Perceived Influence and Friendship as Antecedents of Cooperation in Top Management Teams: A Network Approach

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Abstract
Using the relational dyad as unit of analysis this study examines the effects of perceived influence and friendship ties on the formation and maintenance of cooperative relationships between corporate top executives. Specifically, it is argued that perceived influence as well as friendship ties between any two managers will enhance the likelihood that these managers collaborate with each other. Additionally, a negative interaction effect between perceived influence and friendship on cooperation is proposed. The empirical analyses draw on network data that have been collected among all members of the top two organizational levels for the strategy-making process in two multinational firms headquartered in Germany. Applying logistic regression based on QAP the empirical results support our hypotheses on the direct effects between perceived influence, friendship ties, and cooperative relationships in both companies. In addition, we find at least partial support for our assumption that perceived influence and friendship interact negatively with respect to their effect on cooperation. Seemingly, perceived influence is partially substituted by managerial friendship ties.

Keywords: intra-organizational networks, perceived influence, friendship, cooperation, top management teams

1   Introduction

In order to accomplish their highly complex and often interrelated tasks, managers on all hierarchical levels seek out colleagues who can provide needed benefits such as advice, information, and support. The resulting cooperative activities are not necessarily based on formal organizational structures or job descriptions (Bunderson 2003, Lazega and Van Duijn 1997, Monge and Contractor 2003). Instead, cooperative networks depict actual and willful patterns of interaction directed towards the successful achievement of mutual goals (Chen, Xiao-Ping, and Meindl 1998, Milton and Westphal 2005). Although cooperative networks and their antecedents have been examined intensively (e.g., Ahuja 2000, Blumberg 2001, Loeser 1999, Mehra, Kilduff, and Brass 2001, Moody 2004, Powell and Brantley 1992,

Shan, Walker, and Kogut 1994) the investigation of collaborative relationships among a firm's upper echelons has attracted surprisingly little academic attention. We attempt to address this void by combining the literature on social networks and top management teams (TMTs) in order to analyze the effect of perceived influence and friendship ties on managerial cooperation in the strategy-making process.

Studying the extant literature (for an overview see Yilmaz and Hunt 2001) reveals that the antecedents of collaborative networks can be assigned to two different levels: First, scholars have examined individual-level determinants of collaborative behavior such as educational background (Hinds and Kiesler 1995); differences in race, sex, and citizenship (Chatman and Barsade 1995); cultural differences

(Chen, Xiao-Ping, and Meindl 1998, Wagner 1995); organizational identification (Polzer 2004); identity confirmation (Milton and Westphal 2005); and individual predisposition to cooperate (Chatman and Barsade 1995, Deery and Iverson 2005). Secondly, the effects of organizational variables have been investigated, e.g., physical distance between organizational members (Beersma, Hollenbeck, Humphrey, Moon, Conlon, and Ilgen 2003), procedural justice and open communication (Deery and Iverson 2005, Kim and Mauborgne 1998), communication technology (Hinds and Kiesler 1995), organizational climate (Iacobucci and Hopkins 1992), reward structures and sanction systems (Beersma, Hollenbeck, Humphrey, Moon, Conlon, and Ilgen 2003, Polzer 2004, Tenbrunsel and Messick 1999), as well as the size of the organization or work group respectively (Wagner 1995). However, most studies have focused on employees and lower or middle managers, thereby limiting our knowledge about collaborative networks among top executives.

The TMT literature provides only preliminary suggestions on the antecedents of cooperation within the corporate elite. Similar to the social network literature, individual-level determinants are regarded as important. Prior research has for instance analyzed the influence of management team diversity (O'Reilly, Snyder, and Boothe 1993) and similarity (Bunderson 2003, Homburg, Workman, and Krohmer 1999, McDonald and Westphal 2003) on cooperation. Stevenson and Radin (2009) have recently shown that there is a positive relationship between the number of interactions a director has with other board members and his influence on board decisions. Westphal (1999) and McDonald and Westphal (2003) have investigated the effect of CEOs' advice seeking from outside directors on behavioral processes and firm performance.

We argue that managers will not only take their individual characteristics and their degree of similarity into consideration when deciding with whom to cooperate; instead, their collaborative decisions will also be guided by the way they perceive their potential cooperation partners in both instrumental and expressive ways. Instrumental and expressive motives for collaboration address fundamentally different needs: "Whereas instrumental motives aim at enhancing material and pragmatic well-being, expressive motives aim at providing meaning to human existence by enhancing emotional and spiritual well-being" (Chen, Xiao-Ping, and Meindl 1998: 290).

Instrumental motives are captured by levels of perceived power and influence of collaborative partners. Although it could be argued that top executives are almost necessarily powerful and influential because of their formal position, we expect differences between upper echelons with respect to their informal positions within the network as well as their access to scarce resources (Boje and Whetten 1981, Brass 1984, Krackhardt 1990, Pfeffer 1981, Salk and Brannen 2000, Sparrowe and Liden 2005). In order to pursue their goals in the most efficient manner, managers are likely to seek cooperation with those who are best able to assist them. In contrast, expressive perceptions comprise affective feelings of friendship toward others. Friendship has been found to enhance cooperation and mutual trust by reducing the hazards of opportunism and the need to elaborate formal governance structures (Eisenhardt and Schoonhoven 1996, Granovetter 1985, Gulati 1995, Stuart 2000). Because of these effects, expressive feelings of friendship between top executives can be expected to positively influence their collaborative interactions.

In addition to the direct effects of perceived influence and friendship on managerial collaboration, we expect both concepts to jointly influence cooperation if studied simultaneously. A central position in a friendship network may increase a manager's perceived influence (Krackhardt 1990). In contrast, there may be circumstances that lead managers to emphasize instrumental motives, thereby impeding feelings of perceived friendship (Chua, Ingram, and Morris 2008). So far, no efforts have been made to solve this puzzle by integrating influence, friendship, and cooperation into a single framework.

From a methodological perspective we examine the effects of perceived influence and friendship in TMTs on the level of relational dyads, i.e., pairs of managers and the relationships between them in order to fully understand managers' cooperative rational. We therefore build on work that has focused on relational ties of different kinds (Ingram and Roberts 2000, Kilduff and Krackhardt 1994, Lazega and Pattison 1999, Umphress, Labianca, Brass, Kass, and Scholten 2003) and define perceived influence, friendship, and cooperation to constitute relational networks of different types.

Several authors have examined cooperation and its antecedents at the level of individual actors – i.e., the nodes of a network (e.g., Baldwin, Bedell, and Johnson 1997, Brass 1981, Brass 1984, Bunderson 2003, Ibarra 1993, Lincoln and Miller 1979). However, comparing the positions of actors within the individual networks by using average scores of actors' embeddedness, these studies typically fail to explain whether the decision of a specific manager *i* to cooperate with some other manager *j* is determined by *i*'s perception of *j* being influential or by *i* viewing *j* to be his friend.

