A SOCIAL NETWORK PERSPECTIVE ON WORK GROUP PERFORMANCE*

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In this paper, we propose that a social network perspective can contribute to addressing the unanswered questions and resolving the debates on work group effectiveness by capturing the dynamics of group advantages inherently derived from the relational nature of the group. We generate propositions concerning three relationships within and outside a group: (1) the vertical relationships between the leader and the members within a group, (2) the horizontal relationships among the members within a group, (3) the group's external relationships with people outside a group. We explore how the network characteristics of these three relationships affect work group performance.

One of the recent trends in business organizations is the increasing use of groups as their fundamental unit of organizational structure in order to respond more flexibly and timely to the rapidly changing environments (Manz & Sims, 1993; Mohrman, Cohen, & Mohrman, 1995). Thus, although the question of what factors affect work group performance is rarely new, this question has become increasingly important. The nature of group activity involves a recurrent pattern of dynamic relationships among people within and outside a group. The advantages of a group are derived from these relationships of people because a group is a smaller and more interactive unit relative to other social units such as an organization (Sherif, 1967). Hence, group effectiveness may be determined by the characteristics of relationships among people around a group.

However, despite this relational nature of group phenomenon, research on group effectiveness has revealed a lack of network perspectives. Previous approaches to group effectiveness are mainly represented in an input-process-output model (Hackman, 1987). Following this model, demographic diversity research has focused on the effects of input factors such as heterogeneous composition of group members on group effectiveness as output factors. However, previous empirical studies have reported the mixed results of

논문접수일: 2004. 12 게재확정일: 2006. 3
* 본 논문은 2004년도 연세대학교 신진교수연구비와 2005년도 한성대학교 교내연구비 지원에 의한 것임.

both positive and negative effects of diversity on group effectiveness (see Guzzo & Dickson, 1996; Milliken & Martins, 1996; Ragins & Gonzalez, 2003; Williams & O'Reilly, 1998 for a review). Consequently, previous diversity researchers have been criticized for using demographic input factors as proxy for actual interactions within the group without directly investigating these interactions (Lawrence, 1997).

Thus, more recently, a line of research suggests that we should consider the intervening factors such as conflict, communication, and cohesiveness in the black box of the group for a better understanding of the relationship between demographic diversity and outcomes (Milliken & Martins, 1996; Pelled, 1996; Lawrence, 1997; Pelled, Eisenhardt, & Xin, 1999). Further, some researchers propose that a direct examination of network characteristics of interactions in the black box may dissolve the contradicting results of diversity-performance relationships (Reagans & Zuckerman, 2001).

Consistent with this recent argument, other researchers have also suggested cohesiveness, conflict, and leadership efforts as the process factors to determine group effectiveness (Guzzo & Shea, 1992). However, in spite of a pivotal role of group process in determining group performance, most previous research has examined group process in a static way, and there has been the lack of unified conception of the definition and nature of group process (Marks, Mathieu, & Zaccaro, 2001). In addition, the group process constructs in previous research have been criticized for the individual-level definitions (based on individuals' perception, behaviors, and attributes) of the group-level constructs and for measurement problems (Goodman, Ravlin, & Schminke, 1987). Thus, Weingart (1997) viewed group process as a dynamic process of action and reaction of group members and suggested the direct examination of communication and interdependent activities of group members rather than asking their own impressions of the properties of group processes for studying group processes. In a similar vein, while presenting the time-based framework of group processes, Marks et al. (2001: 357-358) argued that group process researchers need to focus on the indicators of group members' interaction process such as co-ordination and managing conflict instead of group property constructs such as cohesion that have been typically used to represent group process.

Thus, a more relation-based approach to these process factors in the group has been suggested as a future research direction. For example, some researchers have proposed the shift of the focus to the relationship rather than leaders' characteristics as the determinants of leadership effectiveness (Graen &

Uhl-Bien, 1995). Specifically, leader-member exchange (LMX) leadership theory focuses on the relationship between the leader and the followers within a group. However, even in the current LMX framework, we may find a limited understanding of this relationship because of its focus on only a dyad relationship between the leader and the followers: whether those followers have high LMX or low LMX with the leader. The recent research suggests that a social network perspective can provide a promising approach to exploring the effects of LMX on group effectiveness (Liden, Sparrowe, & Wayne, 1997). Therefore, the important issue for the performance implication of LMX is how the leader identifies and establishes relationships with members who occupy certain beneficial positions in the network among members rather than whether the leader has high or low LMX with those followers.

Following these recent trends of emphasizing the more relational perspectives on group effectiveness, we propose that interactions within and outside a group need to be the pivotal focus of group effectiveness research rather than being considered one of the constituting factors of the input-process-output model. Drawing from Simmel's (1955, 1971) ideas of group interactions, some sociologists have argued that interactions constitute emergent phenomena, distinct both from individual and macro-social phenomena, and the qualitatively distinctive features of group phenomenon are its nature of multi-level domain and its focus on interactions (Levine, 1991; Manson, 1993). Social network perspective focusing on social relationships that link the individual and the social structure (Coleman, 1988) can be a fresh theoretical and methodological tool for group effectiveness research.

