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Gossip in organizations

Ellwardt, L.

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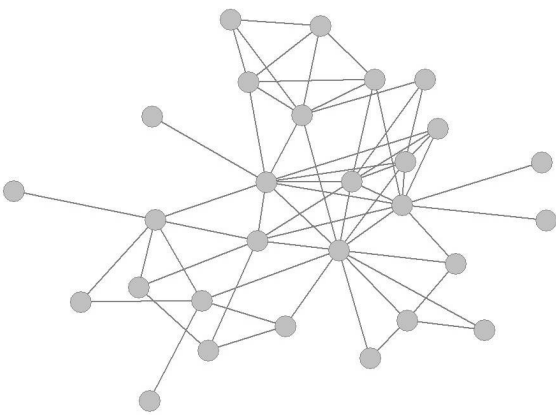
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Chapter 7

Me and You and Everyone We Gossip about: Social Network Analysis of Gossip Triads



This study investigates how instrumental and expressive ties influence gossip in employee triads. It is expected that instrumental ties, that is, shared group membership, between the three actors in the triad will increase the flow of positive and negative gossip (interdependency hypothesis). Furthermore, it is argued that closed triads, in which all actors share an expressive tie (i.e., friendship), will breed positive gossip (closure hypothesis). Negative gossip is assumed to flourish in coalition triads, where sender and receiver share a friendship tie with each other but not with the object (coalition hypothesis). The statistical model which has been specifically developed for this study consists of a logistic regression with three correlated random effects for sender, receiver, and object. Estimation was implemented using the software WinBUGS. The results yield support for the interdependency hypothesis and for the closure hypothesis, but only partial support for the coalition hypothesis.

This chapter is based upon Ellwardt, L., Van Duijn, M., Wittek, R. Modeling three-way social network data: A case study of gossip triads in the workplace. Submitted for publication.

7 ME AND YOU AND EVERYONE WE GOSSIP ABOUT: SOCIAL NETWORK ANALYSIS OF GOSSIP TRIADS

7.1 Introduction

Gossip, i.e. talking about absent others, has received increasing attention in recent theories of cooperation (Coleman, 1990; de Pinninck et al., 2008; Sommerfeld et al., 2007). Most of these theories focus on the positive or negative effects of gossip for the group, or for the individual senders, receivers, and targets in the gossip triad. Not much is known about the social network conditions favoring or inhibiting positive and negative gossip, nor do we have the appropriate statistical models at our disposal that would allow us to take into account the relationships between all three actors of a gossip triad.

Discussing the behavior of absent third parties has been suggested to be a low-cost and effective means of punishing behavior that deviates from cooperation norms, but it goes on at the expense of those who behave in accordance with these norms (Kniffin and Wilson, 2005; Sommerfeld et al., 2008). Coleman concludes “each person who has an interest in the maintenance of the norm and the application of sanctions to those who violate it comes thereby to have an interest in the spread of information that can lead to a consensus on legitimate sanctions” (Coleman, 1990, p. 284). One prediction following from this argument is that gossip flow will increase to the degree that people have shared interests in a common goal and thus are instrumentally interdependent.

Moreover, in networks of high interdependency, enhanced gossip flow is assumed in highly cohesive structures, where individuals of a network are closely tied with one another (Merry, 1984). According to this assumption, connectedness and relationship quality between individuals in a network has consequences for their gossip behavior, namely, whether gossip is spread at all, with whom it is exchanged, who is the target, and whether the contents are positive or negative. Close, expressive ties are a double-edged sword. On the one hand, having expressive relationships protects individuals from becoming the target of harmful gossip (Keltner et al., 2008). On the other hand, in expressive relationships private information about others is exchanged (Bosson et al., 2006; Burt, 2005; Jaeger et al., 1994). Based on these arguments, we will argue that gossip is influenced by the various combinations of social relationships – both instrumental and expressive – in an organizational network.

