Guanxi networks and members' effectiveness in Chinese work teams: Mediating effects of trust networks

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The present study examined 33 teams with a total of 206 team members (excluding team leaders) to explore the effects of intrateam *guanxi* and trust networks on individual effectiveness in Taiwan. *Guanxi* networks included non-job, departmental and past team networks, while trust networks included affective and cognitive trust networks. Results showed that: (i) *guanxi* networks could better explain members' effectiveness compared with relational demography, and different *guanxi* networks had different effects; (ii) the more central an individual's position was in the cognitive trust network, the higher the individual's effectiveness; (iii) the past team *guanxi* network of a team member displayed a positive effect on the centrality of cognitive trust network, while non-job and departmental *guanxi* networks showed negative effects; and (iv) the effects of members' *guanxi* networks on individual effectiveness were mediated by the centrality of trust networks.

Key words: centrality of trust networks, *guanxi* networks, relational demography.

Introduction

Teamwork is widely regarded as an effective management technique and adopted by many organizations (Wellins *et al.*, 1994). Consequently, researchers have explored factors affecting team performance and teammates' effectiveness from various perspectives, such as team design and team processes (Stewart & Barrick, 2000), and team leadership (Huang *et al.*, 2003). Recently, studies have investigated the relationships between team composition and team effectiveness or members' effectiveness. The effects of relational demography (e.g. gender, age, and education) on intrateam interaction and team effectiveness are well documented in the West (Riordan, 2000). However, it is also well-documented that *guanxi*, an emic concept, plays a more important role in interpersonal interactions than the concept of relational demography in Chinese societies (Xin & Pearce, 1996; Chou, 2002).

Unfortunately, most empirical studies about Chinese *guanxi* are limited because they were conducted under experimental conditions or with student participants, casting doubt on their external validity (Huang, 2002). Besides, previous research on *guanxi* in an organizational context mainly focuses on the effect of the relationship between the leader and the subordinate on the subordinate's effectiveness (Farh *et al.*, 1998), and little effort has looked at how *guanxi* affects group dynamics. We believe that in Chinese

work teams, *guanxi* should play a critical role in influencing team interaction processes and members' effectiveness. Therefore, this study explored the following questions: Does *guanxi* have a unique effect upon members' effectiveness? If so, is this effect stronger than the effect of similarity in demographic background? Do different types of *guanxi* lead to different effects?

As interactions among different persons play an important role in group dynamics, we examined the individual in the context of a group, taking the linkage between an individual and other teammates into consideration (Bond & Kenny, 2002). From a network perspective, this study explored the relationship between intrateam *guanxi* networks and team members' effectiveness, and examined if different types of *guanxi* networks showed differential effects on effectiveness.

Finally, *guanxi* ties or networks of Chinese people are based on the foundation of mutual trust, which is used for making decisions about future interactions (Kasperson *et al.*, 1992; Peng, 2001). Thus, it is possible that the trust networks formed by individuals with other teammates are not only the critical factor in affecting members' effectiveness, but also the key in mediating the effect of *guanxi* networks. We attempted to clarify the relationships among *guanxi* networks, interpersonal trust, and members' effectiveness. In summary, we have four purposes for the present study: (i) to explore the effect of Chinese intrateam *guanxi* networks on members' effectiveness; (ii) to investigate the relationship between trust networks and members' effectiveness; (iii) to clarify the effect of intrateam *guanxi* networks on trust networks; and (iv) to examine the mediating effects of intrateam trust networks on *guanxi* networks and team members' effectiveness.

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Theories and hypotheses

Work teams

Katzenbach and Smith (1993) define a team as a group of members who process complementary professional skills and knowledge, and depend on each other for work. On the basis of mutual trust, all members collaborate and communicate with each other to achieve common goals. The main differences between traditional departments and work teams include the number of members, the flexibility of the group, and the interdependence of members. There are normally only 4–15 members in a team while a department may consist of thousands of members. A team can be formed immediately based on a particular task or purpose, and will be disbanded on the accomplishment of the goals. The most significant difference in the definition of a team and a department is that members in a team are ‘depending on each other and being complementary to each other’, while members in a department lack this nature (Levi, 2001). Compared with members of a department, team members of a work team have individual, but complementary, professional skills, perform distinct tasks, and regard the achievement of the team’s goal as the individual’s highest goal. Consequently, there is more cooperation, including intensive communication, coordination, learning, and knowledge sharing, among team members (Fisher *et al.*, 1997).

A team is a system with a high level of interpersonal interactions, and members within the system may have different levels of interaction with other members. In order to fully understand an individual’s effectiveness in a team, we need to focus on the meso-level of network factors formed by teammates, in addition to individual attributes (individual level) and team attributes (group level) (Tichy, 1981; Chou, 2002). A team member’s position within this interactional network (taking the individual as the centre and the team as the boundary of the personal network) will affect the team member’s effectiveness within the team (Sparrowe *et al.*, 2001).

Relational demography, guanxi networks, and members’ effectiveness

Relational demography. It is a tradition of industrial and organizational psychology to analyze the effects of personal characteristics on organizational behaviors and employee attitudes. The frequently used characteristics include age, seniority, education, race, and gender (Tsui *et al.*, 1995). More recently, researchers have used the concept of relational demography, the similarity of demographic background, to investigate the individual or team effectiveness with different levels of analysis, including individual, team, and organization.

In the context of a team, the concept of relational demography at the individual level refers to the sum of the relative discrepancy between an individual and all other members for a given attribute (e.g. gender, age, seniority; Jackson *et al.*, 1995). After reviewing about 80 studies on relational demography in organizations, Williams and O’Reilly (1998) conclude that the greater the dissimilarity of relational demography among teammates, the lower the satisfaction and organization commitment, the worse the quality of interpersonal communication, the more likely for interpersonal conflict to occur, and the lower the individual’s job performance.

The effect of similarity (or homogeneity/heterogeneity) upon the interaction processes among individuals can be explained by using self-categorization theory, social identity theory, and similarity–attraction paradigm (Tsui *et al.*, 1992; Williams & O’Reilly, 1998). Based on the logic of self-categorization theory, relational demography provides an individual with information for self-definition. An individual can use these external and explicit characteristics to carry out social comparisons, categorize oneself and others into different categories of social groups, and define self and others (Tajfel & Turner, 1986). If an individual uses these relational demography characteristics to categorize people into different social groups, he or she will also be influenced by corresponding stereotypes, attitudes, and behaviors salient for these social groups based on the categorization. Furthermore, according to social identity theory, self-identity is partly formed by identifying with social groups that are important to oneself (Brewer & Miller, 1984). Based on relational demography, people will join different social categories or groups, and form a psychological attachment to the group they identify with.

Based on the similarity–attraction paradigm, similarity in demographic variables, attitude, and values increases the attraction between people. Similarity is an important source of mutual attraction, and high interpersonal attraction facilitates more frequent communication and higher social integration, as well as a desire for maintaining mutual social ties. Thus, when a team member has higher similarity in background with other teammates, there will be higher quality of interaction, stronger commitment and higher effectiveness (Tsui *et al.*, 1992).