In this paper, we explore the effects of relational characteristics of internal and external group activities on group effectiveness using a social network perspective. Specifically, we focus on the three relationships within and outside the group that have been argued to affect group effectiveness. Within the group, based on previous research on the influences of leaders and peer members on individuals' group activities (Hackman & Walton, 1986; Hackman, 1992), we examine both the vertical relationships between the leader and the members and the horizontal relationships among the members. Drawing on research on external perspective on groups (Ancona, 1993), we also look at the group's external relationships with people outside the group. In this paper, we explore how the specific network characteristics of these three relationships affect work group performance.

I. INTRA-GROUP VERTICAL RELATIONSHIPS: LEADER-MEMBER RELATIONSHIPS

Leaders influence group effectiveness through playing an important role in shaping group norms, managing followers' behaviors directly, and linking a group with the larger social system such as an organization effectively (Hackman & Walton, 1986). Specifically, leaders' characteristics and behaviors such as their expectations of group performance (Eden, 1990) have been suggested to be related to group effectiveness.

Recently, however, leadership theories have evolved from leader-based approach to a relationship-based approach such as leader-member exchange (LMX) theory. The critical questions of LMX theory have been how the characteristics of dyadic relationships between the leader and the members are correlated with individual or group outcomes of interest (Graen & Uhl-Bien, 1995). With the introduction of social network perspective, we may extend the domain of a relationship-based leadership research beyond the traditional focus on the dyadic relationships (Sparrowe & Liden, 1997). For example, by looking at the network of members within a group, we can learn that some of the members with low LMX are indirectly connected to the leader through their ties with other members who developed high LMX with the leader.

For the past decades, the extensive research has shown that LMX influences several outcomes such as work attitudes, perceptions, and behaviors of followers. Yet, the fundamental question of whether the leader's differentiation of the followers would be beneficial for the overall group has been rarely studied (Yukl, 1989).

Using a social network perspective, we can shed light on this important but unanswered question. First, from a network perspective, we can grasp the more complicated aspects of high-quality relationships. One critical question for future LMX research is how to define high-quality relationships in leader-member exchange. Trust, respect, mutual obligation, generating mutual loyalty and influence have been suggested as the characteristics of high-quality relationship. However, researchers failed to reach consensus on the definitions, and noted that the characteristics of high-quality relationships can be differently useful depending on the situations (House & Aditya, 1997). Descriptions of high quality relationships can be represented in the general network characteristics of relationships such as strength of ties (i.e., strong vs. weak ties) or multiplexity of ties. Strong ties have been shown to be related to the characteristics of high LMX (Gerstner, Brass, & Day, 1995).

Particularly, Sparrowe and Liden (1997) defined relationship quality based on the three different levels of reciprocity in exchange process, and argued that network of strong ties, networks rich in structural holes, and negative network represent the three types of reciprocal exchange respectively. We propose that multiplexity can also reflect the distinctive features of high quality LMX. Multiplexity is defined as multiple bases for interaction among individuals, whether defined by roles, behaviors, affiliations, contexts, and relationships (Verbrugge, 1977; Brass, 1995). If a person interacts with the same people in different contexts and develops overlapping relationships (e.g., friends, co-workers, and neighbors), he or she has multiplex relationships (Mitchell, 1969). Individuals involved in multiplex relationships are less able to withdraw from the social network because such withdrawal may jeopardize existing relationships in more than one context. Hence, we argue that strength and multiplexity of relationship between the leader and the member can reflect the structural definitions of high quality LMX.

Second, a network perspective can provide a more complete picture of the relational structure of leadership within a group by considering other relationships among members beyond leader-member dyad relationships. The focus of network research is on how social actors can manage their network relationships more effectively, given limited time and resources (Burt, 1992). Previous LMX research implied that lower satisfaction and performance of followers with low LMX may result in lower performance of the group as a whole (Liden, Sparrowe, & Wayne, 1997). The question thus arises about how the leader develops connections to more followers in the group to reduce the possible negative consequences and increase the overall group effectiveness. Beyond the dyadic relationships, considering the network structure among followers might be important for understanding the leader's effective networking strategy to be connected to more followers, given limited time and resources. In this section, we explore what network characteristics in the leader-member relationship affect the leader's strategic benefits and thereby facilitate group effectiveness.

1.1 The Leader's High LMX Ties with Informal Leader

The structural approach to leadership showed that individuals with the greatest control over communication tend to be viewed as leaders by other group members (Freeman, Roeder, & Mulholland, 1980; Fernandez, 1991). Previous network research has suggested that social actors who occupy central positions in the network tend to be more prominent and have more power and control

over resources and information (Freeman, 1979; Brass & Burkhardt, 1992). Hence, central members in the social network of a group can be identified as informal leaders.