Workplace gossip has been defined as “informal and evaluative talk in an organization about another member of that organization who is not present” (Kurland and Pelled, 2000: 429). The literature quite consistently distinguishes the evaluative component further into positive and negative (Elias and Scotson, 1965; Fine and Rosnow, 1978; Foster, 2004; Grosser et al., 2010; Soeters and Iterson, 2002). Examples of positive gossip are praising or defending someone’s behavior, and examples of negative gossip are criticizing or complaining about someone. Therefore, we will examine both positive and negative forms of gossip. The definition indicates that workplace

gossip ideally should be approached as social interactions between three interdependent actors: sender, receiver, and object of gossip (i.e., the absent third party; Shaw et al., 2010; Wittek and Wielers, 1998). Figure 7.1 depicts these actors in the so-called *gossip triad*. Arrows indicate to whom the behavior is directed, namely that two employees gossip with one another about a third person.

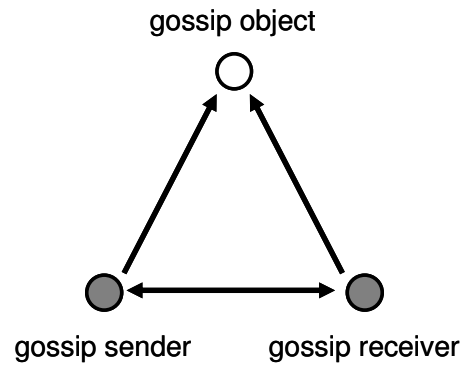


Figure 7.1 The Gossip Triad

We assume that the emergence of gossip is dependent on the multiple interactions of the instrumental and expressive relationships between those three actors (Burt, 1992; 2005). First of all, instrumental ties are considered an important predictor of gossip in organizations. Through gossiping, employees praise the contributions of group members to the work group and criticize deviance from cooperation norms. Workplace gossip is therefore expected to predominantly occur within rather than across formal work groups or teams. Second, we propose that gossip is affected by friendship relationships between the organizational members. It will be argued that closed triads, in which all actors share an expressive friendship tie, breed positive gossip. Negative gossip flourishes in coalition triads, where sender and receiver share a friendship tie with each other but not with the object.

This research contributes to both theoretical and empirical work on gossip. The underlying theory poses that individuals involved in gossip have differing, interchangeable roles – they send, receive or become the object of gossip. This allows hypothesizing on detailed configurations of instrumental and expressive ties in the gossip triad. However, testing such a detailed theory requires specific network data and complex data analysis tools. The empirical approach comprises a statistical solution for the analysis of triadic network data.

In what follows, a theoretical framework on gossip triads will be elaborated in order to answer the following question: *How does gossip depend on the employees' embeddedness in the network of instrumental and expressive ties?* In an empirical study, the predictions that follow from this framework will then be tested. For this purpose, three-way data on a complete gossip network were collected among employees in a Dutch child-care organization. Next, a new statistical model was developed, which consists of a logistic regression model with three correlated random effects for sender, receiver, and object of

gossip. Finally, the results will be presented and discussed with regard to their theoretical and scientific implications.

7.2 Theoretical Background

Social capital theory distinguishes two types of social relationships between employees in organizations (Lin, 2001). Instrumental ties arise in the course of fulfilling work tasks, for example, organizational members are formally assigned to work groups and are expected to interact with one another therein. Expressive ties contain a socio-emotional component and represent affective trust bonds between employees, and thus may support instrumental ties (Bohnet and Frey, 1994). For example, employees who share expressive ties more often help and advise one another in work-related matters (Lin, 2008). We propose that both instrumental and expressive ties influence the propensity to send gossip, receive gossip, and become the object of gossip, and whether the gossip tends to be positive or negative. Similarly, in their study on organizational gossip Grosser and colleagues argue “that positive and negative gossip is fundamentally different and that each form travels through instrumental ties and expressive ties differently. That is, an individual will engage in positive and/or negative gossip based on the individual’s dyadic relationship ties with others” (Grosser et al., 2010, p. 180).

In the following we will briefly discuss each of the three dyadic relationships in the gossip triad, and then formulate hypotheses on how their combination affects gossip. We will do this first for instrumental, and then for expressive relationships.