Guanxi. A Chinese’s self-concept is primarily based on his or her relationship with others, or the so-called ‘self in relation to other’ (Yang, 2001), which is different from the Western emphasis on independent self-concept. Therefore, the concept of relational demography should be less important than *guanxi* in a work setting. In fact, the most important source of social identity for Chinese is family and relationships with individuals who share common life experiences (Lee & Hsu, 1995).

After a review of the literature, Tsui and Farh (1997) pointed out that 'guanxi' describes at least six types of interpersonal relationship. However, from the viewpoint of *chaxu geju* (a Chinese form of particularism), *guanxi* means an interpersonal relationship formed by a specific norm rather than all general relationships among people. Consequently, some researchers defined *guanxi* as a 'particularistic tie' or 'relationship bases' (Jacobs, 1979), 'interpersonal relation based on special rules' (King, 1992), 'direct and special tie between individuals' (Farh *et al.*, 1998), or 'informal, private, and specific relation due to mutual obligation' (Peng, 2001). All the analyses above indicate that the origin of 'guanxi' in Chinese societies mainly relates to family background and social life experiences that are shared with others. Only a small number of *guanxi* relationships are inherent, and most relationship bases are acquired, or originate from shared attributes. The general relationship bases include: kinship (blood relationships), kindred, geographical relationships, school relationships (classmates, teacher and students), job relationships (colleague, supervisor, and subordinate), sworn brothers, fellow soldiers, etc. (Jacobs, 1979).

Relational demography and guanxi. If we use relationship bases to define *guanxi*, *guanxi* and relational demography may seem very similar, but actually they differ greatly in terms of content (Farh *et al.*, 1998; Chou, 2002). Both *guanxi* and relational demography describe common background, mutual experiences, and social ties. However, relational demography is based on personal characteristics such as age, gender, education, belief, seniority, position, and specialty. In Chinese society, *guanxi* is generally based on past interpersonal interactions and shared life experiences such as family, neighbors, classmates, and colleagues. Accordingly, the attributes involved in relational demography is specific and unambiguous, such as gender, whereas relation bases of *guanxi* can be flexible and include different aspects, such as all types of blood relationships, geographical relationships, job relationships, and school relationships. Finally, the concept of relational demography does not include elements of interpersonal interaction, whereas *guanxi* relationships are often regarded as the natural results of past interpersonal interactions.

Team members' effectiveness. In studies exploring the effectiveness of a team member, job performance, satisfaction with cooperation, and team commitment are commonly used measurement indices (Lemieux-Charles *et al.*, 2003). Job performance refers to the degree and speed with which team goals are achieved; satisfaction with cooperation refers to team members' positive feelings about the cooperation process and positive expectations for future cooperation; and team commitment refers to the degree of acceptance of team goals, values, and identification

(Schipper *et al.*, 2003). Job performance is related to productivity, while satisfaction with cooperation is related to a team's cohesiveness.

In studying the effects of members' backgrounds on team effectiveness in Chinese business teams, we have to be cautious about importing Western concepts into a Chinese context (Morris *et al.*, 1999). Given that *guanxi* is a core concept in Chinese societies, it should have a unique effect on team effectiveness through team composition. Compared with the Western concept of relational demography, a member's 'guanxi' networks, which refers to his/her relationship network with all the teammates, should also have a stronger effect on members' effectiveness. The first hypothesis is as follows:

H₁: In a Chinese team, the effects of intrateam *guanxi* networks are stronger than those of relational demography on a team member's effectiveness.

Intrateam guanxi networks and team member's effectiveness. *Guanxi* itself implies the acquisition of resources and information during interpersonal interaction and, as such, it should have positive effects on promotion, reward allocation, special treatment, authorization, and so on (Cheng, 1995; Chou, 2002). These effects have been verified using scenario research designs (Hsu *et al.*, 2002; Hu *et al.*, 2004) but, in field studies, the results obtained are inconsistent. In studies about the effect of multirelational ties on outcome variables, such as vertical relationship quality, interpersonal emotion, organizational commitment of subordinates, and subordinate effectiveness, only a few relationships showed effects and the types of relationships showing effects were inconsistent (Farh *et al.*, 1998; Xin *et al.*, 1999). In addition, relational ties sometimes have a negative effect on interpersonal affection. A review of these studies is given in Table 1.

To explore the reasons for the inconsistency, we need to explore the differences between work and non-work contexts. *Guanxi* within an organization is not only influenced by culture, but also by institutional factors (Huang, 2002). Specifically, non-job relationships, such as family, friend, and classmate, facilitate both parties to define a set of interactional roles and ways of interaction based on mutual background and experiences (Yang, 1993). However, an institution may prescribe formal work relationships that constrain the interactional roles and behavioral norms defined by *guanxi*, and an individual's job performance may be affected due to the conflict between these two sets of roles. We argue that the classification of relation bases in the workplace as family and non-family (Wei, 2001) or as family/acquaintance/stranger (Yang, 1993; Tsui *et al.*, 2000), and the categorization of all relationships into nine major types (Farh *et al.*, 1998) are unable to capture the reality of relation bases in modern organizational settings. In the present study, the relation bases among team

Table 1 Research results for relational demography and relation bases in Chinese organizations

Researchers	Sample	<i>Guanxi</i>	Relational demography	Outcomes
Farh <i>et al.</i> (1998)	560 vertical dyads; insurance agents and their supervisors (Taiwan)	Relatives Former neighbours	Gender (–) Education (–)	Trust in the supervisor
	205 horizontal dyads; executives and their connections (mainland China)	Relatives Same natal origin Former classmates		Trust in the connection
Xin <i>et al.</i> (1999)	175 vertical dyads; managers and their subordinates (Taiwan)	Same natal origin Former colleagues	Tenure	High-quality relationship between supervisor and subordinate Subordinate commitment Subordinate performance
	168 vertical dyads; senior managers and their subordinates (mainland China)	Former classmates Same natal origin Same party affiliation	Gender Tenure	High-quality relationship between supervisor and subordinate High-quality relationship between supervisor and subordinate Subordinate commitment Subordinate performance
Chen (2000)	190 vertical dyads; employees and their supervisors in organization (Taiwan)	Former neighbours	Education	Intimacy with supervisor Affective trust in supervisor
	304 horizontal dyads; employees and their coworkers (Taiwan)	Relatives Same party affiliation Former supervisor (–)	Gender Education	Friendship Intimacy with coworkers Affective trust in coworkers
	175 horizontal dyads; employees and their business connections of external organizations (Taiwan)	Relatives Former supervisor (–)		Friendship Intimacy with connections
	174 dyads; employees and their non-business connections of external organizations (Taiwan)	Relatives Former classmate Former school fellow (–) Former supervisor (–)	Age	Friendship Intimacy with connection Affective and cognitive trust in connections

(–), negative effect of a base for *guanxi* or a difference in relational demography on outcome variable.

members are classified as team relationship (with past experiences of teamwork), departmental relationship (past or present relationships between supervisor and subordinate, or colleagues working together), and non-job relationships (family, neighbors, school fellow, fellow soldier, people with same interest, people with the same political affiliation), to capture the reality of Chinese organizational life. In addition, the effect of *guanxi* also depends on whether the roles and behavioral norms associated with *guanxi* are compatible with a teammate's job role or not. A negative effect may emerge on the team member's performance when the role formed by relation bases in conflicts with the member's job role.