Because central social actors tend to be more conspicuous and prominent in the networks, compared to less central actors, they tend to have more ties with other members by attracting more attention from other various members. Thus, central persons are more likely to access various resources and information within the group (Knoke & Burt, 1983). The formal leader can benefit from this informal leader by establishing the high LMX relationships with that person. Through the informal leader who is the central person in the network, the formal leader can be connected to more followers and access various resources and information in the group.

The informal leader also plays a critical role as an opinion leader for the important issues. From the informal leader, the formal leader can gain more various information on the issues among followers in the grapevine. The formal leader can also communicate his or her own opinions and ideas with followers through informal leader and can even persuade other followers on the issues with the help of informal leaders (March & Sevon, 1988). Thus, these effective leadership behaviors can result in better group performance.

Proposition 1: The more central the followers with whom the leader has high LMX in the group, the better performance the group achieves as a whole.

1.2 The Leader's High LMX Ties with Diverse Cliques

The benefits of differentiation of ties with individual followers have been assumed in LMX theory. Similarly, the strategic benefits of subgroup differentiation will be also important for the effective LMX of the leader. If the group is divided into several cohesive sub-groups such as cliques, given the limited time and resources, the leader needs to develop ties with these cliques in the most effective way. The greater the number of different groups to which the focal person has access through at least one another person, the greater the diversity of information and social support to which the focal person has access (Snijders, 1999). Thus, as noted by Krackhardt and Brass (1994), the leader can access information and resources in the various cliques by establishing ties with at least one person in each sub-group.

As discussed above, connections with informal leader who is central person in the network and an opinion leader might be beneficial for the leader. Thus, if the leader has diverse ties with the cliques through the high LMX tie with the central member in each clique, the leader can be connected to more followers

in the group. Cliques in the fragmented group can be also connected with one another through the leader to collaborate on the given tasks, thereby enhancing the overall group effectiveness. If the leader has redundant ties with people in only one or two cliques, the followers in the cliques that are not connected to the leader may be dissatisfied (Krackhardt & Brass, 1994). The fragmented group can suffer from the lack of communication and increasing conflict, resulting in lower group performance. Thus, we propose that if the leader of the group develops high LMX with the central member in each of more cliques, that group may be more effective.

Proposition 2: The more the leader connects to diverse cliques through high LMX with the central person in each clique of the group, the better performance the group achieves as a whole.

1.3 The Leader's Accuracy in Social Network Perception

In the previous LMX research, the competence of the leader has been suggested to influence group effectiveness regarding the criteria for the leader's differentiation of follower (Liden, Sparrowe, & Wayne, 1997). The more competent leaders, compared to the less competent ones, can identify the followers with better ability and attitudes and develop high LMX with them. In this case, the overall group performance may increase due to satisfaction and better performance of more able and motivated followers with high LMX in spite of negative effects of less able and motivated followers with low LMX on performance.

Similarly, social network theory has emphasized the importance of an individual's competence of network perception. Researchers suggested that an individual's perception of the social connections among people in his or her network is important. Rather than actual networks, such cognitive maps of individuals are even more important for capturing the network effects that network researchers have suggested (Krackhardt, 1987). An individual's ability to perceive accurately the network structure in an organization has been noted as a critical source of power (Krackhardt, 1990).

Thus, we propose that the leader's abilities to accurately perceive the network structure of his or her group affect group effectiveness. If the leader can identify the informal leaders and sub-group situations more accurately, that leader can benefit from his or her networking strategy with informal leaders and sub-groups for group effectiveness discussed above. Otherwise, although the leader recognizes the possible advantages of the network connections to the central members, that leader would have difficulties to identify

the central members and thus fail to realize those networking advantages.

Proposition 3: The more accurately the leader perceives the social networks in the group, the better performance the group achieves as a whole.

II. INTRA-GROUP HORIZONTAL RELATIONSHIPS: THE RELATIONSHIPS AMONG MEMBERS

The relationships among members within a group have been the focus of most previous research on group effectiveness. The first stream of research on the effects of member relationships on performance is demographic diversity research. However, diversity research has offered seemingly contradictory findings for group effectiveness (Guzzo & Dickson, 1996; Milliken & Martins, 1996; Williams & O'Reilly, 1998). Some researchers have reported that group diversity is positively related to the creativity and decision-making effectiveness of groups (Bantel & Jackson, 1989; McLead & Lobel, 1992; Watson, Kumar, & Michaelsen, 1993). However, others have found a negative association between the diversity of group members and group effectiveness (Jackson et al., 1991; Tsui, Egan & O'Reilly, 1992). These mixed results may be derived from the tendency of demographic diversity research to conduct "black box" studies without examining the actual relationships among members within a group. Thus, in recent years, some researchers have called for more attentions to the intervening process constructs and actual relationships ignored as the black box by previous diversity research (Lawrence, 1997). Specifically, in the relationships between group diversity and performance, affective, cognitive, and communication-related aspects have been suggested as critical process constructs to influence outcomes such as group effectiveness (Milliken & Martins, 1996; Lawrence, 1997; Pelled, Eisenhardt, & Xin, 1999). In this literature, researchers argued that heterogeneous members are more likely to have less communication with each other and thus create conflict, resulting in lower group effectiveness as a whole, emphasizing the process intervening factors as mediators of diversity and performance relationships (Pelled, Eisenhardt, & Xin, 1999).