The present study contributes to the existing literature in a number of ways: First, as our analysis is based on a rare data set of perceived influence and friendship ties among top executives (i.e., all managers at the top two management levels) of two multinational companies, we rely on and integrate results from two separate streams of research, namely the literature on intra-organizational networks and on cooperation in TMTs. Secondly, using the level of relational dyads as our unit of analysis enables us to empirically distinguish between the direct effects of perceived influence and friendship as antecedents of managerial cooperation and to investigate the joint effect of both antecedents. Thirdly, as we also control for characteristics of managers' formal positions, we are able to provide estimates for the importance of perceived influence and friendship ties relative to formal aspects of cooperation. Taken together, an examination of the determinants of managers' cooperative decisions will allow for deriving closer insights into the functioning of complex cooperative networks among a firm's upper echelons.

The rest of the paper is organized as follows. Next, we develop our conceptual logic and advance the research hypotheses. Subsequently, we proceed by describing the data and research methods followed by a presentation and discussion of the empirical results. We conclude by discussing managerial and research implications of our study, point to limitations of our approach, and provide some future research directions.

During the last decade, knowledge has come to the fore in management and organization studies. Much of this interest has been driven by the insight that knowledge is becoming ever more central in creating value for organizations and, more generally, for the entire post-industrial world. Knowledge is considered to be becoming the most significant resource in the economy of the 21st century (David and Foray 2002, Krogh and Roos 1996). Correspondingly, corporations are assumed to be building their competitive advantage more and more on superior knowledge and their practices (Barney 1991). Knowledge work and knowledge-intensive firms figure prominently in this context (Alvesson 2004, Robertson, Scarbrough, and Swan 2003, Spender 1994, Starbuck 1992). The notion of knowledge-intensive firms refers to organizations, such as accounting firms, high-tech corporations or consultancies, whose essential asset is supposed to be knowledge, or as Alvesson (2001: 863) puts it: 'companies where most work can be said to be of an intellectual nature and where well-educated, qualified employees form the major part of the workforce'. The central resources of these firms are specialized expertise and sophisticated patterns of problem-solving. In a similar vein, authors even propose re-conceptualizing organizations as knowledge systems (Krogh and Roos 1996, Tsoukas and Mylonopoulos 2003) and suggest that all organizational activities be analyzed in terms of knowledge-based activities: knowledge creation, transformation, distribution, utilization, etc.

2   Conceptual Foundations and Research Hypotheses

To derive our research hypotheses, we build on an extensive review of the extant network literature and combine it with results from research on cooperation within TMTs. Although many studies primarily focus on a different unit of analysis (i.e., the individual actors or nodes of the network), we incorporate respective findings into our theoretical discussion of the relationships between friendship, influence, and cooperation – thus altering the unit of analysis to the dyad (i.e., the individual relational ties). From a methodological point of view, we follow a structural approach. Consequently, we define each construct to represent a network in which the actors are connected by relational ties of the respective type (i.e., cooperation, perception of influence, and friendship).

Cooperation. Networks of cooperation result from the division of labor within organizations which is reflected in the distinction of different formal positions in the corporate hierarchy. As assignments,

tasks, and responsibilities are divided among the work units that are involved in organizational processes, interdependencies between managers arise. These interdependencies are established by the recurring exchange of inputs and outputs as the work flows along work chains through the organization (Brass 1984). In line with this view, we adopt a behavioral perspective and define cooperation as interactive and relational behavior between top managers that is directed towards the achievement of organizational tasks (Chen, Xiao-Ping, and Meindl 1998, Milton and Westphal 2005). Past research has shown that collaborative networks are not exclusively the result of formal organizational structures but are largely determined by informal work contacts (e.g., Lazega and Van Duijn 1997, Monge and Contractor 2003). Thus, we treat cooperation as an emergent structure in which the actors' actual patterns of interaction define the social network. Consequently, cooperative ties may either be formally prescribed or informal in nature (Ibarra 1993, Stevenson 1990).

Lazega and Pattison (1999) stressed the collegiate component of cooperation. Based on their findings among partners of a corporate law firm, they suggest that actors are interested in establishing long-term, stable relationships rather than taking the maximum advantage out of cooperation. For this reason, cooperation ties between actors are defined to represent stable cooperative settings. In other words, managers being connected by a cooperation tie work together continuously rather than on single occasions (Brass and Burkhardt 1993). It is important to note, however, that even stable cooperative relationships between managers may be directional, because granting resources such as know-how or advice to others does not necessarily require direct reciprocation. For example, actor i may send information to actor j while j does not provide information to i.

Perceived Influence. Influence, which has frequently been related to power, is primarily instrumental in nature. We conceptually build our definition of influence on Dahl (1957: 202-203) who suggested that "*A* has power over *B* to the extent that he can get *B* to do something that *B* would not otherwise do". Consequently, perceived influence is defined as the extent to which an actor is regarded as being influential and powerful with respect to the achievement of organizational tasks (Brass 1984).

Managerial influence and power are derived from the control over relevant resources (Boje and Whetten 1981, Brass 1984, Pfeffer 1981). Control by an actor implies that others in the network have few alternative sources for acquiring a specific resource. As a consequence, powerful actors control or mediate others' access to the resource. These resources can be different in nature. A manager's rare and valued expertise for instance, is a source of expert power (French and Raven 1959) and has been linked empirically to being promoted more quickly and to higher levels (e.g., Raskas and Hambrick 1992). Moreover, top managers derive legitimate power from their formal position within the hierarchy and reward power from their ability to exert influence over the compensation and career perspectives of their subordinates (French and Raven 1959). In case there is a need to mobilize support for radical change, managers with referent power and individual traits like charisma are likely to be regarded as especially influential and powerful (Krackhardt 1990). Influence is further characterized by a time-related component. Although the degree to which a manager is perceived as being influential reflects his current level of power the roots of influence are set out in the past. The results a manager achieved in previous periods – either due to the control of scarce and critical resources or personal traits – serve as a signal for the results that will be achieved in the present period and therefore largely determine his current level of influence (Podolny 1994, Shane and Cable 2002, Shrum and Wuthnow 1988).

Building on balance theory (Heider 1958), it can be expected that actors try to cooperate with those whom they consider to be particularly influential, because they seek to profit from their partners' influence by being connected to them. There are two possible explanations behind managerial cooperation ties: First, managers may expect to achieve better results and to accelerate problem solving by making use of their partners' experience. Secondly, they may strive to build and maintain cooperative ties with those being perceived as influential, because their own status is contingent on the status of their affiliates (Kilduff and Krackhardt 1994). Accordingly, Stevenson and Radin (2009: 35) reported the following quote from an interview with a CEO: "So, sometimes you form ties with the least-threatening people, the ones you know eventually

you can shoot, or you form ties with the strongest people because they can help you win, so there is a number of different criteria for forming the tie, but in the end you form a tie in order to be influential."

In line with Kameda, Ohtsubo, and Takezawa (1997) we suggest that a manager's status is directly related to the way he is perceived by his peers as being influential. With respect to an influence spillover – i.e., the opportunity to benefit from a partner's influence – a rising amount of cooperative ties to higher-status colleagues increases the esteem that is accorded to a specific manager and increases the appreciation for his offerings for exchange. A lack of such ties, however, and the presence of cooperation ties to lower-status actors harm a manager's appraisal (Podolny 1994). Cooperation with influential others may provide access to relevant resources, thereby enabling a manager to increase his own influence within the network (Brass 1984). Consequently we expect that managers with lower status are inclined to establish cooperation ties with higher-status managers whereas influential managers should be sparing in cooperating with lower-status managers. This is in line with our directional definition of cooperation.

