dislike, and other forms of negative affect, is the consequences of these negative emotions or antipathy directed toward each other within the team based on the knowledge on social category membership (Abrams, 1996; Brewer & Brown, 1998). Individuals automatically make initial categorization of other individuals seemingly belonging to different social groups and, without any interventions, tend to maintain affective conflict against them (Fiske & Neuberg, 1990). Through social categorization, these individuals often feel social distance away, and social polarization against, the members of out-group (Tajfel & Wilkes, 1963; Brewer & Brown, 1998).

Some forms of negative emotions, such as fear and disgust that imply avoidance or movement away from the members of out-group (Smith, 1993), often lead to the formation of a stereotype that monolithically views that the members of out-group have the same characteristics without considering possible inter-individual differences between them (Brewer, 1986; Hogg, 1996; Hogg & Abrams, 1988; Kramer, 1991b; Nelson, 1989). Other forms of negative emotions, such as dislike, anger and jealously that imply hostility against the members of out-group (Smith, 1993), often result in nonverbal discrimination against them (Hogg & Abrams, 1988;

Kramer, 1991b; Triandis, 1961; Triandis & Davis, 1965) in a manner of self-fulfilling prophecy, whereby individuals' negative emotions induce the members of out-group to behaviorally confirm those negative emotions (Fiske, 1998). In turn, the members of out-group who perceive these negative emotions may evoke similar negative emotions toward these individuals, and hostile interactions erupt between them (Reardon, 1995). Further, since stereotypes are automatically activated in the minds of individuals in the presence of a member of different social group, even individuals' conscious and intentional attempts to override these impulses may result in a feeling of discomfort (Devine, 1989; Devine, Monteith, Zuwerink, & Elliot, 1991).

As is noted earlier, demographic attributes often serve as social groups in terms of which members within the team establish their self-concepts as well as categorize each other. Demographic attributes that are highly impermeable could prevent individuals from moving from one social group to another social group (Pelled, 1996). Social identity that derives from a highly impermeable category is more likely to become a global self-concept that individuals carry into every situation (Abrams, 1996; Turner, 1982), and the role it plays is fundamental, central and wider in scope (Judge et al., 1997), thus enabling scholars to explain the variance of human attitude and behavior (Brockner, 1988; Weiss & Adler, 1984; Wylie, 1974). Indeed, social identity perspective's aim and contention is that social psychology has to provide a supra-individual level of analysis by discrediting explanations based on individual differences within the same social group (Stryker,

1987) in order to account for the affective attitudes (e.g., prejudice and discrimination) it seeks to explain (Abrams, 1996). When self-concepts are activated under immediate situations, their impacts on the members of the same social group within the team tend to show the high degree of uniformity (Festinger, 1947; Tajfel & Turner, 1986; Turner, 1987). For social psychological purposes, the impacts of self-concept on members' affective attitudes are presumed equivalent, as well as the nature of the social identification and social categorization process are presumed monolithic (Newcomb, 1951).

As the impermeability of demographic attributes that circumscribe social groups within the team increases, they are likely to serve as the possible bases for social identity and social category. Race is highly impermeable as a primitive generic social category (Messick & Mackie, 1989), thereby being proposed to have significant effects on affective conflict. Also, organizational tenure could serve as a social category in a manner that prevents individuals from regressing to a lesser amount of tenure in the organization (Pelled et al., 1999). As there exists more diversity on these attributes, members will categorize one another and attempt to establish their social identity in more intensive ways (Stroessner, 1996), leading to increased affective conflict.

Prior studies suggest that the relative separateness and clarity of a social group comparison context may affect the extent to which social categorization occurs. For instance, as religious affiliation became more unambiguous in the immediate situations, individuals tended to be more conscious of its impermeability

as a social group, hereby leading to their favorable attitudes between in-group members, however, being emotionally polarized against out-group members (Charters & Newcomb, 1952; Festinger, 1947). Other studies showed that the members of the demographically diverse team have more experiences of negative affect than those of the demographically homogeneous team (Levine & Moreland, 1990; O'Reilly et al., 1989). High separateness and clarity of a perceived social group comparison context characterized by race and organizational tenure diversities will produce more affective conflict through intense categorization of social others within the team.

Hypothesis 2:

Demographic diversity will be positively associated with affective conflict within the team.

Cognitive Conflict and Team Performance

Scholars (Wanous & Youtz, 1986) have argued that the presence of cognitive conflict characterized by the disagreements between individuals can stimulate their cognitive activities, such as to generate plans or creative ideas, solve problems, or make informed decisions and, in turn, have a positive impact on their collective performance. This argument rests on assumption that an exposure to dissent may encourage individual to search for more information, to delve into issues more

deeply from multiple perspectives, and to evidence more one's original thought (Nemeth & Kwan, 1987; Nemeth & Rogers, 1996; Tjosvold, 1986), hereby enabling them to detect correct solutions that otherwise would have gone undetected (Mitroff & Linstone, 1993). It also relies on some evidence of experimental research that even reading or hearing of counter-attitudinal messages influenced the quantity and quality of thought (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986).

Janis (1982) posited that, when individuals fail to criticize each other's arguments due to strong concerns on maintaining unanimity, they tend to overlook disagreements critical to a higher quality of decision-making. Similarly, Churchman (1971) noted that, in ill-structured decision situations confronting modern organizations, the absence of cognitive conflict in decision-making could be inferior to dialectical inquiry in which different approaches to problems can foster the debate over opposing arguments.

To explore the impact of cognitive conflict, decision-making scholars have employed two types of experimental techniques designed for circumventing the pressure for social conformity (Janis, 1982) and stimulating the cognitive activities between individuals (Churchman, 1971). These are dialectical inquiry and devil's advocacy. The dialectical inquiry is a method by which, a prevailing plan or recommended plan is identified, along with the data used to derive it. Then, individuals attempt to identify the assumptions underlying that plan. Next, a counter-plan is developed, which is feasible, politically viable, and generally credible on the basis of different data which rests on assumptions opposite those supporting

the original plan. From these diametrically opposed positions, individuals rigorously debate the assumptions until they agree on a set of common assumptions. From these surviving assumptions, a final plan or recommendation is constructed and adopted. On the other hand, the devil's advocacy is a less elaborate method by which, a prevailing plan or recommended plan is identified and critiqued, however unlike dialectical inquiry, no explicit counter-plan is offered. Individuals attempt to discover all that is wrong with the original plan for the sake of denigration, however, provide neither counter-plan nor counter-evidence to support it.

Mason (1969) argued that the dialectical inquiry should be more effective at improving a decision-making than the devil's advocacy. After conducting a meta-analysis of seventeen studies examining the differences in the effects of these different approaches, Schwenk (1990) found that both the dialectical inquiry and the devil's advocacy are more effective than a decision-making without cognitive conflict in a manner that the dialectical inquiry has a slight advantage over the devil's advocacy technique. Individuals that used objective facts and develop a counter-plan were found to be more effective at stimulating cognitive activities than those who only critiqued he original plan. To the extent that disagreements from others are supported by the objective facts and are demonstrable to them, these disagreements can be perceived as authentic and credible, thus attracting other individuals' serious attention (Nemeth, Connell, Rogers, & Brown, 2001) and enabling them to utilize disagreements effectively in the process of decision-making. On the other hand, when a superficial critique is offered, it is often discounted as

useful information on the issue (Maass & Clark, 1984; Moscovici & Nemeth, 1974), thus is neither sufficiently motivating other individuals to reassess their opinions and to search for alternative information (Kruglanski, 1989; Taylor, 1981). In a follow up to this meta-analysis study (Schwenk, 1990), Schwenk and Valacich (1994) examined the decision-making performance of student teams in the experimental settings. Their findings, however, did not support the Schwenk's (1990) claim that the dialectical inquiry is superior to the devil's advocacy. They found no significant differences across the teams using different techniques to decision-making, instead, that these teams seemed able to make effective use of either technique. In short, it was concluded that there is no clear pattern for team's decision-making quality except that both dialectical inquiry and devil's advocacy tend to be superior to a decision-making that does not experience cognitive conflict.

Besides the results of these studies in an experimental setting, several field studies on intact teams found that the increase of cognitive conflict within the team has a positive association with its performance. Amason's (1996) large-scale study of top management teams found that cognitive conflict within the team is positively associated with team's decision quality and performance. In a similar vein, Eisenhardt et al's (1997a; 1997b) multiple-case studies found that top management teams in high-performing firms have higher cognitive conflicts than teams in low-performing firms. Further, firms with lower cognitive conflict teams did less well. Other studies of work team by Jehn et al. (1999) and Pelled et al. (1999) supported

the claim that cognitive conflict within the team is positively associated with team performance.

Hypothesis 3:

Cognitive conflict within the team will be positively associated with team performance.

Affective Conflict and Team Performance

Unlike the research on the effects of positive affect (Isen & Baron, 1991), the experience of negative affect at work settings received relatively little attention from organization scholars (George, 1992). However, an interest in the study of negative affect and its consequences is growing as researchers recognize the negative effects these emotions have on important organizational outcomes such as citizenship behaviors and withdrawal behaviors (George, 1996). In contrast to the positive impact of cognitive conflict, the affective conflict between individuals is likely to have a negative impact on team performance. Scholars have argued that affective conflict characterized by a state of interpersonal incompatibilities such as frustration, anxiety, dislike, and other forms of negative emotions would impair team performance through the lack of cooperation between individuals that can be best accomplished when they can synchronize their thoughts, feelings, and behavior (Barnard, 1938; Hackman, 1992).

When individuals feel antagonistic with one another within the team, they are unlikely to coordinate their actions effectively and in turn produce suboptimal team performance (Argyris, 1962). Zajonc (1980) noted that negative emotions have pervasive impacts on the formation of individuals' perception of social situations and its consequent interpersonal behavior. Individuals have a general tendency to minimize the efforts to interpret information associated with the attitudes and behaviors of others in a manner that sustains negative affect (Forgas, 1995; Forgas & George, 2001; Martin, 1986; Martin, Seta, & Crelia, 1990). Individuals are apt to selectively activate available memory structures to which the primed negative emotions are connected (Bower, 1981; Bower & Forgas, 2001), which they may not even be aware of doing (Bargh & Pietromonaco, 1982). Accordingly, they tend to persistently make biased information processing of the attitudes and behaviors of others (Fiske & Taylor, 1991). When the attitudes and behaviors of others are interpreted in an inaccurate manner that fits negative, stereotypical expectations individuals already have about them, this confirmed expectations may strengthen these individuals' biased information processing tendency (i.e., self-fulfilling prophecy) (Fiske & Neuberg, 1990). The consequences of these negative affect are individuals' unwillingness to take cooperative actions that potentially enhance the team's welfare (Etzioni, 1988).