This recent trend in group diversity research is related to the second stream of research on group effectiveness that has focused on process constructs such as conflict and cohesiveness as the determinants of group effectiveness. However, although these constructs are inherently relational concepts, group process research has also revealed the

lack of a relational perspective. In most studies, researchers have measured conflict and cohesiveness by the individual members' perceptions rather than by the characteristics of actual relations and failed to provide more specific dimensions of actual interactions among members. Thus, important process-related constructs such as cohesiveness have been criticized to have definitional and measurement problems (Goodman, Ravlin, & Schminke, 1987).

We propose that a social network perspective can contribute to the current group diversity research by directly examining the different aspects of member interactions within a group. Beyond the existing constructs of member relationships, how can we classify the different aspects of member interactions? Drawing from Simmelian theory of group interactions, Levine (1991) suggested the six pattern variables that represent the comprehensive aspects of interaction structure. These pattern variables include group size, social distance, self-involvement, symmetry, valence (positive/negative sentiments), and vertical position. Although group size is one of critical determinants of interaction pattern (Simmel, 1950), in this section we focus on the emergent features of member interactions excluding group size. Thus, based on the remaining pattern variables by Levine (1991) except group size, we explore how network characteristics of member interactions within the group affect that group's performance.

2.1 Social Distance

The first feature of interaction structure involves the concept of social distance initially suggested by Simmel (1950). Simmel's concept of social distance has been differently interpreted and measured by a number of scholars (Levine, Carter, & Gorman, 1976). For example, Kadushin (1962) distinguished four specific dimensions of social distance: normative distance (the manner and the expected degree of interactions); interactive distance (the degree of actual interaction), cultural distance (the degree of value homophily), and personal distance (the degree of understanding and unspoken communication). Particularly, some of the early social network researchers already sought ways of applying sociometric methods to this social distance concept as one of critical social relation constructs (Laumann, 1966; McFarland & Brown, 1973).

In this paper, we use the more general definition of social distance referring to the aspect of how close individuals stand to one another in various respects (Levine, 1991). Consistent with the previous attempts by social network researchers, we argue that the concept of social distance among group members can be captured by the network concept of density. The density of a network

among group members represents the extent that the entire network in the group is highly interconnected and the average strength of connections among members (Scott, 1991; Burt, 2000).

Previous research has shown that the network density may affect group performance. Members in a dense network tend to develop strong norms and enforce sanctions against individuals who violate the agreed expectations and norms through close communication (Burt, 2000). Thus, the dense group should benefit from greater cooperation, greater information sharing, and less tendency to engage in social loafing, thereby leading to better group performance. (Sparrowe, Liden, & Kraimer, 2001; Reagans & Zuckerman, 2001)

However, contrary to previous studies that suggested simple positive linear relationships between network density and performance, we argue that excessive group density may negatively affect group effectiveness. Highly dense groups can constrain individual group members' contacts with diverse others outside and restrict access to more varied resources and innovative information available beyond the closed group (Portes & Sensenbrenner, 1993). Similarly, positive in-group biases and negative out-group biases possibly generated in the tightly knit group limit the absorption of innovative external information (cf. Coser, 1956; Pruitt & Rubin, 1986; Simmel, 1955; Tajfel & Turner, 1985). Thus, it is at moderate levels of group density that group effectiveness will be maximized (Oh, Labianca, & Chung, forthcoming).

Proposition 4: The close social distance among group members will have an inverted U-shaped relationship with group performance as a whole.

2.2 Structural Embeddedness

Whereas social distance focuses on how close group members are each other, another distinctive aspect of interactions among group members is how much individual members are involved each other. In Levine's framework (1991), self-involvement represents this aspect referring to the extent of the claims individuals make on the personalities of other members. According to social network theory, the extent of structural embeddedness provides a context for this involvement of individuals (Granovetter, 1985). Structural embeddedness refers to the extent of overlap of social relations among individuals (Feld, 1997). These common relationships among individuals are derived from those individuals' sharing activities (i.e., foci) with one another (Feld, 1981).

Although embeddedness has been measured in various ways (Uzzi, 1996), one promising indicator of embeddedness in a group can be the concept of multiplexity (Fischer, 1982).

If a group member at work is also a friend for inviting home for dinner, or going to a movie after work, these individuals are involved in multiple domains together, and connected in both emotional and instrumental exchanges through multiplex ties (Verbrugge, 1977).