7.2.1 *Instrumental Ties: Shared Group Membership*

Individuals in an organization are required to collaborate toward organizational goals and allocate rewards on the group level. The resulting interdependency makes monitoring the group members’ activities and reinforcing cooperation norms important to all members (Hackman, 1992). It has been argued that gossip assists the necessary forms of control and thereby promotes cooperative behavior (Burt, 2005; Coleman, 1990; de Pinninck et al., 2008; Kniffin and Wilson, 2005; Sommerfeld et al., 2008). Surprisingly, so far much of the present research on workplace gossip has failed to elaborate on the role of shared group membership: “It is still not clear, for instance, whether gossip occurs equally across all organizational relationships or is more prevalent in team member exchanges” (Mills, 2010, p. 215). Based on the above-mentioned social control argument, we would expect gossip flow to congregate predominantly within work groups, that is, between instrumentally tied organizational members.

Sender-receiver dyad. Being assigned to the same formal work group increases the opportunities that sender and receiver will meet and engage in direct face-to-face interactions. Frequent interactions produce closure in social networks (Wasserman and Faust, 1994), which is assumed to facilitate gossip (Merry, 1984). Employees of a group more often discuss work-related matters and other people in the firm than do employees from different groups. Moreover, through their intense contact, group members may also

develop trust bonds in addition to original instrumental ties. The potential gossip sender will approach receivers who have proven reliable and cooperative in past work procedures, and who can be expected to also cooperate in gossip conversations by keeping discrete information about third parties to themselves. In line with the proximity assumption, previous research has shown that employees tend to gossip with colleagues from their own work group rather than from other groups (Grosser et al., 2010).

Sender-object dyad. We propose that employees gossip about colleagues from their own formal work group. Talking positively about group members allows the senders to signal their identification with the conduct of the group, and that they can be counted on (Gambetta, 2006). Positive gossip behavior includes, for example, praising an absent member, providing political or social support, or defending that member in their absence. This behavior increases the possibility that the group will socially support the gossip sender should the need arise in the future (Dunbar, 2004). Hence, although the object him/herself might not even reciprocate the positive behavior, the sender may benefit from a greater chance that the *group* as a whole will generally reward this behavior (Willer, 2009). Research has shown that group affirmation through appraisal of individual contributions (i.e., positive gossip) becomes even more likely when group members are highly interdependent in their goal achievement (Kniffin and Wilson, 2005). The context of interdependency makes group solidarity important, since it maintains the proper functioning of the work group. Thus, we expect that employees will pass along favorable information about absent members of their work group.

Next, we suggest that employees not only spread positive but also *negative* gossip about organizational members from their group. The underlying rationale is similar to the one of spreading positive information, namely, supporting and defending group norms. By means of negative gossip, employees socially control the contributions of others who have the power to impede the group's functioning, and thereby the achievements of the single group members. There is agreement that gossip is a relatively cheap and effective instrument for sanctioning deviants, loafers, or free-riders in social groups (Coleman, 1990; Dunbar, 2004; Merry, 1984). In addition to reinforcement of cooperation for the benefit of the whole group, senders also use negative gossip to signal their commitment to group norms, and hence promote their own reputation (Kniffin and Wilson, 2005). Praising and defending group norms has been shown to increase one's social status in the group (Willer, 2009).

Receiver-object dyad. Receivers, in much the same way as senders, will have an enhanced interest in hearing gossip about organizational members from their own work group, since the reported behavior will likely affect the group's goals and thus the receiver's personal achievements (De Backer and Gurven, 2006). Hearing negative information is expected to be conceived as more sensational than positive information in this context (Davis and McLeod, 2003). However, research has shown that positive third-party information is also valued, because it helps receivers learn about behavioral standards in the group, and about what is generally perceived as acceptable behavior and what is not (Baumeister et al., 2004). In addition to learning about the organizational

culture, receivers may use gossip to socially compare their own behavior and achievements with that of significant others such as their direct colleagues, peers, and influential people (Suls, 1977; Wert and Salovey, 2004).