Through the ecology of inaccurate attribution of each other's attitudinal and behavioral intentions in a negative manner, affective conflict is sustained. People in conversation tend to continuously mimic and synchronize their movements with the

facial expressions, voices, postures, and behaviors of others (Bavelas, Black, Lemery, & Mullett, 1987). In a similar vein, the negative affect that individuals have about others often reciprocates another negative emotions that others have about these individuals, because people have an innate capacity to catch and mimic others' emotions by observing their facial and vocal expressions (Hatfield, Cacioppo, & Rapson, 1994). Weiss and Cropanzano (1996) noted that these primitive emotional contagions could develop over time into the negative moods characterized by the relatively long enduring state of affect lacking the specificity of negative emotions with regard to a particular object or behavioral response.

When there exists affective conflict within the team, individuals may avoid contact with others with whom they feel uncomfortable. They are less likely to exchange information nor pay due attention to each other's potentially useful ideas that can improve task performance (Argyris, 1993). When people experience intense frustration and fear associated with affective conflict, they often disengage from interactions and become disinterested in them (Ross, 1989). As Kramer (1991a) noted, the expectations of negative experiences of feeling anxiety associated with the interactions with others can withhold individuals' interactions with them. Otherwise, individuals may be excessively concerned to ascertaining the state of others' feelings, consequently diverting substantial time and energies to it rather than to task performance (Evan, 1965). When affective conflict exists within the team, it severely limits team performance in these manners.

The results of prior research support the proposed association between affective conflict and team performance. Evan's (1965) study found that research and team development teams showing high interpersonal attacks performed less productively compared with other teams showing low interpersonal attacks. George (1990) found that negative affective tone was negatively associated with team's engagement in prosocial (helping) acts. Jehn's (1995) interviews and observation of the work team members revealed that they were psychologically distressed and became less committed to the task when there were frequent interpersonal crashes manifesting themselves in intense dislike and frustration. Amason (1996) found that affective conflict within the top management team diminished decision quality. Similarly, other studies by Jehn (1997) and Jehn et al. (1999) found that affective conflict had negative effects on team performance. Recently, Duffy and Shaw (2000) found that frustration associated with envy between student team members led to overall diminished team performance. Specifically, they also found that negative affect led to members' greater effort reduction in the completion of the team's tasks.

Hypothesis 4: Affective conflict within the team will be negatively associated with team performance.

Moderator Effects of Cognitive Conflict Management Practices

While some studies (Amasons, 1996; Eisenhardt et al., 1997a; 1997b; Jehn et al., 1999; Pelled et al., 1999) found that cognitive conflict has a positive impact on team performance, other studies (Ancona & Caldwell, 1992; Glick et al., 1993) did not find such a positive association. These discrepant findings suggest that cognitive conflict may not automatically translate into favorable team performance. For example, Ancona and Caldwell (1992) noted that, when different perspectives about the team's task are provided by members, they may not be utilized effectively unless the team has appropriate practices to manage cognitive conflict. Likewise, Glick et al. (1993) concluded that, while demographic diversity affects cognitive conflict, the positive impact of cognitive conflict is not so pervasive as managerial and academic literatures often suggest. Scholars agree that, despite the presence of these discrepant findings, the mechanism by which the benefits of cognitive conflict within the team can be realized or not is not fully understood yet (Gruenfeld et al., 1996; Williams & O'Reilly, 1998).

A possible explanation for these mixed findings may be the lack of attention that has been paid to the practices to manage cognitive conflict between individuals (Simons et al., 1999; Webber & Donahue, 2001). Gruenfeld et al. (1996) emphasized the theoretical importance of considering the presence of cognitive conflict and its effective resolution as well. Kilduff, Angelmar, and Mehra (2000) found that successful and unsuccessful teams showed quite different patterns of

practices to resolve cognitive disagreement over the course of the simulation at experimental decision-making settings. Eisenhardt et al. (1997b) noted that the best top management teams develop skills toward the management of cognitive conflict and these skills can distinguish the world-class executive teams from the rest. In the review of research on top management teams, Hambrick (1994) argued that the key is behavioral integration by which the team engages in mutual and collective interaction that enhances the quality of information exchange. Indeed, with the absence of behavioral integration, a team that has rich cognitive resources must operate as a loose constellation of individuals. Hence, this study addresses to the cognitive conflict management practices within the team as a moderator of the effects of cognitive conflict on team performance.

Cognitive conflict management practices refer to the patterns of verbal behaviors in the exchange of individuals' ideas and information by which the team can elaborate and manage an emergent state of cognitive disagreement over different aspects of the task (Innami, 1994; Kuhn & Poole, 2000). While most conflict management practices have been treated as individual characteristics or tendencies (De Dreu, Evers, Beersma, Kluwer, & Nauta, 2001; Rancer, 1995), it is also possible to conceptualize them as a team level property of practices that the team enacts when individuals deal with cognitive disagreement over the aspects of task (Eisenhardt, 1997a; 1997b; Katzenstein, 1996; Woodman, Sawyer, & Griffin, 1993). Indeed, previous studies (Innami, 1994; Kuhn & Poole, 2000) established the utility and feasibility of using cognitive conflict management practices as the stable property of

a team. Innami's (1994) study is especially important to the purpose of the present study. He coded the task-related utterances in the context of cognitive disagreement between individuals over the solution to problems in an experimental setting, and identified that the reasoning and positional orientations are the major types of cognitive conflict management practices that can affect the quality of their interactions and collective performance. This finding was consistent with other findings on the effects of cognitive conflict management practices at the individual level of analysis (Falbe & Yukl, 1992; Yukl, Falbe, & Young Youn, 1993). Accordingly, this study conceptualizes the cognitive conflict management practices as a team level multidimensional construct that consists of the reasoning and positional orientations to the resolution of cognitive conflict. These orientations are proposed to affect individuals' interactions ensuing from cognitive conflict, and in turn on team performance.

The reasoning orientations refers to the degree to which team members exchange facts and reasons that support their ideas in a deliberative process of team's decision making (Innami, 1994). Presenting and responding to arguments and counter-arguments by enumerating examples and clarifying confusion can stimulate individuals' cognitive activities more vigorously than criticizing each other's arguments peripherally without any substantial facts (Nemeth et al, 2001). These generally enable the team to make informed decisions (Schwenk, 1990) in manners that assess different opinions efficiently in comparative ways (Argyres & Mui, 2000) and sharpen individuals' viewpoints on the aspects of the task effectively (Eisenhardt

et al., 1997a; 1997b). It is notable that strategy scholars who develop a knowledge-based theory of the firm have focused on these deliberative interactions as a source of sustained competitive advantage (Brown & Duguid, 1991; Nahapiet & Ghoshal, 1998; Nonaka & Takeuchi, 1995).

The positional orientations refers to the degree to which team members stick to their opinions in defensive ways to avoid demands by others or proactively persuade others to change their opinions (Ashforth & Lee, 1990; Innami, 1994). While Porter, Allen, and Angle (1981) viewed these behaviors as discretionary social influence attempts that are intended to promote or protect the self-interests of individuals and threaten the self-interests of others, scholars have tended to operationally focus more on the promotion of self-interests than on their protection (Ashforth & Lee, 1990). Much of the literature on these behaviors has pertained to proactive and acquisitive behavior wherein the individual attempted to assert some control over others at work settings (Kipnis & Schmidt, 1988). As such, previous studies have neglected the reactive and protective side of these behaviors (Ashforth & Lee, 1990). Unlike them, the present study treats the positional orientations as both assertive and defensive tendencies as well that the team enacts in the management of cognitive conflict.

Research on team decision-making suggests the importance of considering cognitive conflict management practices in order to understand the effects of cognitive conflict on team performance. A series of studies (Stasser & Stewart, 1992; Stasser & Titus, 1985; 1987; Stasser et al., 1989) showed that team discussion

tends to revolve around the information and perspectives that most members share, and the unique idea known to only one member but necessary to improve the quality of a final decision is rarely mentioned more than once and thus does not figure into team's decision-making process. These studies suggest that, since demographically similar members usually share certain worldviews (Alderfer & Smith, 1982) and often have some difficulty in understanding a demographically different member's idea (Maznevski, 1994), minority member's disagreement can be treated with skepticism by the members of a majority group and is less likely to factor significantly into team's discussion. However, when a minority member can effectively demonstrate one's own unique idea to the majority members, such cognitive diversion will not occur. These arguments made by such a minority member may be perceived as credible (Infante, 1985) and thus accepted into the enhancement of a final decision-making (Parks & Cowlin, 1996). Put it simply, unless there exists an exchange of logical arguments between individuals within the team, the team may make a decision prematurely and have a poor task performance (Janis, 1982).

Team's effective management of cognitive conflict takes on additional significance because the team must respond to ill-structured, judgmental tasks rather than well-structured, intellective tasks in modern organizations. Judgmental tasks are those that require a consensual agreement of different perspectives over solution to collective problems, in contrast, intellective tasks are those that can have a demonstrably correct answer to them (e.g., math problems) (Laughlin, 1980). Since

the difficulty to appreciate other's idea tend to become more distinct in ill-structured, judgmental tasks, to overcome it is highly important to the success of team's discussion (Parks & Cowlin, 1996). When impartial and well-reasoned discussion is made, individuals can overcome this difficulty and achieve a consensual agreement of different perspectives by understanding the rationale underlying a final decision. As a result, they can coordinate their efforts and commitments to it, thereby enhancing team performance (Amason, 1996; Child, 1972; Quinn, 1980).

When an expressed opinion is disagreed with, an individual may make inferences about the intention of the opposing individual from the perceptually salient information that the verbal behavior connotes (Fiske & Taylor, 1991; Heider, 1958). From a social information processing perspective (Griffin, 1983; Salancik & Pfeffer, 1978), the reasoning and positional orientations will serve as the bases on which an individual constructs the reality of team events and interpret the intention of other individual who provides disagreement with his or her opinion (Christiansen, Villanova, & Mikulay, 1997; Cropanzano, Howes, Grandney, & Toth, 1997; De Dreu et al., 2001; Ferris, Bhawuk, Fedor, & Judge, 1995). In other words, these orientations will shape individual's attribution of other individual's intention of disagreement and criticism that may be potentially threatening and embarrassing nevertheless necessary to the improvement of team performance (Argyris, 1962; Kelley, 1979). These patterns of attribution may have profound implications for the successful translation of cognitive conflict into team performance.