In multiplex relationships among individuals, because one individual's behavior in one context affects that person's behavior in another context, multiplex relations tend to constrain the individual's behavior and foster consistency in behavior (Krohn, 1986). The mean level of multiplexity in social network within a social setting has been used to indicate the degree of social integration in the social setting such as a group (White, Boorman & Breiger, 1976). Researchers have also argued that embedded social structure encourages the emergence of norms and the establishment of trustworthiness (Granovetter, 1985; Coleman, 1988; Portes & Sensenbrenner, 1993). Thus, group members who have multiplex ties and thereby are embedded in the group are more likely to cooperate each other, conform to agreed norms, and abstain from social loafing. Based on these arguments, we expect that the group whose members are embedded each other through multiplex ties tends to achieve better group performance.

Proposition 5: The more embedded group members' interactions are, the better performance the group achieves as a whole.

2.3 Reciprocity

One of the distinctive features of interactions in a group is drawn from social exchange perspectives on interactions. According to exchange theorists, the nature of human interactions involves the exchange of valued items (e.g., material, informational, or symbolic items). Self-interested individuals join and remain in a group because the group provides rewards that are not available elsewhere (Markovsky & Lawler, 1994). The group then must develop systems of monitoring and sanctioning to maintain sufficient compliance to group norm and prevent members from free-riding (Hechter, 1987). Thus, human activity becomes directed toward the attainment of rewards and avoidance of punishments. Reciprocity represents this key nature of human exchange interactions. Thus, the extent to which the expectations among their members are reciprocal or asymmetrical can be one of critical features of interactions within a group (Levine, 1991).

Similarly, team-member exchange research (Seers, 1989; Seers, Petty, & Cashman, 1995) also focuses on the importance of reciprocal relationships among group members for group effectiveness. As an indicator of team-member exchange quality, researchers assess the reciprocity between a member and his or her team with respect to the member's contribution of ideas, feedback, and as-

sistance to other members and, in turn, the member's receipt of information, help, and recognition from other team members.

According to this research, individual members having reciprocal relationships and thereby experiencing a high level of team-member exchange quality tend to contribute more cooperative and collaborative efforts and receive more social rewards in return. This reciprocity nature of member interactions can be captured by the network concept of symmetry. If A asks B for advice, and B also asks A for advice, then the relationship between A and B is considered a symmetric tie (Brass, 1995). Hence, group members who have reciprocal and symmetric ties are more likely to cooperate each other, conform to agreed norms, and identify themselves as "team players", thereby resulting in better group performance.

Proposition 6: The more reciprocal, group members' interactions are, the better performance the group achieves as a whole.

2.4 Conflict

Along with cohesiveness, conflict has been the focus of most demographic diversity and process-oriented group research as the determinants of group effectiveness. Most previous research has classified the issue of conflict into emotional and task conflict, and focused on the different effects of these two types of conflict on performance (Jehn, 1995; Pelled, Eisenhardt, & Xin, 1999).

Contrary to this content-based distinction of conflict, from a social network perspective, we suggest a structural distinction of conflict including (1) the extent to which individuals have positive and negative ties with each other, and (2) the extent to which the social network of group is fragmented into different subgroups.

Whereas most network research has assumed the positive relationships such as friendships and acquaintanceship as the nature of ties, some network researchers argued that under certain circumstances, negative relationships provide better explanations of organizational behaviors and outcomes (Labianca & Brass, 2001). This negative relationship between individuals can be a structural indicator of conflict (Baldwin, Bedell, & Johnson, 1997). Individuals' negative relationships with outgroup members were reported to be related to perceptions of intergroup conflict (Labianca, Brass, & Gray, 1998). These negative relationships in the group might lead to less communication and adversarial behaviors with one another, thereby posing the negative impacts on group performance (Labianca & Brass, 2001). Empirical study actually showed that a group with more negative relationships among its members is less effective

than one with fewer negative relationships among its members. (Sparrowe, Liden, & Kraimer, 2001).

The level of fragmentation into subgroups can be another structural indicator of possible conflict within the group. Individuals in a group tend to form subgroups, and the group can be fragmented into different cliques. Given a limited number of strong ties a person can maintain, dense connections within a clique may decrease the probability of strong connections across cliques in a group (Brass, Butterfield, & Skaggs, 1998). Further, researchers focusing on in-group/out-group biases have argued that in-group cohesiveness may facilitate positive in-group biases and negative our-group biases (Coser, 1956). Thus, the number of cliques in the network may represent the extent to which the group members are fragmented and disconnected. Previous research on group diversity implied that more diverse groups tend to suffer from lack of internal communication because of fragmented interactions among group members, resulting in less effective performance (Lawrence, 1997).

Particularly, negative relationships among members in fragmented cliques tend to accelerate perceptions of inter-clique conflict (Labianca, Brass, & Gray, 1998), lack of communication among cliques, and thereby resulting in less group effectiveness. Hence, we propose that the group that suffers from this dual structural conflict simultaneously is more likely to have less performance.

