Social Capital, Third Party Gossip, and Cooperation in Organizations

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1 Introduction

In many organizational settings cooperation between peers is one of the crucial preconditions not only for the production of collective goods, but also for the successful accomplishment of one's own tasks. However, not all individuals are equally successful in eliciting voluntary cooperation from their colleagues. This article deals with two factors that may contribute to the differential success of organizational members to maintain such cooperative relationships with their peers: social networks and strategies of informal social control.

Informal social structures are widely recognized as influential *ex ante* determinants of organizational behavior. Far less attention has been paid to the question how differences in *ex post* informal social control behavior affect intraorganizational cooperation. The goal of the present contribution is to sketch and empirically test a theoretical model of cooperation that incorporates both dimensions into one framework.

In what follows, we will first give a brief overview of existing insights concerning the link between informal networks, strategies of informal social control and intraorganizational cooperation. A theoretical model and two testable hypotheses are presented in the third section. This will be followed by an outline of the empirical study and the research design. The article closes with a discussion of the results.

2 Networks, Sanctions, and Cooperation

Stable cooperative relationships among peers become more and more important for the members of modern organizations to carry out their jobs. Along with this development came a growing concern for the conditions that foster intra-organizational cooperation. A common characteristic of research in this area is the claim that "embeddedness" into informal networks stimulates cooperation. At least two broad theoretical traditions can be distinguished, depending on whether it sees power or trust as the major trigger of cooperation.

The first one is rooted in power dependence theory. Its major argument is that cooperation is a function of unilateral dependence: Individuals who occupy an advantageous exchange position in the informal social networks of the firm will ultimately be better off in these transactions (Emerson 1972; Molm 1996; Cook 1990). Informal networks consist of instrumental as well as expressive interpersonal ties like communication, advice, friendship and trust relationships and are the focus of a still growing research tradition on organizational behavior (for recent reviews see Flap, Bulder & Völker 1998; Krackhardt & Brass 1994; Savoie 1993), and individuals have an advantaged position to the degree that they have alternative sources to obtain the resources they desire. Empirical evidence from experimental studies supports this view (Molm 1996). In the context of research on real life organizations, these findings have their correspondence in the well-documented link between structural holes and a variety of control benefits (Burt 1992). Having many of these structural holes provides an actor with a source of social capital and is an indication for the extent to which the demands from the target are negotiable. Another study shows that a lack of structural holes in managerial networks can result in failures regarding the coordination of critical interdependencies (Benassi & Gargiulo 1997). One conclusion from this research is that particular social network configurations are better able to prevent defection than others (Wittek, Hangyi & Carroll 1996). In sum, scholars in this perspective focus on the stability of asymmetrical outcomes of cooperation, like the degree to which the controller is able to exploit the target. The social structural condition under which this outcome becomes most likely — a structural power advantage — is asymmetrical, too.

The second type of research puts a stronger emphasis on trust rather than power. While network structures are also considered to be important, scholars in this branch underline that cooperation will be most likely where both exchange partners trust each other (Pennings & Woiceshyn 1987; Bradach & Eccles 1989; Powell & Smith-Doerr 1994; McAllister 1995). What these researchers have in mind when they talk about embeddedness and trust is a reciprocal, symmetrical relationship that is stable over time. This means that both exchange partners contribute their intelligent effort so that the other can carry out his or her task, and that they do so repeatedly.

So far, both approaches have offered enough empirical evidence to demonstrate the validity of their argument. But apart from a number of programmatic statements about the potentially complementary nature of the two explanatory sketches[1], not much progress has been made in the development of a coherent framework which clarifies the role of both phenomena and their interrelationship with cooperation in organizations.

We argue that there are at least two major reasons for this failure. First, both approaches deal with two different types of interdependencies, without taking into consideration the interrelationship between them (Lindenberg 1997). Whereas the power argument is explicitly limited to the notion of functional interdependencies, the trust argument frequently mixes elements of cognitive and functional interdependencies, as for example in the claim that the creation of team interdependencies enhances mutual trust, which in turn fosters cooperation (Barker 1993).

Second, both approaches either neglect variations in *ex post* sanctioning behavior or assume that in close-knit groups the use of indirect control strategies like gossiping or third party leverage has a catalytic effect in enforcing cooperation (Coleman 1990; Ellickson 1990; Lazega 1993). Until recently, most structural arguments were synonymous with Emerson's (1972: 67) claim that advantageous network positions would automatically generate control benefits, thereby rendering a closer investigation of exchange and punishment strategies superfluous. More recent efforts show a growing concern for the incorporation of purposive action and strategy into their models. These efforts are characterized by an explicit distinction between the structural conditions that provide the basis of power, and the strategic elements of its actual use. Studies in this direction revealed that under the same structural conditions, different exchange strategies can produce considerable variations in the payoffs for individual actors (Markovsky 1987; Molm 1997). Being successful in getting others to cooperate with yourself obviously is not only contingent upon a good network position, but also on the use of specific sanctioning or control strategies.

Control strategies are purposive actions that respond to deviant behavior (Horwitz 1990: 9) and are part of the more general phenomenon of what has been called 'compliance gaining behavior' or 'influence tactics'. The variety of influence strategies and taxonomies found in the literature is too vast and complex to be covered or summarized here in any theoretically meaningful way (Kellerman & Cole 1994). One common characteristic of this research is its preoccupation with *direct* control attempts, in which the controller privately communicates with the target about the grievance. Despite the rich body of studies on such dyadic control attempts, research on their effectiveness is "recent and

1 See the articles in the forthcoming special issue on "Trust and Control in Organizational Relationships" of the journal *Organization Studies.*

relatively scant" (Barry & Watson 1996: 298). Studies dealing with the outcomes of different compliance gaining strategies are mainly concerned with variations in the "pressure to comply" exerted by a controller (Dillard 1988) and its effectiveness in eliciting compliance of the target. These arguments center around the beneficial or detrimental effects of 'hard' and coercive vs. 'soft' and conciliatory forms of sanctioning behavior in the dyad.