The previous explanation was based on the assumption that lower-status managers seek to establish collaborative ties with higher-status actors. Alternatively, however, cooperation may also be initiated by the higher-status party. Consistent with Dahl's (1957) definition of power and influence, an influential manager i can get another manager j to do things that j would not do otherwise. Therefore, i may request cooperation from j. Because j considers i to be powerful and influential, j is likely to comply with i's request, because refusing to collaborate may lead to negative consequences for j due to the influence and power that i possesses.

We argue that a manager's perception of the influence of his potential cooperation partners will be more decisive than the partner's overall position in the influence network, because an individual manager will hardly be able to observe the influence perceptions of all others. Managers will therefore typically rely on their own appraisal of their partners' influence within the network when deciding to cooperate with them although we acknowledge that the perception of an individual manager may be affected by the perceptions of his affiliates. We therefore offer the following hypothesis:

Hypothesis 1: There is a positive effect of perceived influence on cooperation such that managers are likely to cooperate with those whom they consider influential.

Friendship. The relevant resource in a friendship network is affect or social liking (Brass 1992). Friendship ties are therefore defined as expressive relationships. Besides the inherent value of being integrated into a friendship network, friendship has been suggested to be instrumental in obtaining other relevant resources such as important information and may also be the basis for forming coalitions (Baldwin, Bedell, and Johnson 1997, Brass 1992). This is in line with resource dependence theory that predicts that managers will attempt to increase the availability of needed resources by establishing ties to the resource provider (Pfeffer and Salancik 1978, Thompson and McEwen 1958).

Several authors have stressed the importance of friendship for communication processes and the exchange of information (e.g., Brass 1992, Ibarra 1993, Jehn and Shah 1997). Information and knowledge that is exchanged between friends is generally more credible, more readily available, more proprietary, and more tacit than information that is exchanged at arm's length (Brass 1992, Uzzi 1996). Managers can therefore expect to obtain more and better information from those who are their friends within the organization. Moreover, by facilitating the recognition of shared interests, friendship may reduce the negative effects caused by free-riding inherent to many cooperative activities (Hardin 1982).

As managers pursue their careers, they often become friends with colleagues inside their organization. However, in the TMT literature, research on friendship ties among executives is rather sparse. Notable exceptions are Westphal (1999) and McDonald and Westphal (2003) who described the positive influence of perceived friendship ties on the collaboration between top management teams and outside directors. In a similar vein, Westphal, Boivie, and Chng (2006) showed that CEOs build and maintain friendship ties with leaders of other firms in order to secure access to important resources. The benefits of these inter-organizational friendship ties reflect the putative benefits of board cooptation without imposing similar constraints on the firm. In the social network literature, friendship has been

assumed to have positive effects on the actors' embeddedness into advice networks, particularly when organizational members encounter uncertainty (Krackhardt 1990, Krackhardt and Stern 1988). Similarly, Uzzi (1996) emphasized the positive effects friendship ties may have on joint problem solving. Strauss (1962) even proposed that relying on friendships can be regarded as a power tactic. He noted that employees who have to cooperate often follow the principle of "reward your friends, punish your enemies" (p. 174), thus being involved in a network of exchange of favors. We expect a similar behavior among top executives.

In addition to previous research that has found evidence for a relationship between actors' embeddedness into friendship and cooperation networks we propose that there is also coherence of the two relations on the level of relational dyads. In other words, manager i will not only take the overall position of manager j in the friendship network into account when deciding about establishing a collaborative tie with j. Instead, i is likely to base his decision to cooperate with j on the matter if he himself considers j to be a friend. Like in the case of perceived influence we assume the own assessment of friendship ties with others to be more decisive for cooperation, because an individual manager may not be fully aware of his partners' overall positions in the friendship network.

Although there might be the possibility of reversed causality (i.e., two managers are friends because they have cooperated) we suggest that it is more likely for top executives to assume that friendship is an antecedent to cooperation. Because top executives have typically occupied several positions within the organization, there have been multiple options for establishing friendship ties with their peers throughout their career. It is therefore likely that friendship ties that have been established at some earlier point in time will affect the way managers cooperate within their present positions.

Hypothesis 2: There is a positive effect of friendship on cooperation such that managers are likely to cooperate with those whom they consider to be their friends.

Building on previous research that has suggested interdependence between friendship and influence (Ho and Levesque 2005, Krackhardt 1990) we expect perceived influence and friendship ties to be neither mutually exclusive nor independent. Instead, manager i may think of j as a friend and consider j as being influential at the same time. Similarly, i's perception of j's influence may be influenced by his friendship feelings towards j. In both cases, the relationship between i and j is multiplex consisting of an influence and a friendship tie (Wasserman and Faust 1994). Multiplex relationships are particularly interesting with respect to cooperation as they bring together the distinct cooperative mechanisms underlying each of the networks (Erickson 1988, Ho and Levesque 2005).

In this study, we have defined perceived influence as primarily instrumental relationships and friendship as expressive ties. Consequently, multiplex relationships consisting of influence and friendship ties combine instrumental and expressive perceptional aspects. McAllister (1995) has argued that instrumental and affective relationships between managers are related to distinct forms of trust (i.e., cognition-based trust and affect-based trust) each of them being associated with specific benefits for cooperation. Cognition-based trust – or trust from the head – was found to be a good predictor of task-related information and advice in instrumental relationships among managers, whereas affect-based trust – or trust from the heart – has been associated with mutual care and concern within friendship ties (Chua, Ingram, and Morris 2008). It can therefore be expected that the two forms of trust interact with respect to managers' decisions to establish collaborative ties with their colleagues.

Technically, we suggest an interaction effect between perceived influence and friendship such that friendship will moderate the relationship between perceived influence and cooperation negatively. In other words, we expect the effect of i's perception of j being influential on his decision to cooperate with j to weaken if i also considers j to be his friend. Friendship is thus assumed to dilute or partially substitute the effect of perceived influence on cooperation. The reasoning behind the negative interaction effect is that instrumental motives for cooperation become less important relative to expressive motives if a pair of managers is connected by a friendship tie.

Building on our definition of ties as directed relationships, the interaction effect of friendship and perceived influence may be viewed from the pers-

pective of the sender and the receiver of a collaborative tie, respectively. In other words, we expect that friendship impacts the effect of perceived influence – no matter by which party cooperation has been initiated.