Proposition 7: The more the cliques are connected through negative ties in the group, the worse performance the group achieves as a whole.

2.5 Centralized interaction

Whereas different relational characteristics of horizontal interactions among members are important as we have explored above, vertical relationships among group members are also influential for members' behaviors and thus for group effectiveness as a whole. In Levine's framework of interaction structure on which this paper draw, the degree and type of vertical gradation individual members exhibit each other was also suggested as one of important features of group interactions (Levine, 1991).

This vertical interaction pattern can be well represented by the network concept of centralization which refers to the extent to which exchange relations are concentrated among a few individuals. Previous research suggested that whereas centralized communication networks are more productive for simple and routine tasks, decentralized networks work better for complex and uncertain tasks (Shaw, 1964; Brass, 1985; Sparrowe, Liden, & Kraimer, 2001). However, most tasks in modern groups such as problem-

solving teams, task-force teams, and self-managing teams can be characterized as complex and challenging. These tasks tend to require creative decision making or problem solving, thus high interdependence and cooperation among group members are also required. Consistent with previous research (Sparrowe, Liden, & Kraimer, 2001), we expect that centralization of a group's network is negatively related to group effectiveness.

Proposition 8: The more centralized group members' interactions are, the less performance the group achieves as a whole.

III. THE RELATIONSHIPS WITH PEOPLE OUTSIDE THE GROUP

Although most group research has treated a group as a closed system excluded from external environment and thus focused on internal dynamics within a group, some researchers emphasized the importance of a group's external behaviors beyond the group's boundary (Ancona, 1990). Communication frequency with outside the group has been suggested as the important boundary spanning behaviors of the group to affect group performance (Tushman, 1977). On the other hand, other researchers have argued that different types of external communication strategies rather than the amount of communication determine group performance (Ancona & Caldwell, 1992).

Even in the group diversity research that mainly focuses on group composition, the importance of external contacts for performance was implied. Researchers emphasizing the positive effects of diversity have argued that increased group diversity adds diverse and innovative perspectives to group activities, resulting in creative and high quality decision making (Morrison, 1992; Watson et al., 1993). However, on this debate over the effects of group diversity on performance, one of the unexamined assumptions is whether diverse group members really bring valuable and diverse information and perspectives from outside for better performance such as creative problem-solving and decision making (Williams & O'Reilly, 1998: 117). We argue that we can explore the process of how group members bring diverse perspectives and information into the group by highlighting the members' linking relationships with outside people.

Additionally, regarding the research on intergroup relations, whereas researchers have devoted substantial attention to the impact of intergroup relations on individual attitudes, behavior, and perception, we relatively know little of how intergroup relations in an organization affect those groups' performance. Thus, previous research has called

for more future research on the direct performance implications of intergroup relations (Guzzo & Shea, 1992). We contend that a social network perspective can contribute to filling the gap and resolving the above debates. By focusing on the network patterns of the group's interactions with people outside the group, we can have a better understanding of how the group's external relationships influence that group's performance.

3.1 Linking Connections to Diverse Groups Outside

Regarding the group's external connections, group diversity researchers argued that members of more heterogeneous groups compared to those of more homogeneous groups may communicate more frequently with people in outside groups because they are less attached to their own groups (Tsui, Egan, & O'Reilly, 1992; Milliken & Martins, 1996). Members of heterogeneous groups may be better linked to external networks, allowing them greater access to diverse information outside and resulting in better group performance. However, these relationships in the group diversity research have been only conceptually discussed but rarely tested.

According to social network research, the network benefits such as early promotion or higher income are derived from the specific relational structure such as structural holes rather than the amount of relationships (Burt, 1992). A possible structural indicator of whether group members actually bring diverse information and resources from outside to the focal group can be that group's connections to more diverse groups outside. If the group has access to timely information, diverse ideas, and critical resources through connections to diverse groups outside, that group is more likely to come up with creative decision making (Milliken & Martins, 1996) and to gain leverage over those outside groups through a brokerage position, resulting in better performance. Thus, we expect that the group whose members are connected to more diverse outside groups tends to be more effective.

Proposition 9: The more diverse, outside groups to which the group members are connected, the better performance the group achieve as a whole.

3.2 Linking Connections to Central People Outside

Researchers emphasizing the importance of external perspectives on group suggested that the several distinctive types of external interaction in which the group engages influence that group's performance. These types of external interactions of the group include absorbing outside pressure and protecting the group (ambassador activity),

coordinating and negotiating with outsiders (task coordinator activity), and scanning for ideas and information (scout activity) (Ancona & Caldwell, 1992; Ancona, 1993).