Some studies found 'soft' strategies to be more effective than 'hard' ones (Baron 1989; Bergmann & Volkema 1989; Yukl, Falbe & Youn 1992). Similarly, groups practicing open and direct resolution of conflicts show higher levels of individual and group performance than groups in which these norms prescribe avoidance (Cohen & Cohen 1991; Gupta et al. 1994; Jehn 1995; Murnighan & Conlon 1991). These results are in line with the early behaviorist arguments that negative sanctions, punishment and coercion would elicit negative counter reactions and thereby initiate a conflict spiral. Other researchers challenge this view and argue that punishments, coercion and negative sanctions can be more effective in suppressing undesired behavior than positive reinforcement, and punishment does not necessarily result in the deterioration of cooperative efforts (De Gilder, Bruins & Ellemers 1994; Molm 1997; Mesch, Farh & Podsakoff 1994).

Compared to the vast literature on the determinants of direct control, research on the causes and consequences of indirect control strategies is still in its infancy. Indirect control efforts are instances in which the controller talks to at least one third party about the grievance, either in the absence or presence of the target.[2] Especially the effectiveness of third party gossip for the enforcement of norms and the production of collective goods has long been acknowledged by social theorists (Black 1984; Coleman 1990; Ellickson 1990; Horwitz 1990; Goodman & Ben-Ze'ev 1994; Merry 1984; Noon & Delbridge 1993; Raub & Weesie 1990; Soeters 1994). Organizational scholars recently started to put gossiping and related behaviors under more systematic empirical scrutiny (Burt & Knez, 1995; Friedkin, 1983; Gargiulo, 1993; Lazega & Lebeaux, 1996; Lewicki & Shepard, 1985; Morrill, 1995; Snijders, 1998; Wittek, 1997; Wittek & Wielers, 1998). But with the exception of some ethnographic studies which show that the use of indirect strategies can be extremely efficient to resolve interpersonal conflicts (Freidson 1975; Gargiulo 1992; Kapferer 1969; Lazega 1993; Thurman 1979), none of these investigations explicitly addressed the

2 For example, of the 64 conceptually distinct strategy types identified in the most comprehensive review of compliance gaininig research (Kellerman & Cole 1994: 7-12), only two cover influence attempts that involve one or more third parties. However, in an empirically grounded refinement of existing instruments to measure conflict management in organization, third party mobilization emerged as a separate factor besides direct forms of control and inaction, accounting for 14% of the variance in a data set of 619 employed adults (Morrill & King Thomas 1992).

effectiveness of third party gossip as a strategy to elicit compliance from one's peers.

In sum, network researchers primarily addressed two different types of *ex ante* conditions which contribute to the successful avoidance of cooperation, but did not very systematically investigate the role that *ex post* control efforts play in this equation. The opposite holds for the compliance gaining and social control literature, which besides that is characterized by a surprising lack of studies on the outcomes of influence strategies and a neglect of indirect control efforts. Furthermore, it seems that any of the *ex post* strategies discussed so far, be they direct or indirect, soft or hard, can be effective in generating a target's compliance.

In order to resolve this incompleteness, a theoretical framework is necessary which is able to capture the interplay between social network characteristics and actual control behavior.

3 Relational Signaling and Cooperation

We build on a theoretical framework for the analysis of governance problems in organizations, *Relational Signaling Theory* (Lindenberg 1998; Mühlau 1999; Wielers 1991, 1997). Signaling theory is rooted in methodological individualism, and builds on the following two assumptions.

First, that human behavior is goal oriented, with social goals playing a central role as triggers for human behavior (Frank 1985; Lindenberg 1994). More specifically, signaling theory assumes that behavior is structured by three metagoals: the realization of physical and social well being and the avoidance of losses. Social well being is achieved through eliciting social approval from other people. Social approval in turn, can have different forms, with affect, behavioral confirmation, and status being among the most important and best described instruments to produce it (Lindenberg 1993). The key instrument to reach these social goals are *relational signals.* A relational signal is an action by an individual or group that affects the production of social approval for another person or group. A positive relational signal can be defined as any behavior by a first party that contributes to the social well being of a second party who also perceives it as an indicator of the stability of the first party's relational frame. The opposite holds for negative relational signals.

Second, the degree to which social goals will be salient in exchange relationships depends on the extent to which the involved actors share in the production and/or consumption of valued goods and resources. *Sharing* is a situation in which two parties can exert both positive and negative externalities on each other (Lindenberg 1982). Together with the lack of alternative exchange opportunities, this characterizes a situation of *mutual* functional interdependence. This

high interdependence/strong solidarity condition can be seen as defininig one extreme of a sharing continuum.

Where little is shared or what is shared is of limited value, weak solidarity is likely to become the salient frame defining the relationship between the controller and the target. Here, the exchange partners are 'allowed' to pursue their personal gain at the expense of other actors, but within limits. The limits are defined by weak solidarity norms, which are based on equity rather than equality principles. The exchange partners attach value to the relationship as such. Obligations exist and are tracked by means of individual accounts, which means that the exchanges with third parties will not have an effect on what goes on in the relationship between the two parties. What is encouraged are signals that communicate a clear relational interest in the particular other person, and the incorporation of third persons for the resolution of conflicts is likely to be considered as a negative relational signal. The weak interdependence/weak solidarity condition can be seen as defininig an intermediate position on the sharing continuum.