The reasoning orientations may help the team to manage cognitive conflict in a productive way. First, the reasoning-oriented discussion can induce individual to attribute the intention of other individual's criticism to organizational citizenship (Ferris et al., 1995) and other positive motives (Christiansen et al., 1997) deriving from the loyalty to the team (Brief & Motowidlo, 1986; Graham, 1991; Organ, 1988). When an individual interprets other's disagreement as a form of constructive controversy (Tjosvold, 1986; 1987) and view other's goal as compatible with one's own (Deutsch, 1973; Johnson & Johnson, 1989; Tjosvold, 1985), it elicits individual's willingness to listen to other's opposing views (Leana & Van Buren, 1999; Wood, Lundren, Ouellette, Busceme, & Blackstobe, 1994). Next, the reasoning orientations can allow other individual to feel safe to provide disagreement without a fear of retaliation (Edmondson, 1999). These expectations may enable individuals to mutually reflect one's argument in a way compatible with other's argument (Kilduff et al., 2000; Nahapiet & Ghoshal, 1998; Weick, 1969; 1995). When these high order interactions are possible, the team can increase the capability to learn from each other (Ely & Thomas, 2001; Schein & Bennis, 1965), make a comprehensive understanding on various task issues (Simons et al., 1999), and build individual's commitment to team's resulting decisions (Priem, Harrison, & Muir, 1995),

Also, the reasoning-oriented discussion will have a positive impact on team member's perception of the work environments (Jones & James, 1979), especially of the procedural fairness (Lind & Tyler, 1988) within the team. Procedural fairness

has two components: a structure of team decision-making process and a quality of interpersonal treatment in it (Brockner & Siegel, 1996). First, the reasoning-oriented team discussion contains informal procedural rules on which the conditions and assumptions underlying different ideas can be rationally analyzed (Mason & Mitroff, 1981; Mitroff, 1974; Toulmin, 1964). The mere presence of these institutionalized rules may secure team members' expectations that their performance will be evaluated by supervisors and peers in a relatively objective and unambiguous way (Masterson, Lewis, Goldman, & Taylor, 2000; Thibaut & Walker, 1975) and that their contributions are accordingly rewarded (Adams, 1965; Moorman, 1991; Mowday, 1991). Secondly, team's enactment of reasoning principles will make it possible that a high quality of interpersonal treatment is consistently exchanged between individuals regardless of their demographic and opinion differences and that there always exist the opportunities for each individual to correct the team's decision (Ely & Thomas, 2001; Leventhal, Karuza, & Fry, 1980). These received treatments may communicate to all team members, especially to a minority member, that minority member's uniqueness is valued and respected (Tyler, 1999). Member's experiences of feeling respected and valued can contribute to team's adaptive changes to the new task environments and the senses of self- and team-efficacy as well (Ely & Thomas, 2001; Lind & Tyler, 1988). Further, a high quality of interpersonal treatment will lead to the identification with team (Smidts, Pruyn, & Van Riel, 2001) and increase the chances that members will successfully exchange their ideas and feedbacks (Kogut & Zander, 1996; Nahapiet & Ghoshal, 1998).

On the other hand, the positional orientations may have a negative impact on interactions between team members and in turn on team performance. First, when there exists a relatively high amount of positional-oriented discussion, cognitive conflict tends to be attributed to other member's intention of self-serving (Brass & Burkhardt, 1993; Ferris et al., 1995), such as a cunning way to get one's way, to buy time and to impose one's will on others (De Dreu et al., 2001). When other member's criticism provides hidden information selectively (Eisenhardt & Bourgeois, 1988; Fandt & Ferris, 1990; Pfeffer, 1992) or becomes too assertive (Tedeschi & Melburg, 1984), the intention of disagreement is interpreted as the social influence attempts designed to protect the self-interests (Ferris, Russ, & Fandt, 1989; Gray & Ariss, 1985; Madison, Allen, Porter, Renwick, & Mayes, 1980) or to struggle for power and status (Cropanzano et al., 1997; Innami, 1994; Parker, Dipboye, & Jackson, 1995). These perceptions often foster more negative interpersonal attitudes and eventually lead to a stalemate of team discussion wherein cognitive conflict does not successfully translate into team performance (Christiansen et al., 1997). When team members divert their efforts to non-task related issues (Argyres & Mui, 2000; Milgrom & Roberts, 1988; 1990), they do not pay attention to the success of team decision-making (March & Olsen, 1979) and feel less responsibility for its outcome (Hackman & Oldham, 1976; Salancik, 1977). As a result, the team must adopt a final decision or seek a consensus prematurely (Janis, 1984) in ways that ignore minority member's valuable and unique inputs into

the team decision-making, thereby leading to decreased efficiency (Argyres & Mui, 2000) and effectiveness (Eisenhardt & Bourgeois, 1988) in task performance.

Also, the position-oriented discussion may have negative impacts on worker's experiences and other outcomes. When there do not exist informal rules to manage cognitive conflict, it can create ambiguity (Tetlock, 1985) and unpredictability (Cropanzano et al., 1997) in team members' expectations that their performances will not be fairly evaluated (Kipnis & Schmidt, 1988; Parker et al., 1995; Porter et al., 1981) and that they will be relatively deprived in reference to other members who are defensive or assertive in discussion (Goodman, 1977). Perceived positional orientations may lead to a variety of individual outcomes such as worker's job dissatisfaction (Ferris & Kacmar, 1992; Gandz & Murray, 1980; Parker et al., 1995), the feelings of job anxiety (Cropanzano et al., 1997; Kipnis & Schmidt, 1988), and the withdrawal of efforts and commitment to the task (Cropanzano et al., 1997; Kidwell & Bennett, 1993), and other team outcomes that include the decreased amount of cooperation (Cropanzano et al., 1997; Parker et al., 1995) and innovation (Frost & Egri, 1991). On the other hand, individuals who are not distracted by the perceived positional orientations (Christiansen et al., 1997) will aggressively redefine work environments (Cheng, 1983; Weick, 1969; 1995) as the arena for social influence activities to promote the self-interests and opportunistically divert resources to them (Fandt & Ferris, 1990; Madison et al., 1980). While these individuals may feel a certain amount of satisfaction in these acquisitive activities,

their potentially adverse relationships with coworkers can be detrimental to team performance (Christiansen et al., 1997).

A high quality of cognitive conflict management practices can be conceptualized as the proportional composition of reasoning orientations relative to the combined amount of both orientations, and it is expected to have a positive impact on the association between cognitive conflict and team performance (De Dreu, 1997). For example, a high quality of cognitive conflict management practices that contain more reasoning orientations in relation to positional orientations will enable the team to successfully translate cognitive conflict into team performance without experiencing team process losses (Hackman, 1987). On the other hand, within the team that has a low quality of cognitive conflict management practices that contain less reasoning orientations in relation to positional orientations, individuals will not apprehend the accuracy of different perspectives and consequently they are so divided as unable to learn from each other nor integrate different them for the sake of improved task performance. Their interactions are represented as the diversion of team's resources to peripheral, non-task related activities.

Hypothesis 5:

The positive association between cognitive conflict and team performance will be stronger when cognitive conflict management practices are higher rather than lower.

Moderator Effects of Task Interdependence

While some studies (Amason, 1996; Jehn, 1997; Jehn et al., 1999) found that affective conflict had a negative impact on team performance, other studies (Jehn, 1995; Pelled et al., 1999) found no evidence that affective conflict impairs team performance. Pelled et al. (1999) discussed, with respect to their unexpected findings, that contextual factors would shape the ways in which team members interact and, in turn, that affective conflict is not necessarily associated with team performance.

A possible explanation for these discrepant findings is the lack of attention that has been paid to team's task design (Williams & O'Reilly, 1998). Macrae and Bodenhausen (2000) noted that certain type of task design is likely to trigger stereotype suppression between individuals and its effects need to be empirically clarified. Relatedly, Jehn (1995) tested the effects of interactions between affective conflict and task interdependence on team performance and its results, opposing to her expectations, partially indicated the possibility that task interdependence may mitigate the effects of affective conflict on team performance.

Interdependence is an important aspect of task design that affects the association between team process and its performance (Gladstein, 1984). While prior research (e.g., Johnson, Johnson, & Maruyama, 1984) did not make distinctions between different types of interdependence, reward and task interdependence are identified as conceptually and empirically distinct, possible to be designed

independently with each other (Wageman, 1995; Wageman & Baker, 1997). Reward interdependence refers to the extent to which the reward that individual receives depends on the performance of others within team. Reward interdependence is designed to intensify individual's economic incentives to cooperate with others. The least interdependent, or independent, reward is one that exclusively accrues to individual based on his or her excellence, such as a commission paid to an individual salesperson. The most interdependent reward is one that is equally given to each individual, regardless of individual performance, based on collective performance such as a gain-sharing plan. A hybrid reward that exists between these two extremes is one in which a significant portion of the reward is given to individual based on collective performance, and another significant portion is given based on individual performance. Many organizations adopt a hybrid reward system that is designed to increase individual's economic incentives for cooperation as well as individual excellence (Lawler, 1990).

While a hybrid reward system is seemingly attractive, simply adding reward measures to address the full spectrum of performance dimensions may not ensure worker's optimal attention to all dimensions (Holmstrom & Milgrom, 1991). In a hybrid system, since workers often perceive that their rewards are neither dependent on individual nor collective performance, they are confused with the ambiguous performance-reward link that comes partially from independent rewards for individual excellence and partially from interdependent rewards for collective performance (Wageman, 1995). Rosenbaum, Moore, Cotton, Cook, Hieser, Shovar,

and Gray (1980) found that team performs relatively poor when independent or hybrid rewards are provided, compared to when interdependent reward is provided. According them, including even a small portion of independent rewards into task design can undermine the performance of team because it directs individual's attentions to a competitive nature of interpersonal action. In a similar vein, Lazear (1989) noted that individually based rewards reduce individual's willingness to cooperate with other team members. Pfeffer and Langton's (1993) study found that the greater reward dispersion is associated with college and university faculty's diminished levels of working collaboratively on research with other faculties.

Further, studies by Wageman (1995) and Wageman and Baker (1997) revealed the insignificant role that reward interdependence can play in order to elicit individual's cooperation within the team. They investigated differential effects of reward and task interdependence on team performance and found that reward system design alone has no independent effects on cooperative behavior within the team, regardless of the varying levels of task interdependence. Their findings were that reward interdependence increases the level of individual's efforts to execute a task that is unambiguously assigned to each worker, however, not the level of individual's extra efforts to cooperate with coworkers that are not necessarily prescribed in job description but are crucial to the improvement of task performance (Katz & Kahn, 1978).