First, we consider the relationship between i and j from the sender's perspective (i.e., actor i). In this case, i seeks cooperation with j whom he considers to be particularly influential by granting resources such as information or task-related advice to j. Manager i may do so because of two reasons: Cooperating with an influential partner may help i to better achieve his goals and benefit from a spill-over of j's overall reputation as influential manager. However, if taking a different perspective on the concept of status (Kameda, Ohtsubo, and Takezawa 1997, Skvoretz and Fararo 1996) we may argue that status differences between i and j may actually prevent i from granting resources such as information or task-related advice to j specifically if the differences are large in magnitude (Johanson 2000). Because collaborative ties are typically susceptible to the problem of free-riding status differences may have negative effects on collaboration. The higher the status of j relative to the status of i, the more i may suspect j to opportunistically exploit his status position by not reciprocating in some way.

Studying multiple relations in a corporate context Lazega and Van Duijn (1997) showed that friendship ties can mitigate status differences between actors, thereby increasing the likelihood that low-status actors will establish cooperative relationships with those whom they consider influential if they are friends at the same time. This can be explained because friendship facilitates the recognition of shared interests and thus reduces the potential negative effects caused by free-riding collaborative activities between managers (Hardin 1982). Friendship ties may hence act as safeguards against negative consequences managers can encounter in cooperative relationships. In other words, an existing friendship tie between two managers can be expected to reduce the importance of perceived influence and status when initiating collaboration.

Secondly, we turn to the case of i cooperating with j because j requests cooperation from i. In this situation, i will comply with j's request in order to avoid potential negative consequences. A first explanation can be found again by considering the problem of free-riding. As friendship typically increases affect-based trust, i can be expected to more willingly comply with j's cooperative request if i considers j to be his friend (Ng and Chua 2006) because cooperation among friends is less vulnerable to the problem of free-riding. In other words, i is more apt to provide resources to j because he expects j not to unilaterally exploit his power position. The second explanation builds on the fact that status differences may also prevent the higher-status manager j to request collaboration from some lower-status manager i. In line with Rosen (1983) we assume that managers who seek advice and information run the risk of losing status and raising the impression of being uncertain or less than fully competent. Relative to lower-status actors those managers enjoying a high level of status could be more interested in employing impression management rather than open communication and collaboration (e.g., Ashford and Northcraft 1992). The social and professional risks of advice and information seeking can be reduced by friendship as the status of j is not only contingent on his level of perceived influence but also on the friendship tie to his partner i. Westphal (1999) showed for instance that top managers were more likely to seek advice from outside directors in the presence of perceived friendship ties. Along the same lines, a stronger and more collaborative relationship between top management teams and outside board members was found in firms where a higher number of directors were appointed after the appointment of the CEO, thereby indicating mutual trust and social liking.

Hypothesis 3: Friendship ties will moderate the effect of perceived influence on the existence of cooperation ties negatively.

3 Data and Methods

3.1 Research Sites, Respondents, and Data Collection Procedures

Due to the fact that no generally accepted techniques for sampling within a given network have been developed, several authors have stressed that network analysis requires collecting data from all members of a previously identified network (e.g., Burt and Ronchi 1994, Ibarra 1993, Rogers and Kincaid 1981). As issues like influence and cooperation are highly context specific (Pfeffer 1981), the strategy process of companies provided the setting

to test our predictions. We employed a comparative case study design with a dissimilar case approach (Larson 1992, Yin 1989) to avoid a simple replication of the results derived from the analysis of one organization in the other. Two firms were chosen to be investigated that were rather different in several aspects such as size, industry, and formal organization. According to Eisenhardt (1989) the findings of case studies are stronger and better grounded when a pattern from one data source is corroborated by the evidence from another.

Data were collected for the strategic planning and decision-making process in two Germany-based multinational corporations. For the sake of anonymity they are called CHEM-CORP and OIL-CORP. Both companies differ substantially with respect to several of their characteristics. While CHEM-CORP is among the world's leading chemical manufacturers with a multidimensional organizational structure and approximately 90,000 employees, OIL-CORP is a medium-size producer of oil and refinery products employing roughly 4,000 people. The company's formal structure is a decentralized holding organization. Both firms exhibit the legal form of a publicly traded stock corporation.

The responsibility for the company-wide strategy-making process is typically located at the top of the organization. Although lower hierarchical levels may participate in the planning process, strategic decision making is usually performed by top management (Mintzberg 1994, Reid 1989). Therefore, the set of actors to be considered for the empirical investigation comprises all executives of the top two management levels in both enterprises. At the first hierarchical level, the management board consists of top executives including the company's CEO who are collectively responsible for the business management of the company. We did not include members of the supervisory board who primarily represent institutional supervisors and overseers of the firm's management (Du Plessis 2004). Subsequently, the members of the management board are referred to as "board members". Executives at the second hierarchical level (hereafter referred to as "second-level managers") typically comprise the heads of corporate entities such as divisions, departments, and subsidiaries.

Due to the specific characteristics of both companies, the two sets differ. At OIL-CORP the corporate units participating in the strategy process largely match the legal structure of the company. In addition to the eight board members the heads of all 17 central service departments and the CEOs of 38 subsidiaries have been identified as being important for the strategic decision process. This results in a total of 63 executives. In contrast, the units participating in the strategy-making process at CHEM-CORP consist of organizational entities. Besides the eight board members all heads of the company's 40 divisions have been integrated into the study. Altogether, the set of actors at CHEM-CORP comprised 48 executives. In both companies, the second-level managers (i.e., the heads of divisions and central service units as well as the CEOs of subsidiaries) report directly to one member of the respective management board, thereby constituting the companies' departmental structures. All managers included in the study had been working for their respective company for several years.

In both organizations all but one executive agreed to participate in the study. For analytical purposes, their relational ties were constructed from the information obtained by the other managers. Data were gathered exclusively through personal interviews with all managers under study. Face-to-face interviews allowed us to give additional explanations if necessary, thereby ensuring a common understanding of the types of relations among all participating managers. We used identical rosters for each relation containing all managers of the respective company in a systematic order. Respondents were asked to mark as many of their colleagues as relational partners within the individual network relations as they deemed appropriate. Some authors have stressed that the described approach is to be preferred as limiting respondents to a fixed number of choices (e.g., name your five best friends) tends to introduce measurement error into network data because it is rather unlikely that all people have exactly the same number of best friends (Holland and Leinhardt 1973, Mehra, Kilduff, and Brass 2001).

3.2 Measures

All relational networks were recorded dichotomously, i.e., we only distinguished whether a specific relational tie exists between any two actors but we did not consider the strength or the value of these ties. Data for both companies were arranged in

48x48 (CHEM-CORP) and 63x63 (OIL-CORP) respectively binary adjacency matrices. In each matrix, cell x_{ij} corresponds to i's relation of a specific type to actor j. For example, if i considers j as being influential, then cell x_{ij} in the influence matrix was coded 1; otherwise x_{ij} was coded 0. Each matrix contained 2,256 and 3,906 observations respectively on all possible pairs of actors.