What are the effects of *guanxi* networks of team, department, and non-job ties on members' effectiveness in a team? We answer this question with reference to Chinese *guanxi* studies, role-conflict theory, and transfer of learning. First, from previous studies on 'face', *renqin* (Hwang,

1988), and *guanxi* orientation (Yang, 1993), it was found that non-job *guanxi* networks have both positive and negative effects on team members' effectiveness. When team members have more non-job relation bases with team members, they may have more social capital and social support, which are useful for task completion and enhancement of emotional ties. In addition, a non-job relationship can reduce interpersonal or job-related conflict and improve harmony among team members. However, if team members have many non-job relation bases, they may consume too much time and energy on non-job issue, thus hindering job progress (Chou, 2002).

Secondly, based on Role Theory (Kahn *et al.*, 1964), an individual's most fundamental role behavior in the context of a team is the completion of the team tasks and goals. If an individual interacts with other teammates based on a non-job relationship, which is formed by past experiences and background, it may result in role-overload or role

conflict due to different role expectations, which may have a negative effect on an individual's effectiveness (Kelly & Voydanoff, 1985). Taking a family relationship as an example, it was found that family members in a family business have higher behavior-based work-family conflict, compared to non-family members and general staff. This result is caused by the incompatibility between role behaviors associated with work and family, which gives rise to negative effects on family cohesiveness, job satisfaction, and organizational commitment (Beehr *et al.*, 1997). Thus, this analysis suggests a negative correlation between non-job *guanxi* networks and personal effectiveness.

Regarding previous relationships created by the experience of working together in the same department or team, the interaction rule is similar to Huang's (2002) concept of 'guanxi rationality.' Here, the effects of profession and *guanxi* are highly influenced by past job interaction and emotional experience. What is the actual effect of past job interaction on current team operation? An answer to this question can be based on the transfer principle of learning. Simply put, the transfer principle states that previously learned skills and knowledge influence the learning of subsequent skills and knowledge. The more similar the structures of previous and subsequent skills or knowledge, the more likely it will generate a positive transfer effect, and vice versa (Finkelstein & Halebian, 2002).

As mentioned earlier, the nature of a department or formal group is different from a work team. A department stresses formal structures. Within a department, an individual possesses a clear role prescription as well as clear and distinct personal goals and responsibilities; department members' specialties are more homogeneous; jobs are performed more independently; and limited resources may lead to competition and ostracism. There is also an assigned departmental supervisor vested with formal power. In contrast, a team emphasizes common goals and shared responsibilities. A teammate's specialties and tasks are independent and complementary, and the sharing of information and resources and collaboration are highlighted. As for the team leader, he/she may be elected by other team members, or chosen as a project manager, but without a high degree of power. Therefore, because of the differences between a department and a team, members' past working experience in the same department may be harmful to team cooperation. That is, members' departmental *guanxi* networks may have a negative transfer effect on personal effectiveness in a team: the stronger the departmental *guanxi* network, the lower the personal effectiveness. In contrast, past team experience should result in subsequent team cooperation, so that an individual's past team *guanxi* network with other teammates should have a positive transfer effect, which will, in turn, exert a positive effect on effectiveness. The second hypothesis of the present study is stated as follows:

H_{2a}: Non-job *guanxi* network has negative effects on team members' effectiveness (satisfaction with cooperation, team commitment and job performance).

H_{2b}: Departmental *guanxi* network has negative effects on team members' effectiveness.

H_{2c}: Team *guanxi* network has positive effects on team members' effectiveness.

Intrateam trust networks and teammates' effectiveness

Interpersonal trust. Trust has been studied in many disciplines. For example, sociologists emphasize that trust is an asset embedded in social relations for maintaining social cooperation (Coleman, 1990). Psychologists underscore the psychological processes and behavior of trust (Peng, 2001). Two important features of trust can be inferred from previous work on trust. The first feature concerns uncertainty and risk. Only under circumstances of uncertainty and the risk of loss will trust exist. That is, trust itself implies the willingness to take risk. The second feature is that trust concerns a subject. One who trusts others, despite the risk of being hurt, expects the good intention and behavior of those being trusted (Hsiung, 2003). Hence, we define trust as the positive expectation of other people's intention and behavior, and the willingness to risk being hurt by them.

Most researchers deem trust as a multidimensional concept. Lewis and Weigert (1985) classified 'cognitive trust' as trust that is based on the rational inspection of trustworthiness, and 'emotional trust' as based on a strong affective association. McAllister (1995) categorized interpersonal trust as cognition-based trust and affective-based trust; the former is based on the reliability, integrity, and capability of the one being trusted, while the latter is based on the affection due to the care and concern for the one being trusted. Yang (1999) considered that Chinese culture separates trust into trust for one's 'capability' and trust for one's 'moral qualities.' We adopt McAllister's (1995) concept of cognition-based and affective-based trusts in our study.

The trust network. The concept of trust networks first appeared in the research of organizational informal power by social network scholars. Krackhardt and Hanson (1993) proposed that, based on the interpersonal interaction among all employees, there are three informal architectures, namely, an advice network, a communications network, and a trust network, in addition to the formal task architecture within organizations. A trust network implies that all the members are willing to share secrets with each other and to provide assistance to one another in crisis. The trust network can be regarded as one of the most important concepts of social capital (Nahapiet & Ghoshal, 1998).

Intrateam trust networks. Team operation stresses cooperation and communication among team members, and trust is the foundation of cooperation and communication and a critical factor for team success (Kasperson *et al.*, 1992). The present study takes a social network perspective to explore an individual's trust within the team. Intrateam trust networks consist of at least three elements: (i) actors – the individual and his/her teammates who interact with each other; (ii) relationship – the actor interacts with other actors due to some relation, and this interaction will further influence their behavior in the interaction. This is termed a trust relationship between teammates in the present study; (iii) the direction and strength of a relationship (Chou, 2002). Via the combination of these three elements, the trust among all team members can be described in a net-like structure, and the individual's position in the network can reflect the totality of all the interactions between the individual and his/her teammates. For this, the degree of centrality is the most used network position index (Sparrowe *et al.*, 2001). The degree of centrality denotes the degree of being the core in the network – the stronger an individual's linkage with others in the network, the more central is his or her position. Conversely, the weaker the linkage, the more marginal is the individual's position.