Relationship similarity. From the above discussion we conclude that senders of positive and negative gossip will pick receivers and objects from their formal work group. Our theoretical and empirical model is based on the assumption that work groups are exclusive, meaning that an employee is formally embedded into only one team at a time. As a logical consequence, two people (i.e., sender and receiver) belong to the same group whenever they both share group membership with the third person (i.e., the object). In any case, the independence from the object will be similar for sender and receiver. Taking arguments on interdependency in work groups together, we hypothesize gossip flow to be highest in triads where both sender and receiver have an instrumental work tie with the object (and hence with one another).

Hypothesis 1(interdependency): The likelihood that a sender will spread positive and negative gossip about an object will increase with formal interdependency in gossip triads, meaning that sender, receiver, and object are members of the same work group.

7.2.2 Expressive Ties: Friendship

Privacy is a crucial factor in the exchange of sensitive informal information (Burt and Knez, 1996; Grosser et al., 2010), especially when negative. Gossip can cause embarrassing reactions or even social repercussions for the sender when the receiver disapproves of the messages or relays the news on to others, most importantly the object. Therefore, senders will try to reduce the potential costs generated through gossip behavior by choosing trustworthy receivers.

Sender-receiver dyad. We argue that the stronger the expressive tie between sender and receiver, characterized by friendship and trust, the more gossip will be transmitted (Burt, 2001). Negative gossip is especially risky and can cause particular embarrassment. From a trusted colleague the sender can expect a shared mindset and that this colleague will respond positively to gossip behavior and support the attitudes of the sender in general. In contrast, spreading disagreeable third-party information may be punished, for example, when the receiver – unlike the sender – is friends with the third party, that is, the object of gossip. If the object learns about the gossip, the sender's relationship with the object may be damaged. More importantly, the object may have powerful means to retaliate for the behavior, for instance, when the object has higher status in the organization. Thus, senders of gossip need to trust the receivers in two ways: that the information will not be used against them and that it will not be disclosed to the objects (Burt, 2001).

Sender-object dyad. When the relationship between sender and object is characterized by friendship or trust, the sender will reduce negative and increase positive gossip for the benefit of maintaining a high quality relationship with the object. Employees will not want to jeopardize friendship relationships but will want to make a good impression,

since friendships are valuable sources of belongingness, solidarity, and social support (Baumeister and Leary, 1995). Instead, it can be expected that employees will talk positively about their friends in front of others when absent (and that these friends will also praise them in return) with the purpose of verifying and deepening the existent expressive relationship. On the contrary, when the relationship between sender and object is *not* characterized by friendship or trust, the sender will increase negative and reduce positive gossip at relatively low cost. In some cases, certain benefits are attached to spreading negative gossip, such as influencing the perceived trustworthiness and image of others (Burt, 2005; Rooks et al., 2010; Sommerfeld et al., 2008). Employees have been shown to use bad-mouthing strategically for selfish advantage so as to manipulate the reputation of competitors and weaken powerful people (Guendouzi, 2001; Scott, 1985; Tucker, 1993).

Receiver-object dyad. We assume the receiver's relationship with the object to affect the valence of the transmitted gossip (which again may affect the relationship with the object). Individuals who have a friendship relationship with a potential object of gossip are less likely to become receivers of negative gossip but more likely to receive positive gossip about this object. The reason is that the gossip sender anticipates the receiver's expressive bond with the object. The sender knows that the receiver will want to avoid tension and preserve the existing trust relationship with the object. The receiver will likely express disapproval of negative messages in order to defend the object, while expressing approval of positive messages to support the object (cf. McAndrew et al., 2007). This latter point is eminent. Potential senders will want to spread positive or negative gossip about certain objects. However, the decision as to whether this is carried out will depend on the relationship between *receiver and object* – something in which the sender is not directly involved.

Relationship similarity. The above arguments can be summarized as follows. Friendship between sender and receiver is generally expected to facilitate gossip activities between the two. The sender's relationship with the object influences the valence of gossip. Friendship between sender and object is expected to enhance positive comments about the object, while absence of friendship is expected to enhance negative comments. The ultimate choice of whether to gossip, however, is influenced by the sender's perception of the quality of the social relationship between potential receiver and object, and the sender may choose receivers accordingly. Preferably, the sender needs to believe that the receiver's relationship with the object is similar to the sender's relationship with the object, that is, that both are friends or both are not friends with the object. This *relationship similarity* reduces risks of social repercussions due to disapproval but increases the potential benefits of intensifying social bonds and finding allies for the sender. Figure 7.2 illustrates the different pathways to positive and negative gossip.