Management scholars emphasize that the team can benefit when members are willing to expend extra efforts on behalf of the team (Pfefer, 1994). Especially,

proactively helping behaviors that entail the direct deference of individual's self-interests, such as "cross-territory helping" (Wageman, 1995) and "working on partner's article" (Wageman & Baker, 1997), has a stronger positive impact on team performance, relative to other forms of extra-role behaviors such as withholding complaints and compliance (Podsakoff, Ahearne, & MacKenzie, 1997). While prior research did not pay much attention to helping behaviors at organizational settings (Wagner, 1995), they are increasingly considered as the important factor for the team to learn, to adapt to changes, and to improve task performance in the long term (Ghoshal & Moran, 1996). Taken together, in order to understand why individual is willing to help coworkers and expend extra efforts for the improvement of task performance, researchers should look at task interdependence rather than reward interdependence (Wageman & Baker, 1997).

Task interdependence is defined as the extent to which individuals must rely on one another to complete their team's task (Thompson, 1967; Van de Ven & Ferry, 1980). While task interdependence is partly determined by the requirements and constraints inherent in task's technology or design (Goodman, 1986), it is also shaped by the way that team members with given responsibility and authority choose to plan, coordinate, and execute their activities in relation to other features of the task, such as goals, feedback, autonomy, and leadership (Saavedra, Earley, & Van Dyne, 1993). While individuals are potentially connected to others through a given form of technology, only active use of connections can engender their social perceptions of the intact team (Burt, 1982; Monge, Fulk, Kalman, Flanagin,

Parnassa, & Rumsey, 1998). Since several researchers (Campion et al., 1996; Shea & Guzzo, 1987; Wageman, 1995) have shown that teams with similar technologies vary widely in their amount of task interdependence, the present study adopts a social psychological perspective of task interdependence as the extent to which team members perceive that cooperation is required to complete the task.

Task interdependence will moderate a negative impact of affective conflict on team performance. Kiggundu (1981; 1983) found that high task interdependence increases individual's perceived responsibility for one's own and others' work outcomes. When individuals see the direct effects of their actions on others, they come to develop a greater sense of felt responsibility for others' work outcomes (Pearce & Gregersen, 1991). Because this felt responsibility implies the importance of making accurate perception and appraisal of others, individuals attempt to assess the appropriateness of their emotional reactions to others that emerged as a form of affective conflict. If individuals find themselves having negative feelings and thoughts on these significant others as a result of their exposure to others' demographic dissimilarity, then they attempt to avoid these negative feelings and thoughts in forming the impression of others. Instead, they partial out the contextual influences on the formation of negative feelings and thoughts that are consequences of human's innate social categorization. Thus, when the team conducts a highly interdependent task, individual may experience the sense of felt responsibility for others' outcomes and formulate less negative impression of others. These processes

of modifying impression formation are represented as "resetting" (Martin, 1986; Martin et al., 1990) and "individuation" (Fiske & Neuberg, 1990).

Also, as is noted earlier, high task interdependence may induce individuals' helping behaviors that are directed toward the goal of relieving others' needs, not toward the enhancement of self-interests (Wageman, 1995; Wageman & Baker, 1997). Considering George's (1990) findings that that affective conflict reduces team's engagement in prosocial (helping) acts, the effects of task interdependence on affective conflict seem significant. Helping acts could facilitate the reduction of affective conflict and even the emotional convergence between individuals. Lanzetta and Englis (1989) found that individuals' emotional responses are partially determined by their expectancies regarding the nature of social interactions with others. When individuals can experience others' helping behaviors, they feel that their social relationships with others are cooperative, thus causing individuals' empathic feelings with others. On the other hand, helping behaviors may provide the helping individuals with supplementing information to infer whether and how much they value the welfare of others (Batson et al., 1992; 1995). Taken together, high task interdependence can induce individual's helping behaviors toward others and, in turn, arouse his or her emotional dissonance wherein these behaviors are used as backward information to infer the value of others' welfare. The results of Batson et al's (1995) experimental studies demonstrate that when individuals show helping behaviors toward others, they come to learn that they value the welfare of others.

Through these emotional processes, affective conflict may be reduced and even emotional convergence may occur.

Finally, high task interdependence can provide individual with new, additional understandings that help to define the social relations with others within the team (Ashforth & Mael, 1989; Brickson, 2000; White, 1992). High density of connections and interactions enables individual to realize the interconnectivity with others (Monge et al., 1998; Robertson, 1999) and to strengthen the perception that the team is a legitimate social entity (Scott, 1992). These perceptions are often attached with the positive evaluations with each other and of the team as a whole (Dovidio, Gaertner, & Kafati, 2000; Gaertner, Rust, Dovodio Bachman, & Anastasio, 1994; 1996). These new understandings will help to disconfirm the emergent stereotypes that are consequences of social categorization (Chatman & Flynn, 2001; Islam & Hewstone, 1993) and contribute to emotional attachment with each other (Bartel & Saavedra, 2000). From these arguments, high task interdependence is predicted to weaken a negative impact of affective conflict on team performance.

Hypothesis 6:

The negative association between affective conflict and team performance will be weaker when task interdependence is higher rather than lower.

CHAPTER IV: METHODOLOGY

Sample

To test these hypotheses, fifty-nine team-level responses were used. Although this sample size may be modest by some standards, it compares well with other field studies published in major management journals and, as a field study, yields valuable insights that can not be gained from the laboratory studies (Pelled et al., 1999). This study included three types of teams (twenty-six work teams, thirty-two project teams, and one top management team) because team literature has considered that differences in the type of team have negligible effects on interpersonal actions and team performance (Cohen & Bailey, 1997; Edmondson, 1999; Williams & O'Reilly, 1998).

Research Sites and Survey Procedures

Before the field investigation, I conducted a pretest study to assess the relevance of this study's survey instruments to research participants. Nine individuals (four healthcare and five non-healthcare workers) from different teams and organizations were asked to complete the questionnaire and to give feedback in terms of the clarity of instructions and the wording of questionnaire items. Since, unlike other measures, the reasoning and positional orientations scales were not standard (had not been used in a published study), a primary objective of the pretest

was to assess the respondent's accuracy of understanding these measures. The verbal and written feedback of respondents was used for the consideration of modifying the questionnaire items. The responses by individuals participating in this pretest study were not included in the field investigation's data.

Following the pretest study, I conducted the cross-sectional field investigation at a total of eleven research sites all located in the area of southern California–hereafter referred to as Sites A, B, C, D, E, F, G, H, I, J and K. Sites A and B were public healthcare organizations. Site C was an automotive manufacturing firm. Site D was a sales and shipping division within an aerospace firm. Site E was an engineering division within an electronic products firm. Site F was an accounting division within a financial service firm. Site G was a customer services division within an office machine firm. Site H was a liaison division within a pharmaceutical firm. Site I was an engineering division within an electric wires and cables firm. Site J was a financial adviser division within a bank branch. Site K was a nonprofit healthcare organization. I asked the contact person at each site to identify the teams possibly participating in this study such that they had no less than three and no more than twenty-five members. Also, a team manager who was familiar with the team's work, had an ongoing opportunity to observe team performance, and was in a position to make such assessments was identified.

Potential participants were informed that their participation was voluntary and involved the completion of a survey instrument, and that their responses would be kept confidential (see Appendix 1: Information Sheet for Non-Medical Research).

The questionnaires (see Appendix 2: Team Member Questionnaire, Appendix 3: Manager/Leader Questionnaire) were distributed by team managers and after several weeks collected by the contact person at each site in the sealed envelopes for confidentiality. Sixty-five teams (545 members) were invited to participate in this study. 238 members (44 percent) from these teams returned the questionnaires. To be included in the sample, at least two members from the same team had to complete the questionnaires (Amason, 1996; Simons et al., 1999). As a result, 232 members from fifty-nine teams were included in this study's sample. On average, 46 percent of the members of a participating team completed the questionnaires. Forty-one managers' responses were available for the ratings of these teams' performance. Table 1 shows information for each site, the number of participating teams, the total number of participating members, and the response rates. Table 2 shows descriptive statistics for the sample as a whole.

Table 1: Participating Teams, Their Members, and Their Response Rates at Each Site

Site	Participating Teams	Members	Response Rates (%)
A	17	84	62
B	8	34	64
C	8	23	40
D	5	17	65
E	3	11	100
F	3	10	100
G	1	6	100
H	1	3	100
I	1	4	100
J	1	4	50
K	11	36	19

Table 2: Profile of Sample

Age (years)	43.84 (mean) 11.28 (standard deviation)	
Gender		
Male	34.82	%
Female	65.18	%
Educational background		
Not graduated from high school	.88	%
Graduated from high school/G.E.D.	1.75	%
Some college or technical training beyond high school (1-3) years	26.32	%
Graduated from college (B.A., B.S., or other bachelor degree)	25.44	%
Some graduate school (but no graduate degree)	5.26	%
Master degree	20.61	%
Doctoral degree	19.74	%
Position (Completed by research participants from Sites A, B and K)		
Not included in a survey questionnaire at other sites	34.36	%
Nurse	7.93	%
Nurse attendant	0	%
Physician or surgeon	16.3	%
Therapist	1.76	%
Administrative staff	18.94	%
Technologist or technician	0	%
Secretary or clerk	.44	%
Other position	20.26	%
Race		
Black/African-American	3.95	%
Asian and Pacific-Islander/Asian-American	23.68	%
American Indian/Alaska Native	.44	%
Latino/Hispanic American	7.89	%
White/Caucasian-American	60.09	%
Other (i.e., Multi-Racial)	3.95	%

Measures

This study included several measures at the team-level of analysis: demographic diversity (predictor variables), cognitive and affective conflict (mediator variables), cognitive conflict management practices (moderator variable), task interdependence (moderating variable), team performance (outcome variable), and others (control variables).

Predictor variables: demographic diversity. Organizational tenure diversity within the team was computed as the coefficient of variation (standard deviation divided by the mean) of organizational tenure between team members (Glick et al., 1993; Pelled et al., 1999). The higher the organizational tenure's coefficient of variation, the greater is the team's diversity. Following previous research (Ancona & Caldwell, 1992: Jehn et al., 1999; Pelled et al., 1999), racial diversity within the team was calculated by the entropy-based index (Teachman, 1980):

$$\text{Diversity} = \sum_{I=1}^{I} -Pi\ (\ln Pi).$$

This index can take into account categorical diversity among members across the possible social categories. A total number of categories is expressed by I, and Pi represents the probability of team members falling into category i. If a certain category is not represented in the team, its assigned value is zero. Since (lnPi) always takes a negative value, it is formulated to be multiplied by another negative value.

This study presumed six racial categories in the team (I=6): 1 corresponds to Black/African-American, 2 corresponds to Asian- and Pacific-Islander/Asian-American, 3 corresponds to American Indian/Alaska Native, 4 corresponds to Latino/Hispanic-American, 5 corresponds to White/Caucasian-American, and 6 corresponds to Other (i.e., multi-racial). For example, if a given team contains ten members (two Blacks/African-Americans, three Asian- and Pacific-Islanders/Asian-Americans, two Whites/Caucasian-Americans, and two Latinos/Hispanic-Americans, and one American Indian/Alaska Native), then P_1 equals .20, P_2 equals .30, P_3 equals .20, P_4 equals .20, P_5 equals .10, and its racial diversity is 1.55. If all members are Blacks/African-Americans, then P_1 equals 1 and team's racial diversity is 0. Thus, the higher the categorical diversity index is, the greater the diversity within the team is.