Centrality of trust networks and team member's effectiveness. Only a few studies examined the relationship between the centrality of trust networks and team members' effectiveness, but we can draw some insight from studies on centrality of social networks and team members' effectiveness. Almost all previous studies converge on the positive relationship between centrality and effectiveness (Brass, 1992; Sparrowe *et al.*, 2001). Basically, effectiveness depends on one's access to resources instead of the possession of resources, such as knowledge, opinion, and information of task, as well as non-job-related resources such as social identity and emotional support, and access to resources is related to centrality (Burt, 1992; Ibarra, 1995; Podolny & Baron, 1997). There are three advantages associated with centrality: (i) being able to acquire unique resources; (ii) having stronger control or negotiation power over resources; and (iii) better opportunities for job promotion (Seibert *et al.*, 2001).

Based on the norm of reciprocity, an individual having a higher centrality in the trust networks within team means the more reliable behaviours she/he demonstrates. Then other team mates have more affective and cognitive trust in her/him and display friendly reactions and positive emotions towards her/him. The individual will in turn expect others to be willing to provide additional effort and support to keep a good relationship with him/her, leading to a positive cycle. The individual is more willing to cooperate with other teammates, and show higher team commitment, and she/he will get more helpful feedback and information from

teammates, leading to better job performance. Therefore, when a member is located at the centre of the cognitive and affective trust network, she/he will have better effectiveness. The third hypothesis is as follows:

H_{3a}: The team member's degree of centrality in the cognitive trust network has a positive effect on personal effectiveness (job satisfaction, team commitment, and job performance).

H_{3b}: The team member's degree of centrality in the affective trust network has a positive effect on personal effectiveness.

Intrateam guanxi networks, centrality of the trust network, and teammate's effectiveness

Guanxi networks and centrality of the trust network. In the West, Zucker (1986) categorized trust based on the mechanism of trust generation: characteristic trust (generated by social similarity), process trust (generated by interaction experience and reputation), and institutional trust (generated by legal institution). However, in Chinese societies, *guanxi* is deemed as the dominant mechanism for establishing trust (Whitley, 1991; Peng, 2001). For instance, the relationship base is a critical factor affecting supervisors' trust towards a subordinate (Hsu *et al.*, 2002).

How exactly do the intrateam *guanxi* networks affect a team members degree of centrality in a team's trust networks? Peng (2001) found that the same *guanxi* has different degrees of trust and influence in different events. To answer this question, we have to explore the various influences of *guanxi* based on different trust networks. Regarding centrality in an affective network, the foundation of the network is based on the feeling of care and concern towards the one to be trusted. Previous research on Chinese *guanxi* found that, compared with affective relationships in the West, which emphasize intimacy and identification of values, Chinese affective relationships are more complicated, as obligation and rites are involved (Yang & Peng, 2001; Chou, 2002). In addition, regardless of whether or not there are emotional ties with mutual understanding or mutual identification, norms and obligations may require people to give help, care, and goodwill to others in various degrees as part of the interaction process (Chang, 2001). Thus, previous relationship bases will have positive effects on affective trustworthiness of a trustee. We therefore suggest that the stronger the team member's intrateam *guanxi* networks (past *guanxi* of non-job, department, and team), the more affective trust-inducing behaviors are demonstrated by the team member, and the more trustworthiness the team member can gain from other team members, and thus the higher the degree of centrality within the trust network. The fourth hypothesis is as follows:

H_{4a}: Team members' non-job *guanxi* network has positive effects on centrality within the affective trust network.

H_{4b}: Team members' departmental *guanxi* network has positive effects on centrality within the affective trust network.

H_{4c}: Team members' team *guanxi* network has positive effects on centrality within the affective trust network.

Regarding centrality within a cognitive trust network, which is a trust based on a rational foundation without the involvement of affection (McAllister, 1995), the effect of *guanxi* on cognitive trust mainly comes from the applicability of experience gained in previous interactions to the team situations. According to role theory and the principles of transfer of learning, non-job *guanxi* and departmental *guanxi* have negative transfer effects on cognitive trust. In contrast, past team *guanxi* has a positive transfer effect on cognitive trust. Therefore, the stronger the team member's non-job *guanxi* network and past departmental *guanxi* network, the lower is the centrality of the cognitive trust network; the stronger the teammate's past team *guanxi* network, the higher is the centrality of the team member's cognitive trust network. The fifth hypothesis is as follows:

H_{5a}: Team members' non-job *guanxi* network has negative effects on the centrality of the cognitive trust network.

H_{5b}: Team members' departmental *guanxi* network has negative effects on the centrality of the cognitive trust network.

H_{5c}: Team members' team *guanxi* network has positive effects on the centrality of the cognitive trust network.

Mediating effects of centrality of the trust network on the relationship between guanxi networks and teammate's effectiveness. A team member's intrateam *guanxi* networks reflect previously established *guanxi*, and the effect of relationship bases on the member's effectiveness may be mediated by his/her teammates' trust in him/her. Although there is little research investigating the mediating effect of trust on *guanxi* and effectiveness, some insight can be gained from studies of networks in Chinese business organizations. Cheng and Liu (1995) proposed a 'penetration model' to explain the establishment of a transactional relationship among Chinese organizations. They speculated that interpersonal trust can mediate the effect of *guanxi* on the establishment of a long-term relationship, and this idea was supported empirically (Cheng *et al.*, 1997).

We therefore believe that a *guanxi*, such as a common origin, is a surface-level tie. In contrast, affective and cognitive trust reflects a deeper relationship quality, which includes mutual instrumental or affection exchange. Within a Chinese work team, the effect of personal intrateam *guanxi* networks on personal effectiveness may be mediated by cognitive trust and affective trust. Our sixth hypothesis is as follows:

H₆: Team members' intrateam *guanxi* networks will be mediated by centrality within the trust network to affect personal effectiveness (job satisfaction, team commitment, and job performance).

The framework of the present study is shown in Figure 1.

Figure 1 The research framework of the present study.

Research method

Research sample

In order to explore the effect of the relationship bases on personal effectiveness, and whether or not the effect was mediated by the degree of centrality within the trust network, we selected work teams from different industries: electronic manufacturing industry (6)¹, IT and network (6), food processing industry (5), automobile industry (3), sales and medical service (10), and the public service (3). The teams included 14 general management teams, eight total quality management (TQM) teams, and 11 R&D teams. Team size was also taken into consideration to reduce the variation in interaction within a team, and only teams with fewer than 15 members were included (Katzenbach & Smith, 1993). Valid data were obtained from 33 teams with 206 team members. We excluded team leaders in our sample, because they were unique in having hierarchical power over other team members. There were at least four sets of data from teammates for each team. The average team size was nine ($M = 9.40$, $SD = 4.25$) and the average team history was 3 years ($M = 3.36$, $SD = 3.78$). In addition, all members of each team came from multiple departments; the average number of departments represented was 5.67 (from 3 to 8 departments, $SD = 1.93$). The detailed composition of the sample is listed in Table 2.

Measures

Our study measured all teammates' demographic data, *guanxi* with all other teammates, interpersonal trust in all other teammates, and individual effectiveness (satisfaction with cooperation, team commitment, and job performance).