Where much is shared or the value of the shared items is high, strong solidarity will become the salient relational frame. In this case, gain seeking is present only as a background goal, and norms of solidarity are salient. Strong solidarity norms are based on equality rather than equity principles, and the realization of individual gains at the expense of others is not conceded. Strong solidarity is most likely to arise in sharing groups of three or more actors, and obligations are defined with regard to the group as whole rather than to particular other actors. The incoporation of group members for the purpose of settling disputes will have a reinforcing effect on the group and will not be considered to constitute a negative relational signal.

Finally, the other extreme of the sharing continuum is represented by an asymmetrical distribution of negative and positive externalities (Molm 1996). Here, the exchange between the controller and the target is characterized by strong *unilateral* functional dependence of the target. The target is a source of positive externalities for the controller, but the latter need not fear negative externalities from the target because of the availability of cheap alternatives. The opposite holds for the target, who is dependent on the positive externalities of the controller due to the absence of exchange alternatives. The asymmetrical and functional nature of the exchange precludes the development of solidarity considerations, resulting in untempered gain seeking as the salient relational frame (Lindenberg 1993). In this case, individuals are not restrained by solidarity concerns, and will therefore try to realize gains even if this will create damages to other actors. Relational signaling will not play a role in such relationships.

With regard to the *ex ante* conditions for cooperation, signaling theories assumptions can be summarized in form of the following proposition:

Proposition 1 The stronger the mutual interdependence between two or more actors, the higher the chances that solidarity considerations will temper the salience of the gain seeking frame.

Hence, from a relational signaling perspective power and trust occupy opposite positions on the dimension of sharing. Having structural power over somebody as well as being highly interdependent with someone should increase the chances that this person will cooperate, but for different reasons. In a power relationship it is the absence of alternatives that makes the dependent person comply with the demands of the powerful actor. Due to the absence of solidarity consideration, this implies that the target will defect as soon as such an alternative exchange opportunity emerges. Things are different where both exchange partners are mutually interdependent. In this case, solidarity considerations will limit the target's inclination to enter alternative exchange relationships at the expense of the controller even if the opportunity for defection emerges. As a result, signaling theory predicts a curvilinear relationship between the degree of interdependence on the one hand and the target's willingness to cooperate with the controller:

H_1: The stability of the target's cooperative efforts towards the controller will be (a) lowest when neither actor is dependent on the other, (b) moderate when only the target is dependent on the controller, and (c) highest when both actors are reciprocally dependent on each other *(Sharing Hypothesis).*

Thus, signaling theory allows to reconceptualize the *ex ante* embeddedness conditions of trust on the one hand and power on the other in terms of the degree of sharing that links the two. To assess the potential relative effectiveness of different *ex post* control strategies in triggering compliance from the target, we start from the assumption of a simple cost-benefit calculation of the target (Fararo & Skvoretz 1997): If the costs of the experienced sanction (or the expected costs of future sanctions) exceed the expected gains from defection, the target will be more likely to cooperate. If the expected benefits from defection exceed the expected cost, the opposite will be the case. This implies that the controller has to be able to credibly threaten the target with the allocation of future losses that will exceed the benefits from defection. This requires an assessment of the damages that the sanction can impose on the target. Signaling theory argues that the crucial aspect of an informal control strategy is the controller's ability to damage the target's opportunities to produce social approval. That is, one has to specify to what degree the controller can interfere with the target's sources of behavioral confirmation, status or affect. The controller has at least two means to accom-

plish this. First, to the degree that she herself is an important source of social approval for the target, she can withdraw or threaten to withdraw her approval for the target. For example, the controller can express her disgust about target's behavior in a private conversation. Second, the controller can decide not to keep things to herself, for example by complaining to other persons about the target. In the first case, the controller engages in a direct control effort. The damage for the target consists in the loss of social approval from the controller. If the controller does not tell anybody else, the amount of disapproval that the target has to book is limited to one person. In the second case, the controller opts for an indirect strategy. Here, the target's potential loss of social approval increases by the number of third parties that the controller approaches. Therefore, control efforts that transcend the boundaries of the dyad are potentially much more damaging for the target than a private discussion. If this assumption holds, then it follows that whether a target will perceive a sanction as weak or strong depends on the degree to which the controller involves third parties into the control effort. By implication, expected strength of future sanctions will be a function of the controller's reputation as a gossiper. The controller may be known to the target as somebody who has invoked third parties during control efforts in the past, for example through accounts from involved third parties who reveal their connivance of a specific case ("Y told me that you had done this"). The target may also hear about such intentions from the controller himself ("I will tell X about what you did"). The line of reasoning up to this point can be summarized as follows:

Proposition 2 Expected damage potential of a sanction is a function of the controller's reputation to involve third parties in a control effort.

But a controller's inclination towards indirect control efforts will not be the only factor influencing the target's assessment of sanction strength. At least as important as a controller's reputation of being a gossiper will be the amount of damage that this might actually cause for the target's social well being. A controller who is connected to many people in different networks can do more damage to the target's reputation than a controller who comes in contact only with a limited number of others. Thus, controllers with much social capital potentially can interfere much more strongly with the target's production of social approval than controllers with low levels of social capital. This implies that the target already disposes over some previous knowledge over the controller and his or her network. The target may have learned about the size of the controller's personal network either through other people, for example through frequent mentioning of the controller's name through different people, or through personal observation. Up to this point the argumentation concentrated on the controller's social capital, leaving aside the potential impact of the target's social capital on

the latter's decision to defect or comply. A target with much social capital not only has alternative sources for the production of social approval. Apart from not complying with the sanction, she also has the opportunity to retaliate against the sanction of a controller by damaging the latter's reputation in her own network. As a result, targets rich in social capital will be hurt less by a sanction than targets with lesser amounts of social capital:

Proposition 3 Expected damage potential of a sanction is positively related to the amount of social capital of the controller and inversely related to the amount of social capital of the target.