Mediator variables: cognitive and affective conflict. Cognitive and affective conflict are different profiles of conflict as a multi-dimensional construct. Because these dimensions were predicted to have theoretically different impacts on team performance (Law, Wong, & Mobley, 1998), scholars have treated them as conceptually distinct. Cognitive and affective conflict scales were adapted from studies by Jehn (1994) and Pelled et al. (1999). The cognitive conflict scale was composed of four questionnaire items: (1) "To what extent are there differences of opinion in your team?"; (2) "How often do the members of your team disagree about how things should be done?"; (3) "How often do the members of your teams disagree about which procedures should be used to do your work?"; and (4) "To

what extent are the arguments in your team task-related?". The affective conflict scale was composed of four items: (1) "How much tension is there among the members of your team?"; (2) "How often do the members of your team get angry while working in your team?"; (3)"How much jealousy or rivalry is there among the members of your team?"; and (4) "How much are personality clashes evident in your team?". Members rated these items on a five-point Likert scale anchored by 1=none and 5=very much. Team-level measures of cognitive and affective conflict were formed by averaging each member's responses to these scales. Higher values represent greater cognitive and affective conflict. Internal consistency reliability (the extent to which there is cohesiveness among items) was computed for cognitive (α = .79) and affective (α = .85) conflict.

Moderator variable: cognitive conflict management practices. The cognitive conflict management practices scale was composed of the aggregation of the reasoning and positional orientations that Innami (1992) identified as the two major types of cognitive conflict management practices. These orientations were identified as the result of his coding of the task-related utterances that individuals made in the context of cognitive disagreement over the solution to problems in an experimental setting. Cognitive conflict management practices were computed as the reasoning orientations multiplied by the ratio of reasoning orientations to the sum of reasoning and positional orientations within the team. The reasoning and positional orientations scales were developed from Innami's (1992) study. The reasoning orientations scale was composed of five questionnaire items: (1) "Members often add

related information or knowledge to the facts and opinions that were initially introduced by someone in our team"; (2) "Members work to clarify disagreeing points or confused arguments in discussions"; (3) "In discussions, members often explore reasons for the team's conclusions, judgments, or inferences"; (4) "Members clarify the conditions and assumptions behind each other's arguments"; and (5) "Members often provide examples in order to explain their opinions". The positional orientations scale was composed of five questionnaire items: (1) "Members often repeat statements or questions in discussions"; (2) "Members often get defensive in their arguments"; (3) "Members tend to stick to their opinions in discussions"; (4) "Members are unnecessarily assertive in discussions"; and (5) "Members do not really respond to each other's arguments in discussions". Respondents rated these items on a five-point Likert scale anchored by 1=strongly disagree and 5=strongly agree. Team-level measures of reasoning and positional orientations were formed by averaging each member's responses to these scales. Higher values of cognitive conflict management practices represent a high quality of a team's approach to cognitive conflict. Internal consistency reliability was computed for reasoning (α = .82) and positional (α = .64) orientations.

Moderator variable: task interdependence. Since teams with similar technologies often vary widely in their amount of task interdependence, members' perception of the level of interdependence that is necessary to complete the task was assessed. The task interdependence scale was adapted from prior studies (Pearce & Gregersen, 1991; Bartel & Saavedra, 2000). The task interdependence scale was

composed of eight questionnaire items: (1) "I work closely with other members in doing my work"; (2) "I frequently must coordinate my efforts with other members"; (3) "My own performance is dependent on receiving accurate information from other members"; (4) "The way I perform my job has a significant impact on other members"; (5) "My work requires me to consult with other members fairly frequently"; (6) "I work fairly independently of other members in my teams" (reverse scored); (7) "I can plan my own work with little need to coordinate with other members" (reverse scored); and (8) "I rarely have to obtain information from other members to complete my work" (reverse scored). Members rated these items on a five-point Likert scale anchored by 1=very inaccurate and 5=very accurate. Team-level measures of task interdependence were formed by averaging each member's response to this scale. Higher values represent a high level of perceived interdependence in the team's task. Internal consistency reliability of this scale was computed ($\alpha = .83$).

Outcome variable: team performance. The team performance scale was assessed in terms of operational efficiency, work and output quality, innovation, and adherence to schedules. These were considered as the major dimensions of team performance (Ancona & Caldwell, 1992; Edmondson, 1999; Hackman, 1987; Van de Ven & Ferry, 1980). The team performance scale was composed of six questionnaire items: (1) "Our team functions very efficiently"; (2) "The quality of service that our team produces is very high"; (3) "Our team usually meets or exceeds customers'/clients'/patients' expectations"; (4) "Critical quality errors occur

frequently in our team's work" (reverse scored); (5) "Our team introduces many innovations or new ideas"; and (6) "Our team usually adheres to schedules". Team members rated these items on a five-point Likert scale anchored by 1=strongly disagree and 5=strongly agree. Team-level measures of members' perceived team performance were formed by averaging each member's response to this scale. Also, team managers' ratings of the same scale were used as another measure of team performance when they were available. Higher values represent better team performance. Internal consistency reliability of this scale was computed for members' ($\alpha = .81$) and manager's ($\alpha = .76$) ratings.

Control variables. Since some sites had higher rates of participation from members than others, site differences were controlled. Team size that represented the number of team members at each team invited to participate was another control variable because larger teams have more potential for demographic diversity (Bantel & Jackson, 1989).

Adequacy of measures. In order to ensure the adequacy of some measures, the discriminant validity (the extent to which measured constructs are distinct from each other) was assessed for cognitive and affective conflict, and for reasoning and positional orientations of cognitive conflict management practices, by conducting confirmatory factor analysis. Table 3 shows the results of this analysis. The goodness-of-fit index was .73, and the chi-square test was significant ($p < .001$). These figures indicate that there is a good fit between the data observed in the sample and the theoretical factor structure expected to be observed in the population.

Table 3: Results of Confirmatory Factor Analysis of Conflict and Cognitive Conflict Management Practices Items

Loading Item	Factor 1 Cognitive Conflict	Factor 2 Affective Conflict	Factor 3 Reasoning Orientations	Factor 4 Positional Orientations
Cognitive conflict 1	.83			
Cognitive conflict 2	.86			
Cognitive conflict 3	.83			
Cognitive conflict 4	.76			
Affective conflict 1		.85		
Affective conflict 2		.83		
Affective conflict 3		.84		
Affective conflict 4		.86		
Reasoning orientations 1			.79	
Reasoning orientations 2			.83	
Reasoning orientations 3			.79	
Reasoning orientations 4			.82	
Reasoning orientations 5			.82	
Positional orientations 1				.71
Positional orientations 2				.82
Positional orientations 3				.72
Positional orientations 4				.82
Positional orientations 5				.77

Also, the intraclass correlation (the extent to which members' responses from the same team differ from those of other teams and agree with each other) was assessed for cognitive and affective conflict, reasoning and positional orientations, task interdependence, and team performance. First, one-way analysis of variance (ANOVA) was conducted on the full data set of 232 members' responses, with team membership as the independent variable and individual member's response as the dependent variable. Cognitive and affective conflict, reasoning and positional

orientations, and team performance measures were highly significant to $p < .01$ level, and task interdependence measure was nearly significant at $p = .0557$. These results indicate that members' responses to these measures were different across teams. Next, this study assessed the extent to which members' responses from the same team agree with each other. Intraclass correlation coefficients were .17 for cognitive conflict, .47 for affective conflict, .25 for reasoning orientations, .23 for positional orientations, .11 for task interdependence, and .24 for team performance. These positive values indicate that members from the same team are more similar than non-members, whereas negative correlations would indicate greater dissimilarity (Kenny & La Voie, 1985).

Analysis

In the next chapter, a series of regression analyses will be conducted to examine the proposed hypotheses. For a hierarchical regression, control and main variables are entered into the model in the first and second steps, respectively. Next, moderator and interaction term variables are added in the third and fourth steps, respectively (Cohen & Cohen, 1983). Also, the mediator effects of cognitive and affective conflict on team performance will be examined when the results of analysis can establish the conditions for examining their mediator effects (Baron & Kenny, 1986).

CHAPTER V: RESULTS

Introduction

Table 4 provides the means and standard deviations of the study variables. Table 5 provides correlations among these variables. Table 6 to Table 15 show the results of a series of regression analyses. They report standardized β coefficients from the final step in their regression models and standard errors in parentheses.

Table 4: Means and Standard Deviations of Study Variables

Variable	Mean	Standard Deviation	Maximum	Minimum
Org. Tenure Diversity	.80	.33	1.68	0.09
Racial Diversity	.43	.37	1.32	0
Cognitive Conflict	2.46	.45	3.33	1.50
Affective Conflict	1.84	.57	3.63	1.00
Cognitive Conflict Management Practices	2.19	.45	3.25	1.30
Task Interdependence	3.78	.39	4.88	2.96
Member-rated Team Performance	3.78	.42	4.75	3.00
Manager-rated Team Performance	4.03	.48	5.00	2.83
Team Size	6.59	6.02	25.00	2.00

Table 5: Correlations among Study Variables

	1	2	3	4	5	6	7	8	9
1. Org. Tenure Diversity	—								
2. Racial Diversity	-. 11	—							
3. Cognitive Conflict	- .16	.03	—						
4. Affective Conflict	- .12	.04	.72**	—					
5. Cog. Conflict Mgmt. Practices	.13	- .08	- .41**	- .64**	—				
6. Task Interdependence	- .02	.17	.12	.08	.14	—			
7.Member-rated Team Performance	.11	- .02	- .31*	- .58**	.69**	.21	—		
8.Manager-rated Team Performance	.22	- .14	- .34*	- .35*	.35*	- .05	.39*	—	
9. Team Size	.04	- .09	.29*	.16	- .07	- .03	-.29*	-.17	—

* $p \leq .05$
** $p \leq .01$

Demographic Diversity and Cognitive Conflict

Hypothesis 1 stated that organizational tenure and racial diversity would be positively associated with cognitive conflict within the team. Unexpectedly, Table 6 shows that no positive impact was found on cognitive conflict, instead showing a modestly negative impact of organizational tenure ($\beta = - .28$, $p \leq .10$ for organizational tenure diversity; $\beta = - .01$, n.s. for racial diversity).