Unless noted, the scales were based on a six-point scale. We used an even number of points on the Likert-like scale to avoid any response bias because Chinese people tend to give answers towards the midpoint (Chiu & Yang, 1987).

Relational demography. To assess the effects of relational demography, data were collected on each teammate's gender, age, education level, and tenure (in the organization). Euclidean distance measures (D scale) were computed for each individual to index how different each person was from others in the group (Tsui *et al.*, 1992).

$$D = \left[\frac{1}{n} \sum_{i=1}^n (S - S_i)^2 \right]^{1/2}$$

n , team size

S , individual demographic data

S_i , other teammates' demographic data in the group

Guanxi network. The measure of *guanxi* was based on Farh *et al.* (1998) and Jacobs (1979). Following the work of Burt (1992) and Ibarra (1993), the name of each member in a respondent's team was listed in the first row, and the types of social ties were listed in the first column in a *guanxi* network table. We asked the respondents to put a check mark (✓) in the cell if he/she had this social tie with the teammate. There were 1163 dyad generated from 206 teammates within 33 teams, and the frequency of these social ties is shown in Table 3. Finally, we categorized the social ties into three kinds of *guanxi* network: non-job, departmental, and team relationship (1 = have this *guanxi*, and 0 = don't have this *guanxi*). Each kind of *guanxi* network was measured by the number of *guanxi* ties with other teammates in a respondent's team, divided by team size

Table 2 Demographic profile of the sample ($N = 206$) in the present study

Variable	Category	N	Percentage (%)	Variable	Category	N	Percentage
Gender	Male	104	50.5	Education	Below senior high school	21	10.2
	Female	99	48.0		Vocational school	82	39.8
	Missing data	3	1.5		Bachelor's degree	74	35.9
Age (years)	<25	14	6.8		Master's degree	22	10.7
	26–30	41	19.9		Doctoral degree	4	1.9
	31–35	59	28.6		Missing data	3	1.5
	36–40	44	21.4	Tenure	<1 year	20	9.7
	41–45	27	13.1		1–3 years	18	8.7
	46–50	11	5.3		3–5 years	36	17.5
	≥51	7	3.4		5–7 years	22	10.7
	Missing data	3	1.5		7–9 years	20	9.7
					9–11 years	19	9.2
					11–13 years	20	9.7
					>13 years	47	22.8
					Missing data	4	1.9

Table 3 Frequency of different dyadic relationships within teams ($N = 1163$)[†]

Relationship	Person-time	Percentage
Non-job relationship	279	24.0 [‡]
Family (including relatives)	46	4.0
School fellow (including classmates, teachers and students)	82	7.1
Fellow soldiers	116	10.0
Neighbours (including past & present)	31	2.7
People with common goal (including same religion)	32	2.8
People with same political party affiliation	23	2.0
Department relationship		
Past colleagues of same department (including supervisor and subordinate)	357	30.7
Team relationship		
Used to be member of same team	167	14.4

[†]Each team member had to report all relationships with other team members, so that $N = \sum_{i=1} n_i * (n_i - 1)$, n_i , number of team members; i , number of teams.

[‡]Relationship types are based on multiple choices, so that this figure refers to the percentage of the number that has this type of relationship over N .

Table 4 Factor analysis of interpersonal trust[†] ($N = 1137$)[‡]

Items	<i>M</i>	<i>SD</i>	Affective trust	Cognitive trust
Affective trust				
You and he/she will share ideas, feelings, and wishes with each other.	3.87	1.12	0.73	0.06
If you face a difficulty with your job, you'll tell him/her and know that he/she will listen to you.	4.03	1.22	0.90	-0.05
When discussing your problem with him/her about your problem, he/she will give you constructive opinion and show his/her concern.	4.13	1.13	0.69	0.16
Cognitive trust				
You are confident of his/her job quality.	4.51	1.09	0.15	0.72
He/she will take the job actively and seriously (or show respect for the job).	4.61	1.02	0.03	0.82
Based on past experience, his/her ability to perform the job is undoubted.	4.61	1.04	-0.03	0.88
Eigenvalue after rotation			2.78	2.67
Cronbach' alpha			0.84	0.87

[†]Method = principal axis rotation (promax, Kappa = 3), and a scree plot is used to determine the number of factors.

[‡] $N = \sum_{i=1} n_i * (n_i - 1)$, n_i , size of team; i , number of teams.

Bold type indicates rotated factor loadings.

minus 1 (number of *guanxi* ties with other teammates/(team size - 1)).

Trust network. The six trust items were taken from McAllister's study (1995), and the three items with highest loading on each of the cognition-based and affective-based trust subscales were chosen. Similarly, we followed Burt's (1992) and Ibarra's (1993) studies in assessing the trust network by asking an individual's trust in each teammate with those six items with a six-point Likert scale (1 = not at all to 6 = very much). We conducted a factor analysis to check the factor structure of the two dimensions of interpersonal trust (cognitive and affective trust), as shown in

Table 4. We then calculated the cognitive and affective trust scores for each participant for each team member, and computed the norms of in-degree centrality scores for each individual to allow for comparisons across groups of different size.

The trust in-degree centrality is a form degree that counts trust relations with a focal individual reported by other teammates, and it is able to avoid the limitations of common method variance.

Individual effectiveness. Three types of individual effectiveness were examined for their potential relation to the *guanxi* network and trust network. First, satisfaction with

cooperation referred to members' feeling and intention to stay in the team. This variable was assessed with the three-item short form of Huang's (2000) Team Satisfaction Scale, which had a Cronbach's alpha of 0.93. Second, team commitment was based on O'Reilly and Chatman's (1986) affective commitment of Organizational Commitment Scale, which had an internal reliability of 0.90. The wording of the scale was revised to suit the context of Taiwan, and the word 'organization' was changed to 'team' in the scale. Third, job performance was measured by four items adapted from Farh *et al.*'s (1991) Job Performance Scale, which had an internal reliability of 0.94. Participants responded to all multi-item scales on a six-point Likert scale.

Control variables. Team members' gender, age, education level, and tenure, as well as team size were included as control variables. They were included because they are proxies of human capital and power, and may influence a person's reaction to group dynamics and his/her job effectiveness. Gender was coded with 0 = males, and 1 = females, and team size was measured by the number of team members. The measures and the coding of age, education, and tenure are shown in Table 2.

Research procedure

Before the selection of the research sample, we first considered the nature of the team, and then selected teams with fewer than 15 members. We tried to include various types of teams to improve the generalizability of our results. After the selection of teams, we appointed a coordinator from each team to distribute and collect the questionnaire. The protection of privacy for each participant was emphasized.

Results

Correlations between all the variables

The means, standard deviations, reliabilities, and intercorrelations of all of the variables used are reported in Table 5. Some correlations are worth noting. First, all the control variables were correlated with relational demography, *guanxi* networks, trust networks, and job effectiveness except for team size. Nevertheless, team size was positively correlated with education and tenure ($r = 0.24$, $p < 0.001$ and $r = 0.15$, $p < 0.05$). These results suggest that the use of gender, age, education, tenure, and team size as control variables is reasonable.