According to a social network perspective, central individuals in the network of an organization tend to be more prominent, have more power and control, and have better access to critical information and resources (Brass, 1992; Brass & Burkhardt, 1992). Further, in interpersonal network, individuals who are connected to the central person can also benefit from that central person's network position (Bonacich, 1987; Kilduff & Krackhardt, 1994). If the members of the group have relationships with the central individuals in an organization, that group may benefit from those central individuals' advantageous network positions in an organization. Then, that group's external activities such as ambassador, task coordinator, and scout activity will be most effective. Based on these arguments, we predict that the group whose members are connected to more central individuals in an organization outside the group tends to have better performance.

Proposition 10: The more central, the outside-people to whom the group members are connected, the better performance the group achieves as a whole.

IV. CONCLUSION AND IMPLICATIONS

In this paper, we propose that a social network perspective can shed lights on the unanswered questions and unresolved debates on group effectiveness and thus capture the dynamics of group advantages that are inherently derived from the relational nature of the group. Particularly, we attempt to combine various determinants of group performance that have been studied in the separate research areas by focusing on the three relationships around the group.

First, a social network perspective can contribute to the relationship-oriented leadership research by showing how the specific network relationships between leader and followers can lead to better group performance. Previous research on LMX has just focused on the high and low LMX relationships between leader and followers. On the other hand, with the considerations of the whole network within the group, we have suggested that the leader's relationships with informal leaders, the balanced relationships with cliques within the group, and the leader's accurate perception of actual network structure of the group may affect that group's performance.

Second, the focus on social relationships can be helpful for demographic diversity researchers those who recently paid attention to the importance of process constructs for

the relationship between demographic input factors and performance. This paper addresses the importance of examining the actual network characteristics of interaction among group members rather than using members' demographic variables as proxy for interactions. Further, our propositions are intended to suggest more specific dimensions of group members' interaction process such as social distance, embeddedness, reciprocity, and vertical distance beyond the existing process constructs such as cohesiveness and communication. Regarding the concept of conflict suggested as the important mediating factor in the recent diversity research (Williams & O'Reilly, 1998; Pelled, Eisenhardt, & Xin, 1999;), we also propose that negative relationship and the level of fragmentation represent the structural distinction of conflict within the group beyond the existing content-based distinction of emotional and task conflicts.

Third, the exploration of social network structure with outside the group can add values to the research on the group's outward activities. We have suggested that the group's connections to diverse groups and central individuals in an organization increase the group's ability to scan for diverse ideas and critical information outside, bring them to the group, and negotiate with outside groups, resulting in better performance

Yet, our arguments have been suggested as a complementary to existing research, not as an alternative. This paper can be a first step for a social network perspective on group effectiveness. Thus we leave more room open for further research. Although we have proposed the basic independent effects of three different relational dimensions, a next logical step for conducting research is to integrate these three relational dimensions for exploring the relationships among three dimensions within and outside a group and the joint effects of three dimensions on group effectiveness. Some previous research has already implied this possibility.

For combining leader-member relationships and the group's external relationships, Sparrowe and Liden (1997) argued that for the leader and the member who have high LMX relations, the member benefits from the leader's social network in an organization because members can access individuals beyond the group through the leader's cohesive network. Similarly, well-connected social relationships and resources derived from the member's network in the organization are helpful for the leader's strategic benefits. Based on these arguments, we may expect that if the leader develops high LMX with the members who are central in the network beyond the group, that group will have better performance using those members' advantageous positions outside.

For combining leader-member relationships

and group member relationships, future research may explore the question of whether close, embedded, reciprocal, and decentralized network structures among group members substitute for the effect of leader-member relationship on group performance. Further, the possible question will be how leader-member relationships affect the formation of specific network structures among group members: whether the leader's high LMX ties with the informal leader will facilitate more vertical centralization among members, or vice versa.

For the possible research on integrating group member relationships and the group's external relationships, Burt's contingency approach to social capital implied future research. According to Burt (2000), performance of the group may be the highest when the internal relationships among group members are cohesive and the external relationships of group members beyond the group are connected to diverse groups that provide non-redundant perspectives and resources. On the contrary, a recent research found that moderate-to-high level of internal cohesiveness and diverse external relations can bring greater group performance (Oh, Chung, & Labianca, 2004). A future research opportunity is to explore further what specific network characteristics within and outside the group jointly influence group performance. For example, researchers can examine how the network characteristics within the group affect that group's external network structures: how vertically centralized networks among members will determine that group's ability to link to outside, and vice versa.

Future research can also explore the relationships between individuals' attributes and network interactions for group effectiveness. Demography diversity research has focused on the importance of individual attributes such as demographic variables ignoring actual interactions around a group. On the other hand, social network research has focused on the structure of actual interactions ignoring the attributes of the "nodes" in the network (e.g., individuals or groups). By considering both individuals' attributes and network characteristics among those individuals, we can have a more complete understanding of this puzzled issue of group effectiveness (cf. Reagans & Zuckerman, 2001). For example, in a group with several fragmented cliques, with the focus on network structure, we can only figure out that the group is divided into a certain number of cliques. However, if we identify the demographic attributes of individuals in these cliques, we can understand the nature of fragmentation: whether the group is fragmented by race, gender, or tenure. This understanding of the nature will be helpful for the leader to coordinate these fragmented cliques for achieving better overall performance.