Previous literature on organizational gossip has described triads with relationship similarity as either closure or coalition triads (Witteck and Wielers, 1998). Closed triads consist of positive relationships only, while coalition triads are characterized by one

positive and two negative relationships. Drawing on this terminology, we hypothesize that:

Hypothesis 2a (closure): The likelihood that a sender will spread positive gossip about an object increases with closure in gossip triads, meaning that sender, receiver, and object are tied by a friendship relationship.

Hypothesis 2b (coalition): The likelihood that a sender will spread negative gossip about an object increases with coalition in gossip triads, meaning that sender and receiver are tied by a friendship relationship with each other but not with the object.

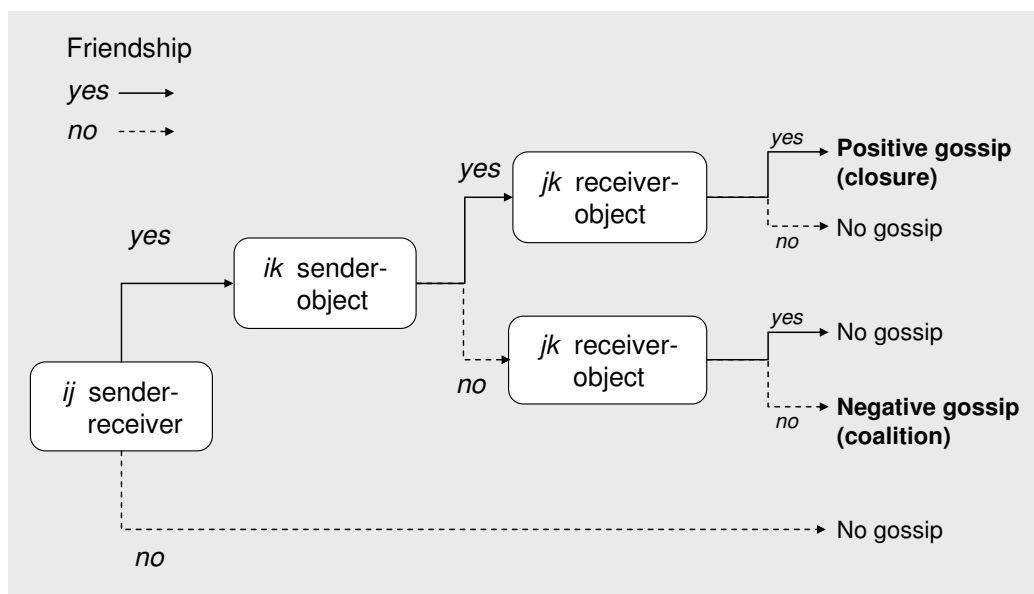


Figure 7.2 Gossip of Sender (i) with Receiver (j) about Object (k) Depending on Friendship

7.3 Data and Method

7.3.1 Data

Data were collected at one site within a medium-sized Dutch non-profit organization in spring 2008. The site was specialized in treating children with special needs which involved problems with their social, psychological, and/or physical functioning. This site employed 36 social workers, behavioral scientists, therapists, medical doctors, and administrative staff. This was an ideal size for this study because there were enough employees for network analyses, but it was still small enough to be able to collect complete network data that asked about gossip sending, receiving, as well as the objects of the gossip.

Within the site, the organization was split into seven teams of anywhere between three and eight employees, some of whom were directly engaged in treating children, while others were engaged in various support functions. None of the teams had formally designated team leaders or supervisors; instead, the teams were all managed centrally by one male manager. All but one of the remaining employees was female, and most were part-time employees.

Data were collected through self-administered computer-aided interviewing. Thirty out of 36 employees (83.3%) completed the survey, which took an average of 32 minutes. The mean age of the employees was 38.94 ($SD = 11.89$, Median = 34), and on average they had been working in the organization for seven and a half years ($M = 7.46$, $SD = 5.68$, Median = 5).