Cooperation. Cooperation networks, often termed as networks of workflow, have been investigated in different contexts (e.g., Brass 1981, Brass 1984, Lazega and Pattison 1999, Mehra, Kilduff, and Brass 2001, Provan and Milward 1995). Several authors have stressed the importance of communication and the exchange of knowledge in the context of cooperation (e.g., Baldwin, Bedell, and Johnson 1997, Brass 1992). Nevertheless, we follow Mehra, Kilduff, and Brass (2001) who have suggested that in order to understand cooperation correctly, it is necessary to consider all different aspects of cooperation that are potentially relevant. Similarly, Ibarra (1993) has argued that although specialized communication networks undoubtedly play an important role in cooperative processes of every kind, more broadly defined organizational interaction networks may be expected to comprise the different aspects of cooperation. For this reason, two relations were integrated into the analysis to cover cooperation: The first relation is represented by an information network, in which the managers exchange important information and knowledge they use for accomplishing their tasks. A support network constituted the second dimension of cooperation. Support in the context of strategy making comprised the active cooperation and assistance as well as the dissemination of advice and consultation among managers (Krackhardt and Kilduff 2002, Lazega and Pattison 1999).

Technically, two separate networks were created for information and support in both companies. As both relations consist of directed relationships we asked the interviewees the following: (1) "Please mark all actors to whom you regularly provide strategically relevant information and knowledge" and (2) "Please mark all actors from whom you regularly receive strategically relevant information and knowledge". In the case of support we asked (1) "Please mark all actors to whom you regularly grant support, help, and advice in the context of strategy making" and (2) "Please mark all actors from whom

you regularly receive support, help, and advice in the context of strategy making". The term "regularly" was used to distinguish stable ties from occasional or single cooperative contacts. Hence, regularity referred to the importance rather than to the actual frequency of collaborative activities (e.g., every day, once a week, once a month, etc.). Moreover, we did not distinguish by which media information and support were transferred between the managers (e.g., personal contact, e-mail, phone calls, meeting).

For both companies, the individual information and support networks were merged into a single cooperation network. We assumed cooperation between any two managers if they were linked by either an information tie or a support tie or by both ties at the same time. Integrating information and support ties into a single cooperation network is supported by the fact that both relations are highly correlated. QAP correlation yielded correlation coefficients between information and support of .55, p < .001 for CHEM-CORP and .45, p < .001 for OIL-CORP respectively. Consistent with its relational components (information and support) also the cooperation network consists of directed ties.

In order to reduce interviewing effects and to enhance validity and reliability, only confirmed cooperation ties were considered for empirical analysis (Brass 1984, Burkhardt 1994, Human and Provan 2000, Kilduff and Krackhardt 1994, Marsden 1990, Provan and Milward 1995). In other words, its indication by both the sender and the receiver formed a necessary precondition for a relational tie to actually exist. While some authors have applied the concept of weak ties in their analyses of organizational networks (e.g., Hansen 1999, Lincoln and Miller 1979) for which an indication by either party is sufficient, we argue that cooperation requires some level of mutual agreement of both managers being involved.

Perceived Influence. Influence ties were represented by the perceived importance and power of actors within the strategy process from the point of view of each individual actor. To assess influence as perceived by the individual managers we asked interviewees "Please mark all your colleagues on the list who you consider to be particularly influential and powerful within the corporate-wide strategic planning and decision-making process" (Brass 1984, Krackhardt 1990). By this, a network of directed

relational ties was created. Following Salancik and Pfeffer (1977), we did not further specify the content of influence, and interviewees hardly required additional information when they were asked to name those being influential.

Friendship. Friendship has been considered in several studies of organizational networks (e.g., Brass 1984, Ibarra 1993, Kilduff and Krackhardt 1994, Mehra, Kilduff, and Brass 2001) and was defined to comprise (not necessarily close) personal ties among managers consisting of conjoint activities that are not related to the managers' business duties. Examples for friendship are socialization outside of work and mutual invitations to each other's homes. To measure friendship ties, we asked respondents "Please mark all actors on the list who are your friends" (Ho and Levesque 2005, Ibarra and Andrews 1993, Krackhardt and Porter 1985). Because we are interested in the way managers think about others as friends we conceptualized friendship as "friendship seeking", thereby creating a network of directed ties (Lazega and Pattison 1999). Although it may be argued that friendship almost necessarily represents a symmetric relationship between actors (i cannot be a friend of j if j is not a friend of i at the same time), we suggest that the way individuals think about their friends is more decisive for their collaborative behavior than their mutual agreement about actually existing friendship ties.

Multiplexity of Perceived Influence and Friendship. The multiplex network was obtained by computing the Hadamard product (Coppersmith and Winograd 1990) between the two relational network variables (i.e., friendship and influence). In other words, to obtain the matrix consisting of multiplex friendship and influence ties the two matrices were multiplied cell-wise. Hence, in the multiplexity matrix cell x_{ij} was coded 1 if i perceived j as influential and considered j as a personal friend. Consequently, cell x_{ij} was coded 0 if j was solely a friend, solely perceived as influential, or neither of both.

Control variables. As network data – in contrast to other empirical data – cannot be collected anonymously, both companies only agreed to participate in the study if no individual-level characteristics like age, education, and job tenure were included into the analyses. However, in order to better estimate the importance of perceived influence and friend-

ship ties, we included four control variables into our analysis reflecting the managers' formal positions. First, as some corporate functions may be more critical in the context of strategy making than others (Bunderson 2003, Finkelstein 1992), we distinguished between different *functional types* of actors. At CHEM-CORP, four types may be differentiated: board members as well as the heads of product divisions, geographical divisions, and central service divisions. Similarly, three types are to be distinguished at OIL-CORP: board members and the directors of central service departments and subsidiaries. Secondly, actors may be assigned to different *hierarchical levels* reflecting different formal positions of power (Brass 1992, Ibarra 1993, Kilduff and Krackhardt 1994, Krackhardt 1990). While the members of the board of directors belong to the first level, all other managers (directors of subsidiaries, central service departments, and divisions) are assigned to the second level. Thirdly, we considered the *departments* the individual corporate units of the managers belonged to for each company (Ibarra 1993). At CHEM-CORP as well as at OIL-CORP, all corporate entities are assigned to eight individual departments. The units of each department operate in related businesses, are located in the same geographical area, and/or have similar responsibilities. Moreover, each department is headed by a board member and all second-level managers belonging to a department directly report to the same board member. Finally, we controlled for the *geographical location* of a manager. We distinguished whether a manager was located at the corporate headquarters or within close geographic proximity, or if he was located in a foreign country.

For methodological reasons also the control variables were coded as relational data in the form of squared adjacency matrices. To accomplish this, we transformed the original 2-mode data sets (actor-by-attribute matrices) into "classical" 1-mode adjacency matrices (actor-by-actor matrices). We thus computed similarity matrices for each of the control variables using the matching rule (Borgatti and Everett 1997). For example, if both actors i and j worked in the same department, cell x_{ij} was coded 1, if they worked in different departments x_{ij} was coded 0. Similarly, cell x_{ij} was coded 1, if both actors either worked in the corporate headquarters or in a foreign entity and 0 otherwise (Burris 2005, Ho and Levesque 2005).