Table 6: Hierarchical Regression of Cognitive Conflict on Control and Diversity Variables (N=55)

Contribution to R^2	Independent Variables	Cognitive Conflict
	Control Variables	
ΔR^2 .09	Site Differences	.01 (.02)
	Team Size	.01 (.01)
	Diversity Variables	
ΔR^2 .05	Org. Tenure Diversity	- .28† (.16)
	Racial Diversity	- .01 (.14)
F		2.18†
Total R^2		.14

† $p \leq .10$

Demographic Diversity and Affective Conflict

Hypothesis 2 predicted that diversity measures would be positively related to affective conflict. Surprisingly, the effects of organizational tenure and racial diversities on affective conflict were not found in Table 7 (β = - .22, n.s. for organizational tenure diversity; β = - .04, n.s. for racial diversity).

Table 7: Hierarchical Regression of Affective Conflict on Control and Diversity Variables (N=55)

Contribution to R^2	Independent Variables	Affective Conflict
	Control Variables	
ΔR^2 .17	Site Differences	.07** (.02)
	Team Size	- .01 (.01)
	Diversity Variables	
ΔR^2 .02	Org. Tenure Diversity	- .22 (.20)
	Racial Diversity	- .04 (.18)
F		3.01*
Total R^2		.19

* $p \leq .05$
** $p \leq .01$

Cognitive Conflict and Team Performance

Hypothesis 3 predicted that cognitive conflict would be positively associated with team performance. Contrary to our expectations, Table 8 and Table 9 show that cognitive conflict has a negative impact on team performance ($\beta = -.21$, $p \leq .10$ for member-rated performance; $\beta = -.36$, $p \leq .10$ for manager-rated performance).

Table 8: Hierarchical Regression of Member-rated Team Performance on Control and Team Process (Cognitive Conflict) Variables (N=59)

Contribution to R^2	Independent Variables	Member-rated Team Performance
ΔR^2 .16	Control Variables Site Differences Team Size	 - .04* (.01) .00 (.01)
ΔR^2 .05	Team Process Variable Cognitive Conflict	 - .21† (.11)
F		4.89**
Total R^2		.21

† $p \leq .10$
* $p \leq .05$
** $p \leq .01$

Table 9: Hierarchical Regression of Manager-rated Team Performance on Control and Team Process (Cognitive Conflict) Variables (N=41)

Contribution to R^2	Independent Variables	Manager-rated Team Performance
ΔR^2 .07	Control Variables Site Differences Team Size	 - .02 (.02) .00 (.01)
ΔR^2 .08	Team Process Variable Cognitive Conflict	 - .36† (.19)
F		2.21
Total R^2		.15

† $p \leq .10$

Affective Conflict and Team Performance

Hypothesis 4 proposed that affective conflict would be negatively related to team performance. Consistent with Hypothesis 4, Table10 provides a robust support for this hypothesis ($\beta = -.36$, $p \leq .01$ for member-rated team performance). While regression of manager-rated team performance did not support H4, its coefficients were very close to the level of significance ($\beta = -.28$, $p = .11$).

Table 10: Hierarchical Regression of Member-rated Team Performance on Control and Team Process (Affective Conflict) Variables (N=59)

Contribution to R^2	Independent Variables	Member-rated Team Performance
ΔR^2 .16	Control Variables Site Differences Team Size	 - .01 (.01) .00 (.01)
ΔR^2 .22	Team Process Variable Affective Conflict	 - .36** (.08)
F		11.50**
Total R^2		.38

** $p \leq .01$

Table 11: Hierarchical Regression of Manager-rated Team Performance on Control and Team Process (Affective Conflict) Variables (N=41)

Contribution to R^2	Independent Variables	Manager-rated Team Performance
ΔR^2 .07	Control Variables Site Differences Team Size	 - .01 (.02) .00 (.01)
ΔR^2 .06	Team Process Variable Affective Conflict	 - .28 (.17)
F		1.88
Total R^2		.13

Moderator Effects of Cognitive Conflict Management Practices

Hypothesis 5 predicted that the association between cognitive conflict and team performance would be moderated by cognitive conflict management practices. Table 12 shows that, after the interaction of cognitive conflict and cognitive conflict management practices was added, multiple squared correlation coefficients increased slightly ($\Delta R^2 = .03$). The interaction of cognitive conflict and cognitive conflict management practices had a modestly significant positive association with member-rated team performance ($\beta = .29$, $p < .10$). The pattern of this interaction was examined using mean splits (Cohen & Cohen, 1983; Aiken & West, 1991). Cognitive conflict and cognitive conflict management practices scores were divided into two groups at one standard deviation above and below their respective means. Figure 3 shows that when team's cognitive conflict management practices are high, the effects of cognitive conflict on team performance are null. However, when the practices to elaborate and manage cognitive conflict between team members are low, a high level of cognitive conflict cannot be translated into high team performance. As a result, these results provide partial support for Hypothesis 5. Regression of manager-rated team performance (Table 13) found no positive interaction effects (($\Delta R^2 = .00$, $\beta = .02$, n.s.).

Table 12: Hierarchical Regression of Member-rated Team Performance on Control, Team Process (Cognitive Conflict), Moderator (Cognitive Conflict Management Practices), and Interaction Term (Cognitive Conflict × Cognitive Conflict Management Practices) Variables (N=59)

Contribution to R^2	Independent Variables	Member-rated Team Performance
ΔR^2 .16	Control Variables Site Differences Team Size	 .00 (.01) - .01 (.00) †
ΔR^2 .05	Team Process Variable Cognitive Conflict	 - .55 (.36)
ΔR^2 .32	Moderator Variable Cognitive Conflict Management Practices	 - .07 (.43)
ΔR^2 .03	Interaction Term Cognitive Conflict × Cognitive Conflict Management Practices	 .29 (.17) †
F		13.58**
Total R^2		.56

† $p \leq .10$
** $p \leq .01$

Figure 6: Moderator Effects of Cognitive Conflict Management Practices

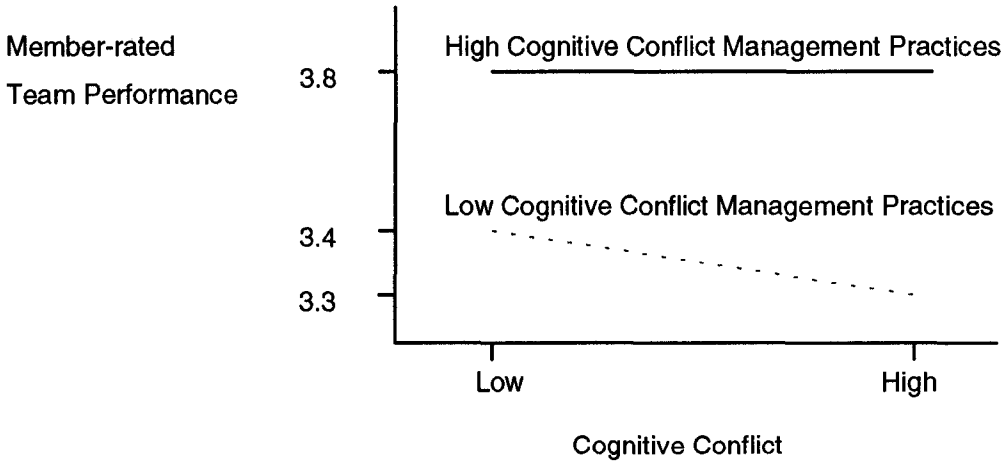


Table 13: Hierarchical Regression of Manager-rated Team Performance on Control, Team Process (Cognitive Conflict), Moderator (Cognitive Conflict Management Practices), and Interaction Term (Cognitive Conflict × Cognitive Conflict Management Practices) Variables (N=41)

Contribution to R^2	Independent Variables	Manager-rated Team Performance
ΔR^2 .07	Control Variables Site Differences Team Size	 .00 (.02) .00 (.01)
ΔR^2 .08	Team Process Variable Cognitive Conflict	 - .35 (.92)
ΔR^2 .02	Moderator Variable Cognitive Conflict Management Practices	.17 (1.02)
ΔR^2 .00	Interaction Term Cognitive Conflict × Cognitive Conflict Management Practices	.02 (.39)
F		1.53
Total R^2		.17

Moderator Effects of Task Interdependence

Hypothesis 6 predicted that the association between affective conflict and team performance would be moderated by task interdependence. Hypothesis 6 was not supported. Tables 14 and 15show that, after the interaction of affective conflict and task interdependence was added, multiple squared correlation coefficients did not change ($\Delta R^2 = .00$). The interaction of affective conflict and task interdependence was not found to have a positive impact on team performance (β = .00, n.s. for member-rated team performance; β = - .26, n.s. for manager-rated team

performance). Finally, it should be noted that the overall significance of regression model in Table 14 reflects the intercept effects ($\beta = 3.59$, s.e. = 1.65, $p = .03$).

Table 14: Hierarchical Regression of Member-rated Team Performance on Control, Team Process (Affective Conflict), Moderator (Task Interdependence), and Interaction Term (Affective Conflict × Task Interdependence) Variables (N=59)

Contribution to R^2	Independent Variables	Member-rated Team Performance
ΔR^2 .16	Control Variables Site Differences Team Size	 - .01 (.01) .00 (.01)
ΔR^2 .22	Team Process Variable Affective Conflict	 - .39 (.94)
ΔR^2 .07	Moderator Variable Task Interdependence	.26 (.43)
ΔR^2 .00	Interaction Term Affective Conflict × Task Interdependence	.00 (.24)
F		8.70**
Total R^2		.45

** $p \leq .01$

Table 15: Hierarchical Regression of Manager-rated Team Performance on Control, Team Process (Affective Conflict), Moderator (Task Interdependence), and Interaction Term (Affective Conflict × Task Interdependence) Variables (N=41)

Contribution to R^2	Independent Variables	Manager-rated Team Performance
ΔR^2 .07	Control Variables Site Differences Team Size	 - .01 (.02) .00 (.01)
ΔR^2 .06	Team Process Variable Affective Conflict	 .78 (2.01)
ΔR^2 .00	Moderator Variable Task Interdependence	.41 (.82)
ΔR^2 .00	Interaction Term Affective Conflict × Task Interdependence	- .26 (.50)
F		1.13
Total R^2		.13

Mediator Effects of Cognitive Conflict

In general, a given variable can be said to mediate between predictor and outcome variables when (1) the predictor affects the mediator, (2) the mediator affects the outcome, and (3) the effects of the mediator on the outcome get reduced for partial mediation and become insignificant for full mediation when the mediator is added to the association between predictor and outcome (Baron & Kenny, 1986). Earlier, neither the effects of diversity measures on cognitive conflict (Hypothesis 1) nor those of cognitive conflict on team performance (Hypothesis 3) were established. Since these results did not meet the above conditions, further tests related to the mediator effects of cognitive conflict were therefore not justified.