7.3.2 *Dependent Variable: Three-Step Procedure to Measure Gossip Triads*

Our sociometric measuring of gossip was based on a model conceptualized as a triad in which two employees (sender and receiver) talked about a third employee (object). The computer-assisted data collection proceeded in three sequential steps, as sketched in Figure 7.3.

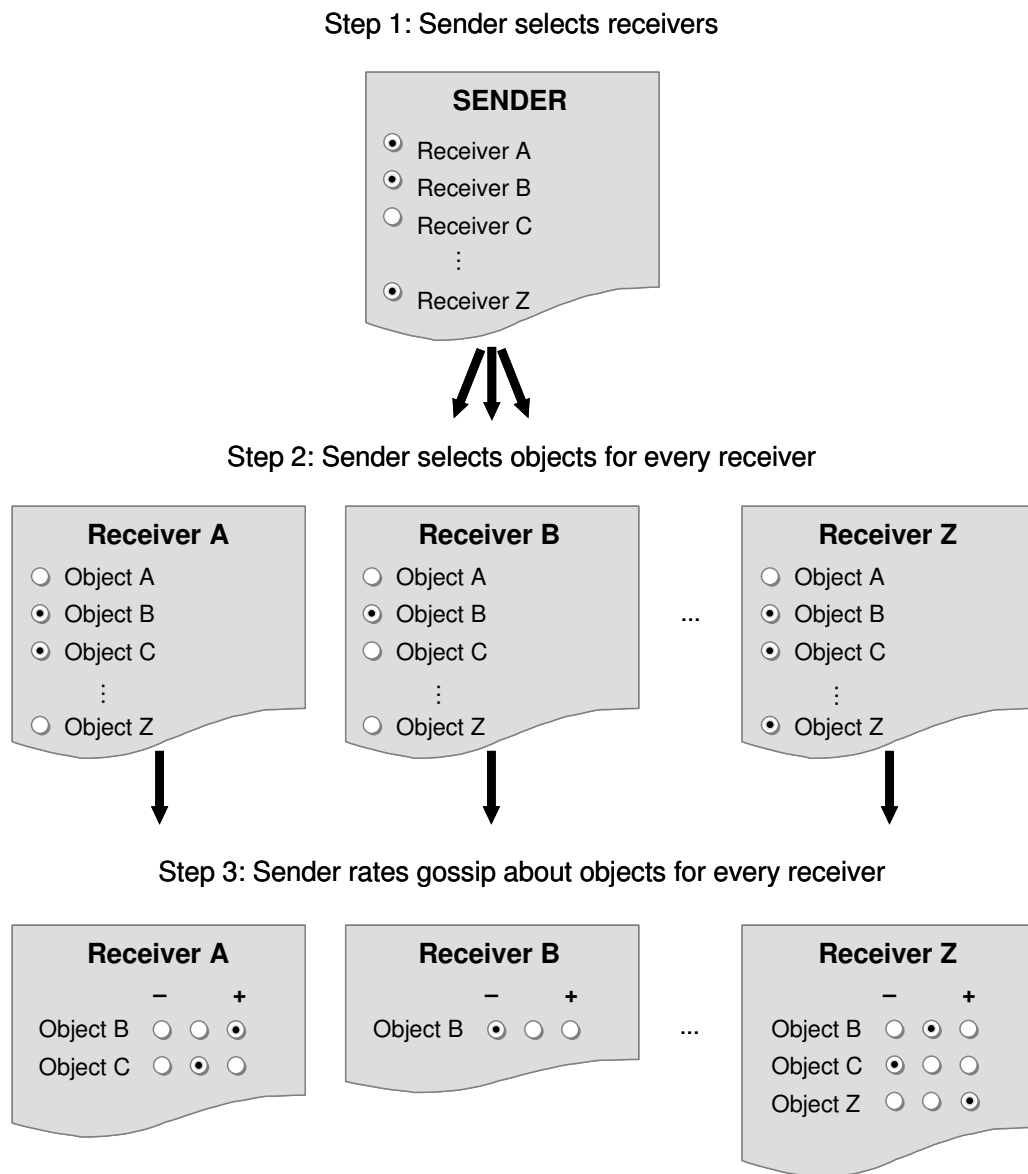


Figure 7.3 Three-step Procedure for Measuring Gossip Relationships

In the first step, respondents were asked to select all employees on a roster with whom they had regularly gossiped. This provided dyadic data on gossip *between* employees, that is, sender-receiver relationships. Second, respondents (senders) identified those third-party employees (objects) on a roster whom they had gossiped about with the employees (receivers) selected in the first step. This provided triadic data on gossip *about* employees, that is, sender-receiver-object relationships. In the third step, respondents were presented with a rating scheme in which they could evaluate the gossip as mostly critical, evenly critical and positive, or mostly positive. They rated the gossip about every third-party employee (object) in relation to every employee (receiver) whom they had gossiped with.

In sum, the data provided directed and valued network data on who had gossiped with whom and about whom, and whether this gossip was negative (critical), positive, or a blend of both. An example of a database generated by this three-step procedure is given in Table 7.1.

Table 7.1 Example of Three-way Data Generated by Questionnaire

Sender i	Receiver j	Object k	Rating
i_A	j_A	k_A	+1
i_A	j_A	k_B	0
i_A	j_B	k_B	-1
i_A	j_C	k_A	0
i_A	j_C	k_B	-1
i_A	j_C	k_C	+1
(i_B)	(...)	(...)	(...)
(...)	(...)	(...)	(...)

Example for interpretation of first row: $i_A j_A k_A = +1$ means that sender(A) gossiped with receiver(A) about object(A) in a positive way (+1). Negative gossip is coded as -1, blended gossip is coded as 0.

Providing the option of characterizing the gossip as blended gave respondents the opportunity to report gossip that was negative without having to check the negative box – in case they struggled to admit socially undesirable behavior. A total of 584 gossip relations were reported, of which 375 (64.2%) positive, 49 (8.4%) negative and 160 (27.4%) blended. Because of the low amount of negative gossip relations and the possibility to interpret blended as at least partially