The previous hypothesis denotes an *ex ante* condition for the stability of cooperative relationships. The question now becomes to what degree the use of particular *ex post* control strategies interferes with the specified effect. We argue that this will depend on the relational signaling character of the sanction. If the degree of sharing in fact influences the salience of different relational frames as the theory predicts, it will also have an impact on the relational signaling character of particular sanctioning strategies. Indirect control strategies are unlikely to be interpreted as negative relational signals under the condition of strong unilateral dependence of the target and strong mutual interdependence between the target and the controller, because either untempered gain seeking or strong solidarity governs the exchanges under these conditions.

With the damage potential of control strategies specified, it is now possible to investigate how gossiping affects cooperation under varying degrees of interdependence between the controller and the target. First, where the target is strongly unilaterally dependent on the controller, she is confronted with two potential losses from defection. First, the controller can exit the relationship without much costs. In this case, the target looses the positive externalities from the exchange, without having an opportunity to substitute this loss elsewhere. According to propositions 2 and 3 the expected damage potential of a sanction will be highest where a controller with much social capital and a reputation for being someone who frequently involves third parties into a control effort faces a target with little social capital: The larger the social capital of the controller, the higher the additional damage she can cause for the reputation of the target if she informs a third party about the latter's defection. Thus, by making use of indirect control strategies structurally powerful controllers can increase the chances that the long term losses they impose on the target will outweigh potential short term benefits that the target might realize through shirking.

Second, where mutual interdependence between the controller and the target is strong, the controller will have difficulties to credibly threaten with her exit from the relationship. Though indirect control might cause a loss of her reputa-

tion, the target will consider it unlikely to loose the positive externalities provided by the controller. In this case indirect control will not increase the strength of the sanction and will therefore also have no significant impact on the enforcement of cooperation: the target and the controller are already forced to cooperate with each other because of their mutual interdependence.

Third, indirect control is likely to have a negative relational signaling character at intermediate levels of interdependence between the target and the controller, because weak solidarity defines the relationship. In this case, the losses the target experiences from the sanction are not balanced by the amount of future benefits that can be expected from the relation. In fact, they far outweigh the benefits, since they negatively affect the social production functions of the target. Thus, at intermediate levels of sharing the incorporation of third parties is likely to generate negative relational signals which decrease the target's willingness to cooperate with the controller.

H_2: (a) If neither actor is dependent on the other, indirect control will *decrease* the stability of the target's cooperative efforts towards the controller; (b) if only the target is (asymmetrically) dependent on the controller, then indirect control will *increase* the stability of the target's cooperative efforts towards the controller; (c) if both actors are (reciprocally) dependent on each other, then indirect control will *not affect* the stability of the target's cooperative efforts towards the controller *(Signaling Hypothesis).*

In sum, the theory predicts that to be conducive for generating compliance indirect control has to be carried out in the context of strong unilateral dependence of the target. It will have negative effects where interdependence is only weak, because under these circumstances indirect control is likely to be equaled with a negative relational signal, and it should not have much impact in situations where both parties are strongly mutually interdependent.

4 Method

Data was collected in a panel study on social network dynamics in a Dutch housing corporation. The panel has four measurements, with intervals from three to four months. The organization consists of six departments and 78 employees, 74 of which participated in the research. In this sample, 31 (42%) of the respondents are women and 43 (58%) men. The mean age is 38 years. Regarding educational status, 70% have a vocational degree, 15% went to the university, and the remaining 15% hold a secondary school degree or lower. There were 14 (18%) respondents with formal authority over somebody in the firm. A test of

the two hypotheses requires the operationalization of one dependent variable (cooperation), and two independent variables (interdependence and gossip).

4.1 Cooperation

The question on interpersonal cooperation was the following: "What is your judgment with regard to the mutual cooperation with your colleagues during the last three months? By mutual cooperation we mean each situation in which the way that a colleague carries out a job is important for your own work. Please indicate which of the following descriptions comes closest to your relation with each of your colleagues." The question was followed by a list of names, each of which could be assigned one of following six values: (1) no work related cooperation was necessary, (2) cooperation was very difficult, (3) difficult, (4) neither difficult nor good, (5) good, (6) very good. Note that what is measured here actually is controller's perception of the target's cooperativeness. The question was included in the second and the fourth wave of the panel, resulting in an interval of about 6 months between the measurements. Since the distribution is skewed, it was decided to dichotomize the responses at the median. This split compared cooperation that was rated as 'good' or better (categories 5 and 6) versus interactions that were rated as neutral or worse (categories 2, 3 and 4). Dyads with missing data and those not requiring cooperation were deleted, leaving 1494 dyadic evaluations of cooperative behavior. Descriptive statistics about the cooperativeness through time are presented in Table 1. As can be seen, the majority of the dyads (58%) are cooperative at both points in time. A change in cooperativeness occurs in 24% of the dyads, while 18% of the dyads are characterized by a 'stable' uncooperative relationship.

The *stability of target cooperation* was derived from these two dichotomized networks (the controller's perception of the target's cooperation assessed at the second and the fourth wave of the panel). A value of '1' reflects stable cooperative efforts from the target towards the controller (i.e., the controller perceived the target as being cooperative at both time periods). A '0' indicates that the controller perceived the target as not cooperative during either the first, the second, or both time periods.