Second, age dissimilarity was positively correlated with gender dissimilarity and tenure dissimilarity ($r = 0.23$, $p < 0.001$ and $r = 0.20$, $p < 0.01$). The correlations between

relational demography and trust networks were either low or not significant. Moreover, all correlations between relational demography and individual effectiveness (satisfaction with cooperation, team commitment, and job performance) were not significant. Third, non-job *guanxi* networks were negatively correlated with departmental and team *guanxi* networks ($r = -0.26$, $p < 0.001$ and $r = -0.28$, $p < 0.001$). In addition, the significant correlations between *guanxi* networks, trust networks and individual effectiveness showed an interesting pattern: non-job and departmental *guanxi* networks were negatively correlated with trust networks and individual effectiveness ($r = -0.14$ to $r = -0.39$, $p < 0.05$). In contrast, team *guanxi* was positively correlated with cognitive trust network and individual effectiveness ($r = 0.15$ to $r = 0.20$, $p < 0.05$). Finally, trust networks were positively correlated with individual effectiveness ($r = 0.22$ to $r = 0.39$, $p < 0.001$), except that the correlation between affective trust and job performance was not significant ($r = 0.05$, $p > 0.05$). The above correlation results generally support our hypotheses.

Furthermore, even though the correlations between satisfaction with cooperation and team commitment were quite high ($r = 0.70$, $p < 0.001$), multicollinearity was not a problem as those two variables were not included in the same regression model.

Relational demography, intrateam *guanxi* networks and individual effectiveness

The M1 and M2 columns in Table 6 list the block regression results for testing the relative effects of relational demography and *guanxi* networks on individual effectiveness. Control variables had little effect on individual effectiveness. After controlling for the demographic variables, M1 showed that only education dissimilarity had a negative effect on satisfaction with cooperation ($\beta = -0.19$, $p < 0.05$). Meanwhile, relational demography did not have significant partial R^2 with all the indicators of individual effectiveness. According to M2 in Table 6, the effects of relational demography on individual effectiveness remained constant after entering *guanxi* networks into the model. However, it was clear that intrateam *guanxi* networks of team members had a unique explanative power for all aspects of individual effectiveness considered (satisfaction with cooperation, $\Delta R^2 = 0.12$, $p < 0.001$; team commitment, $\Delta R^2 = 0.08$, $p < 0.01$; and job performance, $\Delta R^2 = 0.04$, $p < 0.05$). Thus, the findings support our first hypothesis: For team member effectiveness in a Chinese team, the effects of intrateam *guanxi* networks are stronger than that of relational demography.

The M2 in Table 6 shows the influence of each *guanxi* network on individual effectiveness. First, non-job *guanxi* networks had a negative influence on satisfaction with

Table 5 Means, standard deviations, and correlations of all variables ($N = 179-205$)[†]

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Control variables																			
Gender	0.49	0.50																	
Age	3.46	1.44	-0.16*																
Education	2.53	0.89	-0.22**	0.12															
Tenure	4.88	2.40	0.04	0.65***	-0.03														
Team size	9.21	1.80	-0.08	0.24***	-0.01	0.15*													
Relational demography (dissimilarity score)																			
Gender	0.45	0.29	0.03	0.25***	-0.01	0.11	0.07												
Age	1.30	0.62	0.01	0.20**	-0.18*	0.14	0.07	0.23***											
Education	0.85	0.46	-0.24***	0.11	0.17*	0.08	0.06	-0.02	0.11										
Tenure	2.00	1.10	-0.10	-0.05	0.09	0.02	-0.02	0.00	0.20**	-0.02									
Guanxi networks																			
Non-job	0.22	0.32	-0.26***	-0.24***	-0.02	-0.31***	-0.06	-0.15*	0.12	0.26***	0.05								
Departmental	0.31	0.31	0.08	0.31***	0.07	0.32***	-0.03	0.18*	-0.04	-0.10	-0.14*	-0.26***							
Team	0.14	0.24	0.07	0.16*	-0.01	0.18**	0.04	0.20**	0.06	0.04	-0.19**	-0.28***	0.12						
Centrality of trust networks																			
Affective trust	4.06	0.51	0.18*	-0.07	0.06	0.04	0.04	-0.15*	-0.07	-0.20**	0.09	-0.31***	-0.09	0.05					
Cognitive trust	4.61	0.63	0.03	0.10	0.14*	0.29***	0.01	-0.11	-0.07	0.04	0.17*	-0.39***	-0.21**	0.18**	0.57***				
Individual team effectiveness																			
Sat. with coop. [‡]	4.70	0.86	0.04	0.06	0.10	0.08	0.10	0.06	0.05	-0.11	0.06	-0.17*	-0.21**	0.15*	0.22***	0.37***	(0.93)		
Team commitment	4.51	0.86	0.04	-0.03	0.00	0.05	0.10	0.01	0.06	-0.11	0.06	-0.14*	-0.18*	0.15*	0.26***	0.33***	0.70***	(0.90)	
Job performance	4.37	0.68	-0.11	0.15*	0.20**	0.26***	0.00	0.06	0.00	0.04	-0.03	-0.13	0.03	0.20**	0.05	0.39***	0.28***	0.26***	(0.94)

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.[†]Pairwise deletion for missing data.[‡]Satisfaction with cooperation.

Numbers in parentheses are Cronbach alphas.

Table 6 Regression analysis ($N = 179$)