negative, these two types of gossip were coded together into one category. This came with the advantage of increased statistical power for the analysis of what from now on will be called ‘negative gossip’. Thus, two dichotomized outcome variables were generated. The positive gossip variable was coded into positive gossip (1) versus no gossip, blended, and negative gossip (0). The negative gossip variable was coded (1) versus no gossip and positive gossip (0).

7.3.3 Independent Variables

Shared group membership. The organization provided data on the formal work groups at this site. In addition to the manager, who was not assigned to a team, there were seven groups ranging in size from three to eight employees. Dyads of employees who belonged to the same work group received code 1 as opposed to employee dyads of differing group membership (code 0).

Friendship. Respondents described their social relationships with every other employee on the following Likert scale: (1) “very difficult”; (2) “difficult”; (3) “neutral”; (4) “friendly”; and (5) “good friend.”¹⁵ This directed, valued network captured the quality of the dyadic relationships within the network, as reported by each individual. The distribution of the variable was bimodal with primarily answer codes of 3 and 4. Therefore, all of the “friendly” and “good friend” relationships were recoded as 1 and the remaining types of relationships as 0 in order to indentify friendships in the network. Of the thus defined friendship network, 998 (out of 1260 possible) tie variables were observed, of which 312 indicated friendship.

7.3.4 Control Variables

Contact frequency. When researching gossip, it is important to rule out differences in behavior based simply on proximity, that is, the amount of interaction employees have had with one another. Each respondent rated how often they had had formal or informal communication with each colleague during the previous three months on a Likert scale ranging from (1) “never” to (6) “eight or more times per week.” For the analysis, contact frequency was dichotomized, where scores of (4) “three to four times a week” and higher were assigned a 1. Compared to friendship, the ‘contact’ network had more missing observations (958 observations) and slightly fewer ties present (306). In addition to the six employees not finishing the questionnaire, two employees did not provide information on contact frequency with the other employees.