4.2 Interdependence

Measurement of interdependence between the controller and the target is based on a sociometric question designed to elicit the communication network of the firm. Each respondent indicated how frequently he or she was talking to every other colleague during work time during the last three months. No restrictions were made about the content or the length of the interaction besides that the communicative event should involve more than a simple message or the

TABLE 1 *Frequency of Cooperative and Uncooperative Dyads at T_1 and T_2*

	Cooperative at T_2		
Cooperative at T_1	Yes	No	Total
Yes	868 (58%)	198 (13%)	1066
No	161 (11%)	267 (18%)	428
Total	1029	465	1494

exchange of greetings. Response categories were as follows: never, less than once a month, one to three times a month, one to three times a week, and daily. For each respondent the first valid entry across the four measurements through time was taken. Missing values (i.e., respondents for whom no information about their choices of a particular target was available) were then replaced by target's choice, assuming involvement in general communicative events is symmetric. The remaining missing values were coded as '0'. Structural power was then operationalized by Burt´s measure of hierarchy.[3] The measure becomes '1' when the constraint that the target imposes on the controller is exactly equal to the average constraint experienced by controller. The measure is greater than '1' if the constraint that the target imposes on the controller is above average. This indicates that the target is among the actors that exert relatively strong constraints on the controller. If the value is smaller than one, the controller is structurally more powerful than the target. Technically, this means that every actor will be treated as a controller and as a target. In the data, hierarchy ranges from zero to 3.64, with a mean value of 1.27 (SD=.67). Since this measure is not symmetric, Burt's measure can be used as an indicator of the degree of unilateral or mutual (inter)dependence. Three ideal typical dyadic configurations can occur. In the first one, the controller and the target impose approximately the same amount of constraint on each other. They are equals in terms of structural constraint. If their hierarchy value is also much above the average, the two are highly mutually interdependent: both have little alternative exchange opportunities and can therefore put high constraint on each other. Second, interdependence is weak where both have an average value on this parameter. Finally, where

3 The computations were carried out with Burt's purpose made program STRUCTURE 4.2. The constraint that actor j imposes on i is defined by the following formula: $c_{ij} = (p_{ij}+[\sum_q p_{iq}p_{qj}])^2/(C/N)$. p_{ij} and p_{iq} indicate the amount of time that actor i invests in communicating with actor j and actor q. p_{qj} measures the time that actor q spends with actor j. N represents the number of contacts in the actor's network, and C is the sum of constraint across all N relationships. C/N is the mean level of constraint per contact.

one of them has a high value and the other a low one, a situation of unilateral dependence exists. Either the controller is more powerful than the target or vice versa.

4.3 Gossip

In an optimal research design, two variables would have to be measured within the dyad: The controller's actual tendency to gossip, and his or her reputation to be a gossiper in the eyes of the particular target. The research design of this study allowed us to directly measure only the first variable, the *tendency to gossip.* It is based on a question that asked the respondents to indicate on a bipolar scale "how appropriate they consider, generally, each of the following reactions as a way to deal with conflicts at work". An actor's tendency to gossip was determined by choosing the highest appropriateness value of the three items measuring indirect control (see Table 2). With Cronbach's α=.86 for the frequency and Cronbach's α=.71 for the tendency to gossip, we conclude that reliability is satisfactory for both constructs

Since it was not possible to get a respondent's evaluation of each colleague's reputation as a gossiper, an indirect way of measuring this second variable was necessary. The variable *frequency of gossip* was derived from the following vignette design. During each of the four waves of the panel, one vignette was presented to each respondent. Each vignette described a hypothetical situation in which the behavior of a (hypothetical) colleague produced some negative externalities for the respondent or the department. The situations varied with regard to two dimensions: whether a grievance affected only one person or the whole department, and whether the trouble occurred only once or repeatedly. For example, one vignette sketched the following situation:

> "It can happen that we feel annoyed by the behavior of a colleague. For example, because it happened repeatedly that due to his or her carelessness we have to work more than would have been necessary".

Each vignette was followed by a set of twelve control strategy items. Each control strategy was therefore evaluated four times if a respondent participated in all four waves. Respondents were asked to indicate on a five point scale how typical each of the twelve reactions was for the people in their department (absent, not typical, somewhat typical, typical or very typical). The variable perceived *frequency of gossip* is based on the maximum of the frequency ratings across the three items measuring gossip (see Table 2). Thus, rather than measuring the controller's reputation as a gossiper, this variable is an indicator to which degree the respondent considers gossip to be a likely reaction as a sanction.

TABLE 2 *Descriptive Statistics for Gossip Variables*

Items	Variables	Mean	S.D.
Ask opinion of others	Appropriateness	31.21	38.56
	Frequency Vignette 1	3.46	.72
	Frequency Vignette 2	3.13	1.00
	Frequency Vignette 3	3.30	.84
	Frequency Vignette 4	3.35	.82
Ask a colleague to talk to the person	Appropriateness	10.35	47.92
	Frequency Vignette 1	2.72	1.00
	Frequency Vignette 2	2.91	1.03
	Frequency Vignette 3	2.76	.92
	Frequency Vignette 4	2.72	.72
Complain to others about the colleague	Appropriateness	25.97	56.60
	Frequency Vignette 1	3.59	.81
	Frequency Vignette 2	3.26	1.12
	Frequency Vignette 3	3.33	.79
	Frequency Vignette 4	3.47	.86
Construct 1 (α=.71)	Tendency to Gossip	45.43	38.98
Construct 2 (α=.86)	Frequency of Gossip	3.87	.75

4.3 Control Variables

Three control variables were included. The first one indicates whether controller has *formal power* over the target. The second one measures whether controller has a *communication relation* towards the target. The rationale for introducing these two variables is that both were found to favor the use of direct forms of control (Horwitz 1990). Finally, *sex* of the respondent was included because of the contradictory claims in the literature concerning differences in cooperative behavior between the sexes.