Centrality of trust networks														
Affective trust		Cognitive trust		Satisfaction with cooperation				Team commitment				Job performance		
Variables	M5	M6	M1	M2	M3	M4	M1	M2	M3	M4	M1	M2	M3	M4
Control variables														
Gender	0.08	-0.02	0.00	-0.02	-0.03	-0.01	-0.01	-0.03	-0.05	-0.04	-0.15	-0.18*	-0.15*	-0.15*
Age	-0.07	-0.09	-0.03	-0.01	0.01	0.03	-0.19	-0.17	-0.15	-0.13	-0.12	-0.12	-0.08	-0.08
Education	0.08	0.13*	0.17*	0.18*	0.11	0.13	0.10	0.10	0.04	0.06	0.21**	0.20*	0.15*	0.15*
Tenure	-0.04	0.32***	0.09	0.13	-0.07	0.01	0.15	0.17	0.03	0.08	0.34***	0.31**	0.16	0.12
Team size	0.07	-0.06	0.11	0.07	0.11	0.08	0.13	0.10	0.12	0.11	-0.03	-0.04	-0.01	0.01
Relational demography (dissimilarity)														
Gender	-0.20**	-0.12	0.01	0.02	0.05	0.07	-0.01	-0.01	0.04	0.05	0.04	0.01	0.06	0.04
Age	-0.03	-0.07	0.05	0.04	0.09	0.07	0.08	0.08	0.12	0.10	0.00	0.00	0.03	0.03
Education	-0.11	0.08	-0.19*	-0.19*	-0.21**	-0.22**	-0.16	-0.16	-0.15	-0.17	-0.04	-0.03	-0.09	-0.10
Tenure	0.14	0.16*	0.02	0.02	-0.05	-0.04	0.00	0.02	-0.07	-0.05	-0.07	-0.04	-0.13	-0.10
ΔR^2	0.06*	0.04**	0.03	0.03	0.04*	0.04*	0.03	0.03	0.03	0.03	0.00	0.00	0.01	0.01
<i>Guanxi</i> networks														
Non-job <i>guanxi</i>	-0.33***	-0.43***		-0.17*		0.00		-0.13		0.04		-0.12		0.05
Departmental <i>guanxi</i>	-0.10	-0.37***		-0.33***		-0.12		-0.24**		-0.12		-0.09		0.09
Team <i>guanxi</i>	0.04	0.13*		0.13*		0.08		0.15*		0.11		0.15*		0.09
ΔR^2	0.08**	0.24***		0.12***		0.03		0.08**		0.02		0.04*		0.01
Centrality of trust networks														
Affective trust					-0.01	0.01			0.10	0.12			-0.21*	-0.22*
Cognitive trust					0.46***	0.37***			0.35***	0.29**			0.53***	0.56***
ΔR^2					0.17***	0.08**			0.15***	0.09**			0.17***	0.14***
Overall R^2	0.21	0.40	0.07	0.19	0.24	0.27	0.05	0.13	0.20	0.22	0.14	0.18	0.31	0.32
F -value	3.73***	9.25***	1.01	3.13***	4.74***	4.29***	1.08	2.14*	3.84***	3.34***	3.93**	2.98***	6.77***	5.53***
$df1, df2$	12 166	12 166	9169	12 166	11 167	14 164	9169	12 166	11 167	14 164	9169	12 166	11 167	14 164

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

cooperation ($\beta = -0.17$, $p < 0.05$), although they did not have a significant effect on team commitment and job performance. Departmental *guanxi* networks had a negative influence on satisfaction with cooperation and team commitment ($\beta = -0.33$, $p < 0.001$; $\beta = -0.24$, $p < 0.01$). Departmental *guanxi* networks had a negative influence on job performance ($\beta = -0.09$, $p > 0.05$), although this effect was not significant. Contrary to non-job and departmental *guanxi* networks, team *guanxi* networks had positive effects on all individual effectiveness factors (satisfaction with cooperation, $\Delta R^2 = 0.12$, $p < 0.001$; team commitment, $\Delta R^2 = 0.08$, $p < 0.01$; and job performance, $\Delta R^2 = 0.04$, $p < 0.05$). In summary, these results supported our second set of hypotheses: Non-job and departmental *guanxi* network has negative effects, and team *guanxi* has positive effects, on team member's effectiveness.

The above results indicate that within Chinese work teams, the *guanxi* between a member and his/her teammates is more important than the effects of similarities like personal attributes and other external characteristics. In addition, the various types of *guanxi* cannot be regarded as identical, and they are not necessarily a positive social capital. Different relationship bases have different effects in different situations.

Effect of the centrality of intrateam trust networks on individual effectiveness

After controlling for demographic variables, team size, and relational demography, M3 in Table 6 shows that intrateam trust networks had significant partial explanatory effects on all aspects of individual effectiveness (satisfaction with cooperation, $\Delta R^2 = 0.17$, $p < 0.001$; team commitment, $\Delta R^2 = 0.15$, $p < 0.001$; and job performance, $\Delta R^2 = 0.17$, $p < 0.001$). The centrality within the cognitive trust networks had positive influences on a member's effectiveness (satisfaction with cooperation, $\beta = 0.46$, $p < 0.001$; team commitment, $\beta = 0.35$, $p < 0.001$; and job performance, $\beta = 0.53$, $p < 0.001$). Therefore, when an individual's ability and responsibility were more trusted by his/her teammate, he/she had more team satisfaction, commitment, and better performance. Hypothesis 3a was supported: a team member's centrality in the cognitive trust network has positive effects on personal effectiveness.

However, the effects of centrality within the affective trust network on an individual's effectiveness were more complex. Regarding zero-order correlations, the centrality within the affective network was positively related to satisfaction with cooperation and team commitment ($r = 0.22$, $p < 0.001$; $r = 0.26$, $p < 0.001$), but not significantly related to job performance. However, after entering cognitive and affective trust networks simultaneously into a regression model, centrality of affective trust network no longer had

any significant effect on satisfaction with cooperation and team commitment. Yet, it had a negative influence on job performance ($\beta = -0.21$, $p < 0.05$). Thus, those results did not support H_{3b}: The team member centrality in the affective trust network has positive effects on personal effectiveness.

Intrateam *guanxi* networks and trust networks

Before testing the mediating effect of trust networks, we first need to examine the influence of *guanxi* networks on trust networks. From M5 in Table 6, the *guanxi* networks had partial explanatory power for the centrality within the affective trust network ($\Delta R^2 = 0.08$, $p < 0.01$). However, this partial explanatory power derived mainly from the negative effect of the non-job *guanxi* network ($\beta = -0.33$, $p < 0.001$). Thus, our fourth hypothesis was not supported.

However, M6 in Table 6 shows that *guanxi* networks had a unique explanatory effect on centrality within the cognitive trust network ($\Delta R^2 = 0.24$, $p < 0.001$). As non-job and departmental *guanxi* networks had negative influences on cognitive trust network ($\beta = -0.43$, $p < 0.001$; -0.37 , $p < 0.001$), and the effect of team *guanxi* on cognitive trust network was positive ($\beta = 0.13$, $p < 0.05$), the results supported H_{5a}: Team member's non-job *guanxi* network has negative effects on the centrality of the cognitive trust network; H_{5b}: Team member's departmental *guanxi* network has negative effects on the centrality of the cognitive trust network; and H_{5c}: Team member's team *guanxi* network has positive effects on the centrality of the cognitive trust network.

Mediating effect of centrality within intrateam trust networks

Finally, we used James and Brett's (1984) procedure to test the mediating effect of the centrality of trust networks by comparing M4 against M2 and M3. M2 and M3 in Table 6 show that *guanxi* networks and trust networks are significant predictors of individual effectiveness. When using *guanxi* networks and trust networks to predict individual effectiveness simultaneously (M4), as hypothesized, *guanxi* networks no longer had a significant influence. However, trust networks had a significant effect on individual effectiveness (satisfaction with cooperation, $\Delta R^2 = 0.08$, $p < 0.001$; team commitment, $\Delta R^2 = 0.09$, $p < 0.001$; job performance, $\Delta R^2 = 0.14$, $p < 0.001$). Thus, intrateam *guanxi* networks did not directly affect member effectiveness, and its effect was completely mediated by the centrality within the trust network. Therefore, H6 was supported: A team member's intrateam *guanxi* networks will be mediated by centrality within the trust network to affect personal effectiveness.