Mediator Effects of Affective Conflict

It was found that affective conflict had a significant impact on team performance (Hypothesis 4). However, the effects of diversity measures on affective conflict (Hypothesis 2) were not established. While the mediator effects on the outcome were established, the predictor effects on the mediator were not found. Hence, this study did not examine the mediator effects of affective conflict.

CHAPTER VI: DISCUSSION

Introduction

The purpose of this study was to have a better understanding of the effects of demographic diversity on team process and the effects of team process, in turn, on team performance. Specifically, this study aimed at understanding how conflict as a team process may shape team performance, because prior research found discrepant results regarding its association. The present study proposed to distinguish the emergent state of conflict between team members from its ensuing interactions within the team process. Thus, it was predicted that the association between conflict and team performance would be a function of moderator effects. In this chapter, I will discuss the results presented in the previous chapter, the limitations of the present study, and the managerial implications for team managers and organizational leaders.

Demographic Diversity and Team Process

Drawing on a social network perspective (Burt, 2000; Gnyawali & Madhavan, 2001; McEvily & Zaheer, 1999), Hypothesis 1 predicted that demographic diversity would have a positive impact on cognitive conflict within the team. This hypothesis was not supported. One possible explanation may be that

there was not so high a level of perceived competition between individuals in the sample as to motivate them to exploit information asymmetry deriving from their demographic differences. A social network perspective posits that when structural holes exist between actors deriving from their dissimilar social contacts, they are likely to take advantage of these holes for various valued organizational resources, such as by providing different opinions in team discussions. However, this will not happen if there does not exist a sufficient amount of intense competition between actors. While this study did not directly assess the levels of perceived interpersonal competition across teams, they may have influenced this study's results. Future scholars could assess the validity of a social network perspective by clarifying the impact of perceived competition between actors on their levels of motivation to exploit structural holes. Also, future research could benefit from an understanding of what will affect such perceptions between individuals within the team. For example, personality characteristics could shape the member's perception of competition with others that may, in turn, affect the levels of their motivation to exploit information asymmetry deriving from different social contacts. A team of many individualists may have more perceived interpersonal competition than that of many collectivists (Chatman & Barsade, 1995).

Drawing on a social identity perspective (Tajfel, 1978; 1981; Tajfel & Turner, 1986; Turner, 1982 & 1987), Hypothesis 2 predicted a positive association between demographic diversity and affective conflict within the team. However, the result did not support this hypothesis. It will not be so simple that social

categorization can occur automatically at the team settings, as a social identity perspective postulates. Although previous research in experimental settings (Devine, 1989; Devine et al., 1991) found a human's innate tendency to categorize others in terms of social groups, individuals would not do so in the actual teamwork settings (Brewer & Brown, 1998). Alternative explanation is that since southern California where all research site are located has a long history of racial diversity, individuals working in this area may not experience affective conflict associated with it. Future research might address the situations under which a variety of social categories become salient to team members and, in turn, have a positive impact on affective conflict. For example, these effects may vary in terms of the degree of criticalness and urgency of the task to team members (Rajagopalan et al, 1993). The more urgent and critical the task is, the more team members will get frustrated with events that interfere with its achievement and thus have more interpersonal aggression (Chen & Spector, 1992) in a manner that social categories can serve to polarize them. Studying the salience and relative influence of demographic characteristics in conjunction with team's events over time will provide a deeper insight on the impact of social categorization within the team.

Team Process and Team Performance

Drawing on the results of laboratory studies using decision-making techniques such as dialectical inquiry and devil's advocacy, this field study predicted

the positive impact of cognitive conflict on team performance (Hypothesis 3). Nevertheless, like other studies (Ancona & Caldwell, 1992; Glick et al., 1993), this study did not find such a positive impact. The results of this study are consistent with Ancona and Caldwell's (1992) argument that a high level of cognitive conflict may lead to a low level of team performance because of the confusion different perspectives create. In other words, when there exists a variety of cognitive resources, they may impair team performance unless they are elaborated and managed effectively by team members. When individuals cannot manage cognitive conflict effectively by themselves, they will divert their attention from team discussion (March & Olsen, 1979) and feel less responsible for its resulting decision (Hackman & Oldham, 1976; Salancik, 1977). In turn, these individuals become less committed to it (Priem et al., 1995), leading to the lower team performance. These results provide additional evidence that it is very important to clarify the complex relationship between cognitive conflict and team performance.

Hypothesis 4 predicted a negative impact of affective conflict on team performance. Regression of member-rated team performance on affective conflict provided robust support for this hypothesis. The lack of support from regression of manager-rated team performance may be that, as Table 4 shows, there was on average a low level of affective conflict (mean = 1.84) relative to a high level of manager's rating of team performance (mean = 4.03). Unlike the relationship between cognitive conflict and team performance where laboratory and field studies found contradictory results, the association between affective conflict and team

performance appears much straightforward. When affective conflict exists among team members, they tend to interpret the attitudes and behaviors of others in a selective manner to confirm the negative view of them. Through the ecology of inaccurate attributions of each other's attitudinal and behavioral intentions in a negative manner, affective conflict is sustained. Thus, affective conflict induces team members to avoid contact with others with whom they feel uncomfortable and, in turn, keeps them from coordinating their actions effectively, thus impairing team performance.

Moderator Effects

In order to have a clearer picture of the complex relationship between cognitive conflict and team performance, this study explored the effects on team performance of cognitive conflict interacting with cognitive conflict management practices. The effects of this interaction were partially consistent with Hypothesis 5. It was demonstrated that the impact of cognitive conflict on team performance has to do with the effectiveness of cognitive conflict management practices. For example, a divergent view is often treated with skepticism by the individuals who share the common view. In the absence of cognitive conflict management practices that contain a higher amount of reasoning orientations relative to positional orientations, a high level of cognitive conflict can create confusion for team members, leading to the lower team performance. On the other hand, when the team has appropriate

cognitive conflict management practices, its members can overcome the team process losses associated with the emergence of a high level of cognitive conflict (Hackman, 1987). However, this may not lead to better team performance. Thus, this study contributes to the literature by resolving the discrepant findings regarding the association between team process and performance in prior research.

Also, this study showed that the impact of a team's high level of cognitive conflict management practices on the association between cognitive conflict and team performance is null. The impact of high cognitive conflict management practices may vary across different types of tasks. While this study did not assess the levels of task complexity across teams, they may influence the moderator effects of high cognitive conflict management practices on the association between cognitive conflict and team performance. Teams conducting routine tasks may not reap performance gains from the combination of a high level of cognitive conflict and a high level of cognitive conflict management practices as may those teams that are facing more complex tasks. The level of task complexity warrants greater attention in future research examining the effects of cognitive conflict management practices.

Unfortunately, this study did not resolve another discrepant finding regarding the association between team process and performance in prior research. Hypothesis 6 predicted that task interdependence would moderate the negative impact of affective conflict on team performance, but this study did not find such evidence. While Macrae and Bodenhausen (2000) called for management scholars to

empirically examine different types of task design that can trigger stereotype suppression between individuals and thus lead to better team performance, the results of this study provide preliminary evidence that task interdependence does not play such a role. Exploration of other types of task design that can mitigate the negative effects of affective conflict on team performance warrants greater attention in future research. On the other hand, the lack of empirical support for Hypothesis 6 may be the relatively low level of intraclass correlation in the level of task interdependence in the sample. While the teams in the sample were nearly significantly different from each other in the level of task interdependence (p = .0557) and team members' perceptions of the level of task interdependence converged with each other in an acceptable manner (r = .11), these numbers were lower compared to those of other team-level measures used in this study, thus pointing out the possibility that task interdependence might have suffered from a measurement problem to some extent. By investigating teams whose intraclass correlation in the level of task interdependence is higher, future researchers could gain more reliable results regarding the moderator impact of task interdependence on the association between affective conflict and team performance.

Mediator Effects

Previously, two studies (Jehn et al., 1999; Pelled et al., 1999) assessed the mediator effects of cognitive and affective conflict on team performance by

including conflict as a team process into the theoretical model. While Jehn et al's (1999) study supported both of these effects, Pelled et al. (1999) found no evidence that either cognitive or affective conflict mediates the association between demographic diversity and team performance. Like Pelled et al.'s (1999) study, the mediator effects were not present in this study. The lack of these mediator effects may have stemmed in part from the absence of the direct effects of demographic diversity on team performance, nevertheless this study could not test it. Although this study provides additional evidence for the lack of mediator effects of conflict on team performance, a firm conclusion needs more research.

Study Limitations

The major contribution of this study was to demonstrate that an increased amount of cognitive conflict does not automatically translate into better team performance, depending on cognitive conflict management practices. However, additional research is needed to refine and extend the results of this study. First, since this study's sample was not randomly selected but conveniently identified by a contact person of participating organizations, it may have suffered a biased selection that in turn affects the results of analysis. Next, this study demonstrated the important role of cognitive conflict management practices but did not examine any antecedents associated with it. For example, members' prior experiences in different organizations and industries may affect their attitudes toward others in the exchange

of cognitive disagreements over different aspects of the task. When appropriate training for these practices are provided in the organization, a team's ability to manage cognitive conflict could improve. Also, a longitudinal study could help to provide deeper insight on the emergence and development of cognitive conflict management practices over time. Chatman and Flynn (2001) examined how cooperative norms in work teams developed over time. Likewise, future scholars might address how and when (in which developmental stage) team's cognitive conflict management practices are formed, and whether they have lasting impacts or can be shaped by the new entry of influential members into the team or by different managerial styles in leading team discussions (Gersick, 1988).

Due to the lack of an objective measure of team performance that could be applicable to the variety of participating teams, this study used subjective performance ratings that may suffer from the tendency of some participants to always mark categories in the middle of or the extremes of the scale in their ratings (Pedhazur & Schmelkin, 1991). Managers' ratings of team performance (mean = 4.03) may have reflected a tendency to rate performance highly. Future researchers could overcome this problem by conducting a study of the same type of team in a single organization where the same objective measure of performance would be applicable to all teams in the sample. On the other hand, such a study may risk unduly limiting its generalizability across different types of teams and organizations. Thus, future research must weigh the merits of generalizability deriving from the

inclusion of various types of teams and organizations, as in this study, against the weakness due to subjective performance ratings.

Finally, while the sample size of this study is comparable with other field studies published in major management journals, future investigation of a larger sample will enable an assessment of the validity of this study's results. Although the survey questionnaires included several other measures, they were not included in the analyses because of the limited size of this study's sample. Future investigation of a larger sample will justify the inclusion of these measures into the multivariate analysis.

Managerial Implications

Despite its limitations, this study extends previous research though its assessment of moderator effects on team process and has several implications for team managers and organizational leaders. First, they do not have to be very concerned about team members' demographic characteristics such as organizational tenure and racial diversity because these characteristics do not have a significant impact on team process.