5 Results

To test the hypotheses, a statistical model has to be chosen which is able to take into account the complex structure of the data: The dependent variable is a dyadic (relational) variable, the independent variables are either attributes of persons (tendency to and frequency of gossip) or dyadic variables (hierarchy, communication and formal power). A method that can handle this type of data is the so-called p_2-model. P_2 is an extension of the well-known p_1-model for dichotomous dyadic complete network data (Holland & Leinhardt, 1981). The p_1-model distinguishes individual sender and receiver parameters for the actors (representing expansiveness and attractiveness, respectively) as well as density and reciprocity parameters for the network. In the p_2-model these effects are further modeled with continuous actor attributes and dyadic covariates, which makes it especially suited for the present purpose. The model contains parameters for the effects of these attributes and covariates as well as sender and receiver variances and their covariance. The p_2-model can be viewed as a kind of logistic regression model for dyadic network data. A derivation of the model, and its precise specification, estimation, and testing is given in Van Duijn (1995) and Van Duijn & Snijders (1996). Model selection and an extensive application can be found in Lazega & Van Duijn (1997), see also Lazega (1997).

A forward selection procedure was used, starting with an empty model without any explanatory variables. Subsequently, a separate analysis was run for each control variable. Since neither *formal power* nor *communication*, nor *sex* had a significant effect on the dependent variable, they were excluded from subsequent analyses. A separate analysis was then carried out with each explanatory variable. This time, two variables had a significant effect (i.e., the standard error was at least two times smaller than the parameter value): *interdependence* and *frequency of gossip*. These two variables were then taken as the baseline model for the subsequent round of estimations, in which again all remaining other variables were added. No further significant effect was found. Since also the interaction between the density and the receiver parameter (introduced as a density effect) did not yield significant results, the final model consists of a positive density effect of *interdependence* ($p<.00001$, $df=1$) and a negative receiver effect of the *frequency of gossip* ($p=.03$, $df=1$). The other parameters (sender and receiver variance σ^2_A, σ^2_B, their covariance σ_{AB}, and density μ and reciprocity ρ) do not change significantly from the null model to the final model. Note that the sender variance is about twice as large as the receiver variance, indicating that actors vary more in sending behavior, that is, in reporting (stable) cooperation, than in receiving behavior, i.e., reported (stable) cooperation. The parameters for the null and final models are summarized in Table 3.

TABLE 3 *P_2 Estimates for Stable Cooperative Relationships*

Parameter		Empty Model	Final Model
Sender	Variance σ^2_A	1.01 (.17)	1.02 (.17)
Receiver	Variance σ^2_B	0.54 (.10)	0.55 (.10)
	Gossip (Frequency)		-0.57 (.26)
Sender-Receiver	Covariance σ_{AB}	-0.18 (.09)	-0.21 (.10)
Density	μ	-0.35 (.19)	-0.57 (.28)
	Interdependence		0.53 (.08)
Reciprocity	ρ	1.13 (.19)	1.01 (.20)

Note: Standard errors in parentheses. N=1494 dyads. Analyses were carried out with the P_2-software, which was programmed in GAUSS (Van Duijn and Snijders, 1996).

To address the joint impact of interdependence and *gossip* behavior on cooperation, a more detailed analysis of the expected probabilities for the different dyadic outcomes is necessary. The expected probabilities for these dyadic configurations are calculated on basis of the final model and presented in Table 4. It reports the expected effect of *gossip* under five different conditions of dyadic constraint. In the first two conditions, social constraint between the controller and the target was either highly or moderately asymmetric. In the remaining three situations, the controller and the target exert the same amount of constraint on each other, and exert either below average, average, or above average structural constraint on other actors in the network.

5.1 Embeddedness Effects

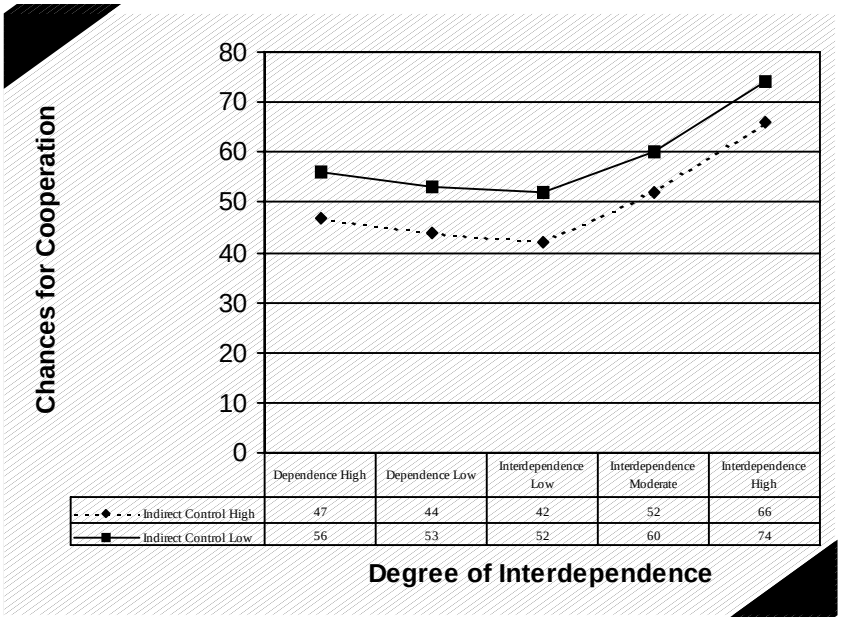
The effect of the interdependence parameter is positive. This indicates that a controller's chances for receiving stable cooperative efforts from a target in fact increase with the constraint that the controller imposes on the target. While this result is in line with the power-dependence and network-exchange approaches, a closer look on the expected probabilities indicates that a more careful interpretation of this result is necessary. As can be seen in Figure 1, stable cooperation is least likely (42%) when the actors are relatively independent of each other. The likelihood of cooperation increases to 56% when one actor is dependent on the other and to 74% when the actors are mutually interdependent. Thus, cooperation is least likely where interdependence is lowest, and cooperation is associated more with sharing than with power. As can further be seen from Figure 1, small increases in mutual interdependence also seem to have stronger effects than small increases in power. The results therefore fully support hypothesis 1.