In the future empirical studies, researcher need to consider the possible moderating factors to affect the relationships between network characteristics and performance such as task characteristics and technology (Gladstein, 1984; Goodman, 1987). We may explore how the introduction of specific type of technology such as information technology will influence the interaction patterns within and outside the group, thereby influencing group performance.

In the current paper, we argue that the focal group's certain internal network characteristics and its ties with people outside the focal group will lead to greater group effectiveness. In the future empirical studies, researchers can measure the group effectiveness using upper-level managers' evaluation of each group (cf. Anderson, 1983) on a broad set of criteria such as quality of work, quantity of work (productivity), initiative of the group, cooperation with non-group members, completing work on time, responding quickly to problems, and overall performance of the group typically used in the group effectiveness literature (cf. Sparrowe et al., 2001).

Furthermore, future researchers may explore the differentiating effects of network characteristics using multi-level definitions of group effectiveness. For example, at the group level, researchers can measure the group's ability to reach agreed-upon goals, its ability to incorporate tacit knowledge, and its ability to come together in the future to do more work. At the individual level, group effectiveness can also be measured as the extent to which membership in the group meets individual group members' goals and needs.

Limited space does not allow us to get into measurement issues concerning network characteristics within and outside the group. However, because we suggested specific possible network measure for each conceptual proposition, we believe that researchers may have some ideas concerning measurement issues for their future empirical studies. For example, whereas structural embeddedness of a group can be measured by the mean value of multiplex ties among members of the group, linking connections to diverse group outside of a group can be measured by examining the distribution of the group members' total ties to people in other groups in the same organization using Blau's (1977) heterogeneity index.

The recent trend in real business organization can be summarized as a shift to more relation-oriented organization. The recently popular topics in the organization studies representing this recent trend such as network organization, strategic alliance, trust, psychological contract, self-managing team, and relation-oriented leadership, cooperation, and empowerment require more attention to network approach. Consistent with this

trend, propositions in this paper focusing on relational characteristics may provide useful insights for the important but controversial topic of group effectiveness.

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A SOCIAL NETWORK PERSPECTIVE ON WORK GROUP PERFORMANCE

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Abstract

As business environment is rapidly changing, most organizations use groups as their fundamental unit of organizational structure. The question of what factors affect work group performance has become one of the important topics in the organization studies. However, in spite of the relational nature of group phenomenon, previous research on group effectiveness has revealed a lack of network perspectives, while producing mixed empirical findings.

We propose that interactions within and outside a group need to be the pivotal focus of group effectiveness research rather than being considered one of the constituting factors of the input-process-output model in the previous group research. Social network perspective focusing on social relationships that link the individual and the social structure can be a fresh theoretical and methodological tool for group effectiveness research. Thus, in this paper, we explore the effects of relational characteristics of internal and external group activities on group effectiveness using a social network perspective. Specifically, we generate propositions concerning three relationships within and outside a group: (1) the vertical relationships between the leader and the members within a group, (2) the horizontal relationships among the members within a group, (3) the group's external relationships with people outside a group.

Regarding intra-group vertical relationships, we suggest that the leader's LMX ties with the informal leader, the leader's LMX ties with diverse cliques within a group, and the leader's accuracy of the group social network perception influence work group effectiveness. We propose that the more central the followers with whom the leader has high LMX in the

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group, the more the leader connects to diverse cliques through high LMX with the central person in each clique, and the more accurately the leader perceives the social networks in the group, the better performance the group achieves as a whole. For the horizontal relationships among members, we consider social distance (density), structural embeddedness (multiplexity), reciprocity (symmetry), conflict (negative ties and fragmentation), and centralized interaction (centralization). We suggest that the close social distance among group members will have an inverted U-shaped relationship with group performance. We also propose that the more embedded and the more reciprocal group members' interactions are, the better performance the group achieves as a whole. On the other hand, we expect the worse group performance when the more cliques are connected through negative ties, and group members' interactions are more centralized. Finally, we turn to the relationships with people outside a group. Linking connections to diverse groups and to central persons outside the group can result in better group performance.

Furthermore, we suggest some directions for future research including the joint effect of network characteristics within and outside the group, the relationships between individuals' attributes and network interactions, the possible moderating factors to affect the relationships between network characteristics and work group performance. We also discuss the possible measurement issues concerning network characteristics and work group performance for the future empirical test of our propositions.

In conclusion, we propose that a social network perspective can shed lights on the unanswered questions and unresolved debates on group effectiveness by capturing the dynamics of group advantages inherently derived from the relational nature of the group. Particularly, we attempt to combine various determinants of group performance that have been studied in the separate research areas by focusing on the three relationships around the group. We believe that our arguments can be a complementary theoretical resource to existing group research.

Key words: Work Groups, Social networks, Leader-member exchange, Group Performance