3.3 Analyses

Our hypotheses are based on the relational dyad as the unit of analysis with all variables being coded dichotomously. Several authors have argued that traditional methods of regression analysis are inappropriate because individual dyads do not constitute independent observations, resulting in high levels of autocorrelation in the regression results (e.g., Carley and Krackhardt 1996, Laumann and Pappi 1976, Schott 1987). For this reason we applied the multinominal logistic regression quadratic assignment procedure (QAP) provided in R, which is a nonparametric approach to logistic regression (for details see Krackhardt (1987, 1988, 1992, 1993). Information on the R project for statistical computation can be found on the website www.r-project.org). QAP proceeds in two steps: First, the data, originally in matrix form, are "vectorized" with a length of $N(N-1)$ with N representing the number of actors in the network and an ordinary logistic regression is performed on them. From this, traditional regression coefficients are estimated for each independent variable. In the second step, a null hypothesis reference distribution is generated against which the observed coefficients can be compared to determine their statistical significance. This reference distribution is created by randomly permuting (i.e., reordering) all the rows and columns of the dependent variable matrix and then recalculating the regression coefficients. The process is repeated multiple times (in this study 1,000 times) to provide an estimate of the distribution of all possible coefficients that are consistent with the structure of the data. If the observed coefficient is larger than, for example, 990 of the coefficients generated under the null hypothesis (represented by the randomly permuted data), then it can be said that this coefficient is significantly different from random at the .01 level. QAP regression has been shown to yield unbiased parameter estimates regardless of the degree of autocorrelation. These estimates can be interpreted in the same way as those obtained from standard regression (Burris 2005, Hinds, Carley, Krackhardt, and Wholey 2000, Krackhardt 1988).

3.4 Excursus on Causality

Although we assumed causal relationships between the independent and the dependent variables, theory argues for cyclic relationships between perceived influence/friendship and cooperation. For example, as previously outlined we may expect friendship to affect cooperation positively, as it fosters the emergence of trust between actors and reduces tendencies for free-riding. Alternatively, managers who frequently work together have more opportunities to create friendship ties than those who do not cooperate. Similarly, we may argue that although it seems reasonable to cooperate with those whom we consider to be influential, we may deem others as being influential because we have learned about the strategies they apply to achieve their targets by cooperating with them. Clearly a full test of the theory would require the use of data that have been gathered at multiple points in time. We do not have such data and it is highly unlikely that top-level managers would agree to be interviewed on the same subject multiple times. However, it follows from theory that at any point in time we should expect a correlation between perceived influence and friendship on the one hand and cooperation on the other. From the perspective of business companies, treating influence and friendship as means to an end in order to explain the cooperative behavior of managers seems to be particularly relevant (for a similar approach see Carley and Krackhardt 1996). Therefore, we will advance our results by analyzing the joint effect of perceived influence and friendship ties on the creation of cooperation ties between top managers.

A second reason for treating cooperation ties as dependent variable is empirical in nature. As outlined, all managers included in the study had been working for their respective company for a number of years though in different positions. We may therefore expect that friendship ties have emerged over a considerable period of time. Similarly, a manager's reputation as being influential is likely to be the outcome of a longer process. In contrast, cooperation within strategy making is related to managers' current positions in which they had typically been a much shorter time.

4 Empirical Results and Discussion

Table 1 displays descriptive statistics and the level of confirmation for the cooperation networks in both companies as well as intercorrelations between the variables. The calculation of intercorrelations is based on QAP, which proceeds in two steps: First, a Pearson correlation coefficient is calculated between the cells of two matrices. Second, the levels of sig-

nificance are estimated by permuting one of the matrices multiple times.

Compared to the few reported confirmation levels of relational ties in networks (Lincoln and Miller 1979, Schwartz and Jacobson 1977, Weiss and Jacobson 1955), tie confirmation for the cooperation networks yielded satisfying results with the proportion of confirmed ties amounting to 52.7% and 69.2% respectively. Direct comparison between the two companies under study reveals that all networks at CHEM-CORP are considerably denser than the respective networks at OIL-CORP, which can be seen from the mean values, thus reflecting the above-mentioned differences in the formal organizations of both companies. While the multi-dimensional integrated structure at CHEM-CORP suggests high levels of interrelation between corporate units (Banner 1995), particularly as far as cooperation is concerned, decentralized holding organizations as employed by OIL-CORP are commonly associated with sparser networks. However, it has to be taken into account that the two organizational networks under investigation differ in size as measured by the number of actors. It stands to reason that smaller networks are likely to exhibit higher densities than larger sets. This can be most easily explained for the friendship network, in which actors will not necessarily name more people as friends just because of a larger size of the network.

The results of the QAP logistic regression models are reported in Table 2. The hypothesized models seem to provide an acceptable fit to the data of both companies with a Pseudo-R^2 of .14 for CHEM-CORP and .35 for OIL-CORP respectively. Although the individual effects differ in magnitude, the results for both companies are largely consistent for most of the effects studied. With respect to the actors' formal position in the organization, two control variables influence cooperation significantly. A negative effect can be stated for functional type and a positive effect for department. Taken together, it can be concluded that cooperation ties are particularly likely to occur between managers who occupy different functional positions but belong to the same department. These findings are plausible for several reasons. In both companies, corporate units are assigned to departments based on the similarity of their tasks, thereby increasing their need to cooperate. Moreover, inter-functional cooperation is suggested by the companies' formal organizations. Spe-

cifically, the multi-dimensional structure at CHEM-CORP suggests close cooperation between the three divisional functions "product", "geography", and "central services" (Banner and Gagné 1995). Likewise, the service departments at OIL-CORP have been designed to closely cooperate with the subsidiaries on a number of issues. In contrast, the hierarchical level does not significantly influence the creation of cooperative relationships between managers. Finally, a significant effect for geographic distance can only be assessed at OIL-CORP. In other words, managers at the corporate headquarters are more likely to collaborate than those being located in any of the globally dispersed corporate entities.

In contrast to OIL-CORP, CHEM-CORP shows an insignificant result for geographic location. This may be explained by the fact that the proportion of managers being located abroad is substantially lower as compared to OIL-CORP. Moreover, these managers travel more frequently to the corporate headquarters (at least once a month). Finally, all of these managers are German natives who had previously worked in several positions at the corporate headquarters.

In Hypothesis 1, a positive effect of perceived influence on the creation and maintenance of cooperation ties was predicted. The empirical findings clearly support this assumption for both companies. Apparently, managers have a preference to cooperate with those they consider to be particularly influential within the strategy-making process. Obviously, their problem-solving capacity as well as the desired influence spillover increase the attractiveness of cooperation partners who are perceived as highly influential (Krackhardt 1990, Podolny 1994). As we have conceptualized both relations (perceived influence and cooperation) as directed ties, we may not only state coherence between perceived influence and cooperation in a general way, but also find support for the suggestion of Podolny (1994) that the status of a specific actor is contingent to the status of his affiliates and hence affects cooperative behavior. As the results reveal, actors tend to establish collaborative ties with colleagues who they consider being influential by granting strategically relevant information and support to them. In contrast to this, managers' inclination to place resources at the disposal of lower-status colleagues is significantly lower. For these reasons, Hypothesis 1 is clearly supported by the empirical findings.