TABLE 4 *Expected Dyad Probabilities for Stability of Cooperative Relationships*

	Unilateral Dependence				**Mutual Interdependence**					
Gossip	High		Low		Below average		Average		Above average	
High	.26	.27	.35	.21	.40	.19	.31	.19	.17	.17
	.12	.35	.16	.27	.19	.24	.19	.31	.17	.49
Low	.18	.26	.25	.21	.29	.18	.22	.18	.11	.15
	.12	.45	.16	.37	.18	.33	.18	.42	.15	.59

READ: Dyads with highly unequal dyadic constraint in which tendency to gossip is high have a 26% chance for the symmetric absence of cooeration (0,0), a 27% chance for asymmetically stable cooperation to the advantage of j, the target (0,1), a 12% chance for asymmetrically stable cooperation to the advantage of i, the controller (1,0), and a 35% probability for symmetrically stable cooperation (1,1).

FIGURE 1. EXPECTED PROBABILITIES FOR STABLE TARGET COOPERATION



5.2 Strategy Effects

Gossip has a negative effect on cooperation. This implies that gossip tends to decrease the chances for eliciting stable cooperation from a target. Figure 1 shows that gossip has negative effects on cooperation, independently of the level of (inter)dependence in the dyad. In fact, frequent gossip decreases the likelihood of obtaining stable cooperation from a target by 8% to 10%.

It can be concluded that gossip does *not* have the predicted beneficial effect on eliciting additional cooperation for structurally powerful actors as it was specified in Hypothesis 2a: rather than eliciting additional compliance, gossip apparently only worsens the chances for structurally powerful controllers to gain the compliance of their targets. Similarly, gossip decreases the likelihood of cooperation by 8% in highly interdependent dyads. The argument made in Hypothesis 2b that gossip should have no significant impact on cooperation in highly interdependent dyads can therefore not be sustained by the data. However, Hypothesis 2c is supported by the data: gossip reduced the likelihood of stable cooperation by 10% when both actors were relatively independent of each other.

6 Discussion and Conclusion

Overall, the empirical findings corroborate the *Sharing Hypothesis* and lend partial support to the *Signaling Hypothesis.* Cooperation is first of all a function of mutual interdependence and to a lesser degree, of power. Frequent gossip is likely to damage cooperative relationships regardless of the network context in which it occurs.

The findings support the claim that theories of cooperation within organizations should pay closer attention to the potential effects of *ex post* control efforts. However, contrary to predictions based on from power-dependence theory (Molm, 1996), consistent coercive sanctioning does not have a positive deterrent effect. Indeed, sanctions may produce a spiral of escalation in conflict. In this case, gossip appears to increase conflict rather than resolve it (Lawler, 1986).

The results have some interesting implications for the widely shared view that indirect forms of social control like gossiping enhance cooperation in close-knit groups. This belief may be due to the fact that chances for cooperation in highly interdependent settings with a strong tendency to make use of gossip strategies are still considerably higher than chances for cooperation in weakly interdependent or strongly unilaterally dependent settings (66% vs. 52% and 56%, respectively; see Figure 1). If high cooperation is found in a group, then it is not due to gossip efforts but to the fact that the group members are strongly

functionally interdependent. In fact, it is likely that cooperation could be even stronger if the group members renounced this type of control behavior.

Since gossip reduced the likelihood of stable cooperation in all of the dyadic configurations analyzed here, a more cautious stance should be taken regarding the relational signaling approach towards gossip. It was argued above that indirect control efforts may be perceived as a negative relational signal only when actors are relatively independent of each other. However, the findings suggest that gossip also has negative repercussions for work relationships even when actors are (unilaterally or mutually) dependent on each other. This finding contradicts two of the three predictions made in the *Signaling Hypothesis.* Why does gossip has such a negative effect under these two conditions?

An answer to this question could be sought in two different directions. The first one relates to the role that feedback information concerning behavioral expectations might play in the sanctioning process. Within the theoretical framework of the present study not much attention is paid to the informational aspect of sanctions (i.e., the substantial content of the compliance gaining message). However, it is possible that the different relational frames also vary with regard to the clarity and explicitness of the respective behavioral expectations. In highly interdependent settings where strong solidarity defines the relationships, every group member will be strongly affected by the misbehavior of a colleague. Consequently, everyone has a strong interest in preventing the occurrence of negative externalities. This also increases the chances that rules of conduct are made explicit that help to avoid such incidents. In this situation, deviations from the prescribed rules are likely to be the result of conformity or complementary problems rather than of a cognition problem in which the deviator was not aware of an expectation[4]. If this is the case, then the core aspect of the resulting sanction is less likely to be its informational nature (the communication of corrective feedback information), but punishment of the deviator. In the case of very damaging infractions against the rules in a highly cohesive group, the sanction is likely to convey an intentional negative relational signal, the ultimate realization of which can be the target's expulsion from the group. A different situation is given in relationships in which gain seeking defines the relationship and the target is unilaterally dependent on the controller. Here, a certain information asymmetry concerning behavioral expectations is literally built into the relationship. Since solidarity concerns are not important in transactions governed by gain seeking, the target can not orient her behavior along the lines of general