However, the effects of team process on performance need to be carefully addressed. Unlike the results of laboratory studies, the presence of disagreements among team members over various aspects of the task does not automatically translate into better team performance. On the contrary, its impact can even be

negative. However, when the team is good at elaborating and managing cognitive conflict in a well-reasoned manner, its negative effects are mitigated. Regardless of the amount of cognitive conflict the team is experiencing, it is important that the organization develops appropriate cognitive conflict management practices though hiring and training.

Next, while affective conflict can have a negative impact on team performance, this study's findings do not suggest that by changing the task design into a high level of task interdependence it may possible to mitigate the negative effects of affective conflict on team performance. As Schneider (1987) noted, if personality characteristics constitute the basis of affective conflict, team managers and organizational leaders may reduce its negative impact on team performance by recruiting the persons of certain personality characteristic. For example, the persons of high self-monitoring who can anticipate others' reactions and adjust their feelings and behaviors accordingly may monitor and control the images of self that they project to others in social situations (Snyder, Berscheid, & Matwychunk, 1988). These high self-monitoring persons will be more likely to not only restrain the expression of their negative affect and but also willing and able to tailor and fashion of their images while working with others (Snyder and Copeland, 1989). In turn, high self-monitors will induce coworkers to form more positive impressions of them (Snyder, 1987), thereby leading to the weakened negative emotions among coworkers. Consistent with these arguments, Flynn, Chatman, and Spataro (2001) provided the evidence that self-monitoring moderates the negative effects of negative

emotions associated with demographic dissimilarity between individuals on individual performance. The personality characteristics may be another important dimension to consider when recruiting new members for the successful team.

In sum, this study demonstrates the importance for team managers and organizational leaders to direct their attention to team process rather than demographic diversity. While strategic human resource management advocates increasing demographic diversity among individuals within a team to broaden the bases of informational and knowledge resources, demographic diversity itself does not necessarily affect the level of team's cognitive resources. Instead, while it is still highly crucial to understand the antecedents to the variety of cognitive resources, they should pay more attention to how an emergent state of cognitive conflict will unfold through team members' interactions.

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Appendix 1: Information Sheet for Non-Medical Research

University of Southern California
School of Policy, Planning, and Development

INFORMATION SHEET FOR NON-MEDICAL RESEARCH

Research Title: Work Team Diversity and its Impacts: Assessing Mediating Role of Intrateam Process and Moderating Roles of Cognitive Conflict Management Practices and Task Interdependence

You are asked to participate in a research study conducted by Professors Peter Robertson, Ph.D. and Robert Myrtle, D.P.A., and doctoral candidate Nobuyuki Ainoya, M.P.A. from the School of Policy, Planning, and Development at the University of Southern California. Results of this study will be contributed to a doctoral dissertation submitted by Nobuyuki Ainoya to School of Policy, Planning, and Development and the Committee on Graduate Studies of University of Southern California. You were selected as a possible participant in this study because you are a member of teams that will vary in terms of measurements in this study. A total of 300-400 subjects will be selected from 50 teams to participate. Your participation is voluntary.

We are asking you to take part in a research study because we are trying to learn more about the effects of work team composition on its dynamics and performance. The results should be useful in determining how the work team can be made more effective.

Completion and return of the questionnaire or response to the interview questions will constitute consent to participate in this research project.

You will be asked to fill out a questionnaire that will take approximately 30 minutes. In each section of the questionnaire, you will be given specific instructions. Some of the questions will seem repetitive. This is not to test you; rather, it is a method that researchers use to measure opinions more effectively. Please carefully and honestly answer each question.

This study assumes no reasonable foreseeable risks, discomforts, and inconveniences for its participants.

Results of this study's analysis and their implications for team management will be made available to the members of teams, team managers and other organizational leaders as appropriate. Researchers also will be available to assist in the interpretation of these results. Further, this study will be contributed to a theoretical understanding of and practical implications for team management in organizational settings.

The research participant will not be paid or offered other benefits for participation in this study.

Any information that is obtained in connection with this study and that can be identified with you and your team will remain confidential and will be disclosed only with your and all of you team members' permissions or as required by law.

When the results of the research are published or discussed in conferences, no information will be included that would reveal your and your team's identities.

All responses will be identified by codes linked to research participants' identity by separate key code. No one at your organization will have access to responses and codes as well that are stored in a password-protected computer. Only investigators will have access to them. All of the processing and analysis of responses will be done at the University of Southern California.

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

If you have any questions or concerns about the research, please feel free to contact Nobuyuki Ainoya at (323) 663-5827, 2031 Dracena Dr. 319, Los Angeles, CA 90027, or Peter Robertson at (213) 740-0353, RGL 222, Los Angeles, CA 90089-0626.

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact the University Park IRB, Office of the Vice Provost for Research, Bovard Administration Building, Room 300, Los Angeles, CA 90089-4019, (213) 740-6709 or upirb@usc.edu.

Appendix 2: Team Member Questionnaire

Team Member Questionnaire Code Number_____

Section I

For items 1 thru 8, please circle the number that corresponds to your response to each statement as it applies to your team.

	none	little	moderate	a lot	very much
1. To what extent are there differences of opinion in your team?	1	2	3	4	5
2. How much tension is there among the members of your team?	1	2	3	4	5
3. How often do the members of your team disagree about how things should be done?	1	2	3	4	5
4. How often do people get angry while working in your team?	1	2	3	4	5
5. How often do the members of your team disagree about which procedure should be used to do your work?	1	2	3	4	5
6. How much jealousy or rivalry is there among the members of your team?	1	2	3	4	5
7. To what extent are the arguments in your team task-related?	1	2	3	4	5
8. How much are personality clashes evident in your team?	1	2	3	4	5

Code Number_____

For items 9 thru 18, please circle the number that indicates the extent to which you agree or disagree with the statement as an accurate description of your team's discussion.

	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
9. Members often add related information or knowledge to the facts and opinions that were initially introduced by someone in our team.	1	2	3	4	5
10. Members often repeat statements or questions in discussions.	1	2	3	4	5
11. Members work to clarify disagreeing points or confused arguments in discussions.	1	2	3	4	5
12. Members often get defensive in their arguments.	1	2	3	4	5
13. In discussions, members often explore reasons for the team's conclusions, judgments, or inferences.	1	2	3	4	5
14. Members tend to stick to their opinions in discussions.	1	2	3	4	5
15. Members clarify the conditions and assumptions behind each other's arguments.	1	2	3	4	5
16. Members are unnecessarily assertive in discussions.	1	2	3	4	5
17. Members often provide examples in order to explain their opinions.	1	2	3	4	5
18. Members do not really respond to each other's arguments in discussions.	1	2	3	4	5

Code Number_____

For items 19 thru 26, please circle the number that corresponds to your response to each statement as it applies to your work situations.

	very inaccurate	moderately inaccurate	accurate	moderately accurate	very accurate
19. I work closely with other members in doing my work.	1	2	3	4	5
20. I frequently must coordinate my efforts with other members.	1	2	3	4	5
21. My own performance is dependent on receiving accurate information from other members.	1	2	3	4	5
22. The way I perform my job has a significant impact on other members.	1	2	3	4	5
23. My work requires me to consult with other members fairly frequently.	1	2	3	4	5
24. I work fairly independently of other members in my team.	1	2	3	4	5
25. I can plan my own work with little need to coordinate with other members.	1	2	3	4	5
26. I rarely have to obtain information from other members to complete my work.	1	2	3	4	5

For items 27 thru 29, please circle the number that corresponds to your response to each statement as it applies to you.

27. I prefer to work with others in my work team rather than working alone.	1	2	3	4	5
28. Given a choice, I would rather do a job where I can work alone than do a job where I have to work with others.	1	2	3	4	5
29. I like it when members of my work team do things on their own, rather than working with others all time.	1	2	3	4	5

Code Number_____

For items 30 thru 35, please circle the number that indicates the extent to which you agree or disagree with each statement as an accurate description of your team's performance.

	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
30. Our team functions very efficiently.	1	2	3	4	5
31. The quality of service that our team produces is very high.	1	2	3	4	5
32. Our team usually meets or exceeds customers'/clients'/patients' expectations.	1	2	3	4	5
33. Critical quality errors occur frequently in our team's work.	1	2	3	4	5
34. Our team introduces many innovations or new ideas.	1	2	3	4	5
35. Our team usually adheres to schedules.	1	2	3	4	5

Sections II

As is explicitly written in the attached "Information Sheet for Non-Medical Research", any information that is obtained in connection with this study and that can be identified with you and your team will be kept confidential.

1. Are you – (please circle one)?
   [1] female
   [2] male

2. What is your educational level? (please indicate highest level completed)
   [1] did not graduate from high school
   [2] graduated from high school or G.E.D.
   [3] some college or technical training beyond high school (1-3) years
   [4] graduated from college (B.A., B.S., or other bachelor degree)
   [5] some graduate school (but no graduate degree)
   [6] master degree
   [7] doctor degree

3. When did you first begin work at this organization?

month	year
_ _,	_ _ _ _

4. When did you first join your present team?

month	year
_ _,	_ _ _ _

5. If you happen to know, please state approximately when your present team was formed?

month	year
_ _,	_ _ _ _

6. How often does your present team have a meeting? (please select one and specify)

[1] approximately every ___ week
[2] approximately every ___month

7. What is the percentage of your attendance at these meetings?

approximately ___ percentage

8. How many different teams other than your present team are you a members of in this organization?

___ team(s)

9. The position in my present team is – (please circle one)

[1] nurse
[2] nurse attendant
[3] physician or surgeon
[4] therapist
[5] administrative staff
[6] technologist or technician
[7] secretary or clerk
[8] other (My position is _____.)

10. How old are you?

____

11. Are you – (please circle one)?

[1] Black/African-American
[2] Asian and Pacific-Islander/Asian-American
[3] American Indian/Alaska Native
[4] Latino/Hispanic-American
[5] White/Caucasian-American
[6] Other (i.e., multi-racial)

Appendix 3: Manger/Leader Questionnaire

Manager/Leader Questionnaire Code Number_____

For items 1 thru 6, please circle the number that corresponds to your response to each statement as it applies to your rating of _____ team performance.

	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
1. This team functions very efficiently.	1	2	3	4	5
2. The quality of service that this team produces is very high.	1	2	3	4	5
3. This team usually meets or exceeds customers'/clients'/patients' expectations.	1	2	3	4	5
4. Critical quality errors occur frequently in this team's work.	1	2	3	4	5
5. This team introduces many innovations or new ideas.	1	2	3	4	5
6. This team usually adheres to schedules.	1	2	3	4	5