Table 1: Descriptive Statistics, Degrees of Confirmation, and QAP Intercorrelations

CHEM-CORP	Min.	Max.	Mean	SD	DC	1	2	3	4	5	6	7
1. Functional type	0	1	n.m.	n.m.	n.m.							
2. Hierarchical level	0	1	n.m.	n.m.	n.m.	.36***						
3. Department	0	1	n.m.	n.m.	n.m.	.15***	-.01					
4. Geographical location	0	1	n.m.	n.m.	n.m.	.18***	-.12	.06				
5. Perceived influence	0	1	.55	.50	n.m.	-.04*	-.19**	.12***	.06			
6 Friendship	0	1	.29	.46	n.m.	.07**	.06	.20***	.03	.10***		
7 Friendship x influence	0	1	.27	.45	n.m.	.03	.04	.21***	.07	.55***	.68***	
8 Cooperation	0	1	.42	.49	69.2%	-.06*	-.09	.28***	.01	.23***	.14***	.21***

OIL-CORP	Min.	Max.	Mean	SD	DC	1	2	3	4	5	6	7
1. Functional type	0	1	n.m.	n.m.	n.m.							
2. Hierarchical level	0	1	n.m.	n.m.	n.m.	.48***						
3. Department	0	1	n.m.	n.m.	n.m.	.35***	.06					
4. Geographical location	0	1	n.m.	n.m.	n.m.	.51***	.08***	.18***				
5. Perceived influence	0	1	.34	.47	n.m.	-.14***	-.17**	.06**	-.03**			
6 Friendship	0	1	.12	.33	n.m.	-.02	-.11*	.22***	.03	.34***		
7 Friendship x influence	0	1	.15	.36	n.m.	-.04	-.13**	.12***	-.00	.59***	.75***	
8 Cooperation	0	1	.23	.42	52.7%	-.21***	-.21***	.12***	-.04**	.28***	.36***	.28***

*** $p < .001$; ** $p < .01$; * $p < .05$
SD = Standard deviation; DC = Degree of confirmation; n.m. = not meaningful
Significance tests based on correlation quadratic assignment procedure tests using 2,000 permutations

Table 2: Multinominal Logistic Regression QAP Predicting Cooperation: Unstandardized Regression Coefficients (Standard Errors)

	CHEM-CORP			OIL-CORP		
Control Variables						
Functional type	-.45 (.12)***	-.49 (.12)***	-.49 (.12)***	-1.68 (.13)***	-1.67 (.15)***	-1.64 (.15)***
Hierarchical level	-.27 (.11)	-.10 (.11)	-.10 (.11)	-.39 (.10)	-.21 (.11)	-.22 (.11)
Department	2.00 (.16)***	1.82 (.17)***	1.83 (.17)***	1.57 (.12)***	1.10 (.14)***	1.06 (.14)***
Geographical location	.02 (.11)	.00 (.11)	.00 (.11)	.32 (.09)*	.29 (.10)*	.28 (.10)*
Main Effect						
Perceived influence		.84 (.09)***	.90 (.11)***		.93 (.09)***	1.10 (.10)***
Friendship		.32 (.10)*	.43 (.16)**		2.02 (.12)***	2.55 (.18)***
Interaction Effect						
Perceived influence x friendship			-.17 (.20)			-.96 (.23)***
Intercept	-.26 (.12)	-.91 (.16)**	.94 (.15)**	-.75 (.08)*	-1.51 (.10)***	-1.58 (.11)***
Pseudo R²	.10	.14	.14	.29	.34	.35
χ² (df)	264.96*** (5)	358.38*** (7)	359.10*** (8)	1,595.35*** (5)	2,090.38*** (7)	2,107.79*** (8)

N = 2,256 dyads among 48 corporate managers   N = 3,906 dyads among 63 corporate managers

*** $p < .001$; ** $p < .01$; * $p < .05$
Significance tests based on multiple regression quadratic assignment procedure tests using 1,000 permutations

Hypothesis 2 suggested a positive effect of friendship ties on the presence of cooperative relationships. The results in both companies support this notion. Although the influence of existing friendship ties on the formation of cooperation ties is weaker at CHEM-CORP than at OIL-CORP, the second hypothesis is also clearly supported by the empirical results in both organizations. Obviously, top- and second-level managers forge friendship ties throughout their careers. More importantly, these friendship ties among upper echelons exert beneficial effects by enhancing the transfer of information as well as by boosting the exchange of advice and support as frequently suggested for other contexts (Brass 1984, Ibarra 1993, Ingram and Roberts 2000, Uzzi 1996). Although we did not include any success variables into our analysis we may expect that friendship ties in the long run also affect the success of the strategy-making process positively. By

fostering the transfer of strategically relevant resources such as information, advice, and support (Kim and Mauborgne 1998, Kogut 1989, Krackhardt and Kilduff 2002, Prahalad and Doz 1987) friendship ties between managers should be able to facilitate the strategy-making process as a whole.

In Hypothesis 3, we predicted a negative moderating effect of friendship on the relationship between perceived influence and cooperation. Because friendship was assumed to mitigate status differences between managers, reduce the problem of free-riding, and make the unilateral exploitation of power by managers less likely, we expected friendship between managers to reduce the importance of perceived influence as a motive when establishing collaborative relationships.

In contrast to the main effect models, the empirical results support our third hypothesis only in the case

of OIL-CORP whereas the respective interaction effect – though negative – is insignificant in the model of CHEM-CORP. In line with our theoretical discussion, friendship and perceived influence are substitutive in nature with respect to their effect on the collaborative decision of managers. Our empirical results are therefore consistent with the findings of Westphal, Boivie, and Chng (2006) who argued that CEOs forge friendship ties to CEOs of other firms in order to secure access to important resources. Indeed, the substitution of instrumental considerations by expressive motives is in line with the notion that in addition to its inherent value friendship itself may be instrumental in obtaining resources being relevant for the achievement of goals (Baldwin, Bedell, and Johnson 1997, Brass 1992).

Although the results for OIL-CORP support our hypothesis, we suggest treating them as tentative as we could not confirm the negative interaction effect between friendship and perceived influence for the second company under study. As our investigation is confined to information that has been gathered in two organizations we may only speculate about the reasons why the findings vary between OIL-CORP and CHEM-CORP. A possible explanation could be that the importance of friendship for collaborative relationships between top managers differs between large companies and smaller organizations. In addition, the strategy-making process may represent a specific environment where managers compete for scarce monetary resources thus leading to a separation of instrumental power from expressive feelings of friendship. The monetary resources needed to fund new strategies and projects are typically tied to specific forms of exchange, thereby echoing instrumental relations in some organizations rather than fostering a more general and mutual exchange that builds on the foundation of friendship (Chua, Ingram, and Morris 2008, Flynn 2005).

To test the stability of our results, we ran sensitivity analyses. Specifically, we tried to control for a potential bias resulting from the fact that information and support were collapsed into a single dependent variable (i.e. cooperation). In order to ensure unbiased results, we ran analyses using information and support as individual dependent variables. Although the effects slightly differed in magnitude, the results invariably remained stable.