4 Cognition problems refer to events in which the deviator was not aware of a certain norm or expectation. Conformity problems arise in situations in which the expectations are known and accepted by the members of a group, but an actor´s behavior deviates from these expectations. Complementarity problems cover those instances in which there are conflicting expectations concerning a specific behavior (for a discussion of the distinction between these three problems see Lange 1975).

solidarity rules. Moreover, given the situation of unilateral dependency, the specification of expectations is at the discretion of the controller alone and hence might also contain more idiosyncratic demands. The result is that in this type of relationship grievances based on cognition problems will be more likely to occur than in sharing groups. Consequently, in order to be efficient in preventing future defection sanctions should contain detailed feedback information. The best way to resolve this information problem is through direct control in which the controller communicates the nature of her expectations to the target. This is also exactly what Lange (1975:138) found in his empirical study on social control in a German platoon: cognition problems are predominantly dealt with by direct control efforts. Gossip is less suited to resolve this information asymmetry, because the target receives the expectations of the controller only filtered through the lens of a third party. And where expectations are unclear, it is also hard to behave in the way desired by a controller. Therefore, the observed negative impact of gossip on cooperation in exchange relations characterized by unilateral dependency could be due to an incomplete specification of behavioral expectations for the target — a side effect of indirect control strategies.

What about the negative effect of gossip under conditions of high mutual interdependence? Though the effect is not strong, the finding is at odds with most of the current accounts on the positive link between gossip and cooperation in close-knit groups (Dunbar, 1997; Gargiulo, 1993; Goodman & Ben-Ze'ev, 1994; Lazega, 1993; Nicholson, 1998). One possible solution to this puzzle might be found in the fact that the present analysis did not take into consideration whether the invoked third party controller is part of an in-group or of an out-group. In groups with a high degree of solidarity, indirect control efforts will not convey a negative relational signal if the involved third party is a member of the in-group. Exactly the opposite will be the case if the controller is not member of the in-group. Especially in situations where the membership role of an activated third party controller is not clear, the indirect control effort might acquire an ambiguous relational signaling character. Therefore, having a reputation for making use of indirect control strategies will be potentially more problematic in situations where the members of a highly cohesive group frequently interact with or have ties to other groups, because suspicions might arise about whether or not a controller 'leaks' to the outside. The resulting non-compliance of the target would then be in line the signaling approach. To the degree that departmental membership also increases the likelihood for the emergence of sharing groups, multiple sharing groups are likely to arise in an organization. This might be the case in the organization under study, for which dyadic interactions both within and between six different departments entered the analysis.

In sum, gossip seems to be 'bad' for cooperation, independently of the network context in which it occurs. Hence, at least in the organization studied here, gossip and third party leverage remains a highly delicate affair.

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Appendix

Table 4 gives the expected dyad probabilities for the outcome variable. Each cell juxtaposes the controller's perceptions of the target with the target's perceptions of the controller. *Symmetrically stable cooperation* is coded as (1,1) to reflect that both the controller's evaluation of the target's cooperativeness and the target's evaluation of the controller's cooperativeness were positive at both points in time. *Asymmetrically stable cooperation* occurs when the controller (but not the target) consistently perceives the other as being cooperative, which is coded as (1,0), or conversely when the target (but not the controller) consistently perceives the other as being cooperative, which is coded as (0,1). Finally, (0,0) represents the case in which both actors (controller and target) perceived the cooperativeness of the other as neutral or negative during one or more of the time periods. This reflects the *symmetric absence of stable cooperation*. The configuration of an asymmetrically stable cooperative relationship can be to the advantage or to the disadvantage of the controller (i). It is *to the advantage of the controller* in those cases in which controller gives a positive evaluation of the target's (j's) cooperativeness at both points in time, but target at least once gives a negative evaluation of the controller's cooperativeness (1,0). Under such circumstances, the target keeps on cooperating with controller despite controller's defection. The controller is 'exploiting' the target. The opposite holds in those cases in which the controller at least once considers the target's contributions as a defection, but keeps on cooperating with target (0,1). This case of asymmetrically stable cooperative relationship is *to the disadvantage of the controller*.

Calculations are based on the final model and were again conducted with a program that is part of the P_2-software developed by Van Duijn (1998). Several representative values were chosen for each of the three variables that were found to be significant in the analysis. The values for dyads with equal dyadic constraint were $c_{ij}=c_{ji}=.5$ for pairs whose social capital is below the average in the network, $c_{ij}=c_{ji}=2$ for dyads whose constraint is above the average in the network, and $c_{ij}=c_{ji}=1$ for dyads with an average level of constraint. As a frequency count of the dyads reveals, the latter is also the most frequently occurring dyad in the network. To elicit the effects of an unequal distribution of constraint in the dyad, we choose two configurations. First, highly unequal dyadic constraint is represented by the values $c_{ij}=.50$ and $c_{ji}=2$, which means that the target j imposes low constraint on the controller i and the controller i imposes high constraint on the target j. Second, moderately unequal dyadic constraint is represented by the values $c_{ij}=.50$ and $c_{ji}=1$. Finally, we chose the values .25 and .80 to represent low vs. high tendency to gossip, and infrequent vs. frequent frequency of gossip. In the data, .80 is the most frequently occurring value for the frequency of gossip, whereas the tendency to gossip is less evenly distributed (the majority of the values is around .25, .50 and .80). Thus, the chosen dyadic configurations cover the majority of the dyad types actually occurring in the data.