Discussion

For the first purpose of the present study, namely, to explore the effect of intrateam *guanxi* networks upon team member effectiveness, it was found that in Chinese work teams, the Western concept of relational demography did not have any explanatory power for team member effectiveness, whereas *guanxi* networks showed significant effects. These results confirm previous findings that in Chinese organizations, relationship bases have greater influence on team members; while relational demography has less or no influence at all (Farh *et al.*, 1998; Xin *et al.*, 1999; Chen, 2000).

Moreover, we found that *guanxi* did not always have positive effect. After all, a team is a task-oriented unit that emphasizes complementary cooperation and communication. Therefore, when *guanxi* is established in situations where collaboration is not emphasized, or when there is competition of resources, such as in many intradepartmental relationships, it will hinder teammates' affective outcomes. This result seems to correspond to the concept of role conflict, and to Huang's (2002) findings with regard to 'guanxi-focused' and 'relationship rationality'. In other words, when both interactants are faced with two sets of relationship roles, the interpersonal interaction not only needs to be compatible with the rules of *guanxi*, but also with the team's professional orientation and work ethics. If the role expectations or behaviors of the two roles are incompatible, the resulting role conflict will diminish interaction satisfaction (or result in reduced team commitment). That is probably why there is an ancient Chinese adage: 'exchange children for teaching' (children are better taught by other parents) (Mencius, Li Lau). In fact, some companies have regulations that prohibit husbands and wives to work in the same company.

As to the second purpose of the present study, namely, to understand the effect of centrality of interpersonal trust networks on team member effectiveness, we found that centrality within the trust network had significant effect on team member effectiveness, and this effect mainly came from cognitive trust. When a member's capability is more positively affirmed by his/her teammates, he/she will have higher job satisfaction, team commitment, and better job performance. Moreover, cognitive trust network centrality seems also to play the role of distorter variable (Morris, 1968). For zero-order correlations, there were positive relationships between affective trust centrality and team member's affective outcomes. However, in the model which included cognitive trust network centrality, the affective trust network no longer had any effect on team member's job satisfaction and team commitment, but had a negative effect on job performance.

Although this result does not support the original hypothesis, when we examine the meaning of affective trust network centrality and its measurement, we note that affective

trust reflects the trustworthiness of an individual in a team, which is built on the individual's care and helpfulness towards other team members. Flap and Völker, 2001) studied the link between social network and job satisfaction, and found that different types of network affect job satisfaction through different means. Work-relevant networks can increase personal job satisfaction directly via performance, salary adjustment, and work motives. In contrast, work-irrelevant intimate, and friendship networks can promote personal job satisfaction indirectly via identification, cooperation, and organizational climate. However, as it costs an individual a lot of time and energy to maintain a core position in the affective network, these work-irrelevant networks have negative effects on job performance.

Our results showed that centrality within the cognitive trust network not only had a significant positive effect on member effectiveness, its effect was also stronger than that of an affective trust network. This result was consistent with the findings of Lewis and Weigert's (1985) study on interpersonal trust and social change. They emphasized that different social structures have different demands of trust. As systems and institutions are becoming more differentiated and well established, there are more relationships that are based on trust with cognitive and rational elements in secondary group relationships (such as organization and team), which exert strong effects on individuals.

As to the third purpose of the present study (i.e. to investigate the effect of *guanxi* networks on affective trust and cognitive trust networks), we found that the context in which a relationship is established and the generalizability of team situations have to be taken into consideration. That is, when the *guanxi* is not based on cooperation and collaboration, it will have a negative transfer effect on cognitive trust in the team. Contrarily, when there is higher generalizability of team situations, there will be a positive transfer effect. Regarding affective trust networks, the *guanxi* network had negative, instead of positive, effects on members' centrality within the affective trust network. This result was consistent with Peng's (2001) opinion about Chinese *guanxi* and trust model. Chinese interpersonal trust is not only decided by the foundation of a relationship, but is also based on the actual interactions in that situation. This result is worthy of further investigation: Are non-job relationships, such as family and friends, in a work environment with long-term interaction a social capital or a social debt?

Finally, regarding the fourth purpose of the present study (i.e. to explore the mediation effect of centrality within a trust network on *guanxi* networks), it was found that the centrality of the trust network had a significant mediating effect on the relationship between *guanxi* networks and team member effectiveness. The relation bases had significant influence on team member effectiveness only through interpersonal trust, which is consistent with the finding of

Harrison *et al.* (2002). We can conclude that elements of trust, which is of a deeper level, are more crucial and more important in affecting team member effectiveness than relation foundation of *guanxi*, which is more distal to team member effectiveness.

In summary, the present study adopted a social network approach, and took into consideration the full scope of relationships among members in the team, the content of trust, and the direction and strength of trust, in exploring their effects on team member effectiveness. We found that *guanxi* played an important role in Chinese work teams, and had a significant effect on team members' cooperation satisfaction, team commitment, and job performance. Moreover, we also found that, even after controlling for the effect of relational demography, the unique effect of *guanxi* was still significant. Furthermore, different *guanxi* had different effects, and *guanxi* effects are mediated by centrality of interpersonal trust networks.

Limitations and future research

Although many meaningful results were obtained, several limitations are noted. First, due to the difficulty in data collection, some teams did not provide complete data sets from all team members. Second, there may be a difference between the interaction among team members and the interaction between the team leader and team members. However, team leaders were not included in this study, and the role of team leaders was not explored. Third, this study did not include team types and team structures as mediating variables to explore their effects on intrateam *guanxi* and trust. Future studies can include these variables, as well as relational mediating variables in the analysis of *guanxi*, trust, and effectiveness. Fourth, the use of relation bases to represent the concept of *guanxi* may be insufficient to delineate the full spectrum of the concept, which may include 'strengthening' *guanxi*, extending one's *guanxi* networks, and the dynamic processes of *guanxi*. Last, the trust network structure within a team may vary as the team develops. Therefore, a longitudinal approach is needed to look into the dynamic processes between *guanxi* and trust.

Although the study of *guanxi* is important in Chinese organizations, there is still a dire need of research in this area, especially about team member interaction. There are many issues awaiting further exploration, including: (i) Exploring the relations among all types of *guanxi*, vertical formal relationships (leader-subordinate), and horizontal formal relationships (among colleagues) in the context of a team, and examining the influence of the interaction between informal social ties and formal working relationships. (ii) Within a team, in addition to the role conflict between informal and formal relationships, do individuals still tend to build multiple relationships with others, while

taking role conflict or role obligation into consideration? (iii) How do individuals use relationships or *guanxi* networks to improve personal performance or facilitate career success? (iv) What types of personal, dyadic, or organizational factors will mediate the effect of relationship within a team? (v) Finally, we need to understand the changes and adaptation of various relationship effects by the accumulation and comparison of *guanxi* research. Taking Taiwan as an example, how does urbanization affect different ties? Do geographical relationships, such as neighbours, still have any effect?

End note

1. Number in parentheses is the number of teams for this study.

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