5 Conclusions and Future Research

The aim of this study was to examine the effects of perceived influence and friendship on cooperation among top executives. In contrast to prior work that mainly focused on the individual actors as unit of analysis, we were interested in assessing the effects between relationships of perceived influence and friendship ties on the one hand and the presence of cooperation ties on the other. Thus, the underlying assumption of the present study was that if managers perceive other colleagues as friends or as being particularly influential within the organization, they are more likely to cooperate with them. In order to test the hypotheses empirically, multinominal logistic regression QAP models were calculated by drawing on empirical data that were collected among top managers participating in their company's strategy-making process.

We applied a comparative case study design with a dissimilar case approach. The two companies under study differ with respect to important aspects such as industry, formal organization, and size. Despite these differences, the results for most of the effects studied are consistent for both cases. Although this does not enable a generalization of the findings in a statistically meaningful way, we offer them as an indication that our results may be rather independent from the features of a specific organization.

Our findings contribute to the literature on social networks and to the TMT literature alike. For both companies, the direct effects between perceived influence, friendship, and cooperation ties were significant and positive. Obviously, it is not only the general level of influence that is attributed to a top manager or his overall popularity being indicated by his embeddedness into the friendship network that makes him an attractive partner for cooperation. Instead, our findings show that the individual assessment of a potential cooperation partner's influence as well as the expressive perception with respect to seeking friendship with a colleague shape the decisions of top managers to establish and maintain collaborative ties. As a consequence, manager i is more likely to provide strategically relevant resources to j – such as information and support – if i considers j to be influential or to be his friend (e.g., Brass 1984, Ibarra 1993, Ingram and Roberts 2000, Lazega and Pattison 1999, Uzzi 1996).

The TMT literature often discusses the perceived influence of executives with respect to potential agency problems (Jensen and Meckling 1976). The power of CEOs has for instance been linked to excessive compensation packages (e.g., Bebchuk, Fried, and Walker 2002, Bertrand and Mullainathan 2001) and the ability to engage in scapegoating in the presence of weak performance (Boeker 1992). Our results indicate that perceived influence and power may also have beneficial consequences as they increase the attractiveness of these managers as cooperation partners. In addition, we were able to show that perceived friendship ties among upper echelons do not only foster advice seeking between the top management and outside directors (McDonald and Westphal 2003, Westphal 1999), but may also increase internal cooperation among the members of the top management. This result adds to a small but growing body of literature on the value and effect of friendship among upper echelons (McDonald and Westphal 2003, Westphal 1999, Westphal, Boivie, and Chng 2006).

Investigating the interaction between perceived influence and friendship offers new insights into the way how instrumental and expressive ties are interrelated within cooperative settings. Although it has been suggested that influence and friendship are interrelated (Ho and Levesque 2005, Krackhardt 1990), the joint effect of both relations on the creation and maintenance of cooperative ties had not yet been investigated. Our findings partially support the assumption that instrumental and expressive ties may indeed be interrelated thus offering a more fine-grained picture on collaborative networks among upper echelons. In one of the companies under study we found support for the third hypothesis predicting a negative moderating effect of friendship ties on the relationship between perceived influence and cooperation. In this company, top executives seem to trade-off their perception of others' influence against their friendship-seeking behavior when deciding about their collaborative relationships. In other words, if the cooperation tie between any two managers is accompanied by an expressive friendship tie, the importance of the partner's perceived influence diminishes.

The negative interaction effect between perceived influence and friendship ties supports the notion that friendship can be viewed as instrumental because it enhances the availability of important resources (Baldwin, Bedell, and Johnson 1997, Brass 1992). In fact, friendship may not only increase the advice-seeking behavior of managers (Westphal 1999) but may even replace or at least mitigate instrumental motives for collaboration. As a consequence, friendship ties among executives – that are often met with skepticism – could in fact promote the effectiveness of the strategy-making process. While cooperation based on instrumental considerations faces the risk that managers behave opportunistically, expressive ties such as friendship reduce status differences between executives and reduce the problem of free-riding. Friendship may even be a means to establish collaborative ties with especially high-status managers who would otherwise not be reachable and therefore not available for the exchange of resources. However, as a significant interaction effect between influence and friendship on cooperation could only be yielded for one of the two organizations under study, further research on the joint effect of instrumental and expressive perceptions as antecedents of cooperation will be necessary.

Despite the consistencies in our results some interesting differences exist between the two companies studied. Generally, the effects of friendship ties on cooperation within the strategy process seems to be stronger at OIL-CORP, whereas perceived influence appears to be more important for the formation of cooperative ties at CHEM-CORP. Different reasons may be used to explain this result: First, OIL-CORP is much smaller in size and less formalized than CHEM-CORP. Additionally, the company has grown substantially within the last few years. Based on qualitative information gathered during the interviews it became apparent that the ample growth of the company within a relatively short period of time was facilitated by strong, informal relationships between the managers. As the adjustment of formal structures and procedures tended to be lacking behind the growing levels of organizational complexity, managers built to some extent on existing friendship ties in getting their work done. Secondly, most managers at OIL-CORP have worked in their positions for a number of years, whereas managers at CHEM-CORP – as a result of the larger organization – have more frequently been promoted to other positions in the company. Obviously, a stable organizational configuration is more likely to foster the amalgamation of friendship ties and pro-

fessional relationships than a dynamic organization, in which the position of individual managers and hence their cooperation partners vary more frequently.

In order to put our findings on a firmer basis, future research should study the interrelations between friendship, influence, and cooperation ties in even more diverse organizations. Particularly, firms of different legal forms (publicly traded versus owner-managed) and different purposes (profit versus non-profit) should be considered. Moreover, it would be interesting to investigate companies operating in different markets with different cultural backgrounds as we cannot rule out that the effects found are typical for German companies. Applying the classic model of cultural dimensions described by Hofstede (1980) it can be expected that the levels of uncertainty avoidance and power distance in Germany may alter the relative impact of perceived influence and friendship on cooperation compared to cultures that score differently on both dimensions. Additionally, the relationships studied may be influenced by the level of uncertainty, which is related to the distinction between routine and non-routine organizational activities (Johanson 2000, Stevenson 1990). Therefore, future research should take economic processes other than strategy making into consideration. In addition, it would be interesting to apply this kind of study to multi-cultural top management teams in which the individual members of the team have different cultural backgrounds. A cross-cultural approach could provide interesting insights into the effect of culture on the relationships between perceived influence, friendship, and cooperation.

A limitation of this study is the use of cross-sectional data, which does not allow us to infer causality. With respect to the perception of influence we have argued that the amount of influence imputed to managers is based on their past performance, resulting in a time-related component of tie formation. Similarly, it is reasonable to assume that friendship ties develop over a considerable period of time and slowly affect the formation of cooperation ties. For further clarification on the causalities between the constructs, researchers may aim at collecting longitudinal network data. However, as time is a particularly scare resource for top executives, they are unlikely to participate in studies in which data has to be collected at multiple points in time. A

longitudinal research design is therefore prone to high drop-out rates making the collection of data on relational ties among all members of the TMT impossible – as required for the type of analysis performed in this study. Hence, the cross-sectional design is mainly owed to the missing willingness of top executives to participate in multiple data collection waves.

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