Job satisfaction. It is also important to control for employees’ job satisfaction. For example, a gossip sender who was dissatisfied might be expected to engage in a greater amount of negative gossip, particularly since gossip is sometimes used as a catharsis for negative emotion (Fine and Rosnow, 1978; Foster, 2004; e.g., Noon and Delbridge, 1993). Similarly, a gossip object who was very dissatisfied might trigger negative gossip in the individuals to whom he or she is tied. We constructed a four-item job satisfaction scale specifically for our organization that was based on qualitative interviews conducted prior to the survey. We asked employees, “How satisfied are you with: ‘your tasks,’ ‘your salary,’ ‘the collaboration with your colleagues,’ and ‘your workload?’” Respondents rated their satisfaction on a seven-point Likert scale (1 = very dissatisfied, 7 = very satisfied).

¹⁵ The question on relationship quality translates roughly as follows: “With some colleagues we have a very good relationship. To some we would even confide personal matters. With other colleagues, however, we get along less well. The following question asks about your relationships with your colleagues. How would you describe your relationship with each of the following people?”

To check whether the measurement was unidimensional, we conducted an exploratory factor analysis with principal axis factoring (using the direct oblimin rotation method, which relaxed the assumption that factors are orthogonal). All items loaded on one factor which had an eigenvalue of 2.67 and explained 67% of the variance. Cronbach's alpha for the job satisfaction scale was 0.81. The resulting scale had a mean of 5.06 and standard deviation 0.94.

7.3.5 Analytical Approach

We investigated our expectations by incorporating actor and dyadic covariates in a logistic regression model with three correlated random effects for sender (i), receiver (j), and object (k). These random effects indicate the individual propensity of actors to send, receive, or be the object of gossip; their covariance matrix represents the variability between actors on these propensities as well as the correlation between them. A positive correlation between, for example, sender and receiver random effects indicates a positive association between propensities to send and receive gossip.

The model can be formulated as

$$\text{Logit}(Y_{ijk}) = \mu + \beta_1 x_i + \beta_2 x_j + \beta_3 x_k + \beta_4 z_{ij} + \beta_5 z_{ik} + \beta_6 z_{jk} + S_i + R_j + O_k$$

where x_i indicates an individual characteristic of an actor (here: job satisfaction) and z_{ij} a dyadic covariate (here: shared group membership, friendship, or contact). The model can be viewed as a cross-nested multilevel model with triadic relationships nested in the three actors involved, each with their different role as sender, receiver, and object of gossip, represented by the random effects S , R , and O , respectively. Because each actor can perform in all three roles, the accompanying random effects are not independent within actors, but assumed to come from a trivariate normal distribution.

Cross-nested multilevel or random effect models for digraphs (complete social network data) for dyadic tie variables that can be assumed to be normally distributed (or measured on an interval scale dyadic) are known as the *Social Relations Model* (SRM; Kenny and La Voie, 1984; Snijders and Kenny, 1999), whereas the *p2 model* (Zijlstra et al., 2009) is cross-nested random effects model for digraphs with binary tie variables. The latter model explicitly models reciprocity between sender and receiver, a feature that is not incorporated in the current model proposed for triadic data. The model presented here can be viewed as a simple binary version of the Triadic Relations Model (TRM), proposed by Bond et al. (1997; see also Card et al., 2010), omitting the random interaction effects of the TRM and the fixed reciprocity effects of the p_2 model.

Parameter estimates were obtained with Markov Chain Monte Carlo (MCMC) estimation, using WinBUGS1.4.3 (Lunn et al., 2000) with hierarchical centering and normal priors for the parameters. Estimates reported are based on samples of 6,000, using three chains and a burnin of 1,000 each (except otherwise noted).

Missing values of job satisfaction, friendship, and contact were imputed during the estimation process. For (centered) job satisfaction, a standard normal distribution was

used (close to the sample distribution). For friendship and contact, simple Bernoulli distributions were used with parameter equal to the mean of the probability of a tie in the complete dyads and the probability of all available tie observations; 0.28 for friendship and 0.34 for contact.

The analyses were comprised of two sets of models, one set with negative gossip and one with positive gossip as the dependent variable. The models were constructed in three steps. In the first step, the effects of the four variables of group membership, friendship, contact, and job satisfaction were investigated separately to identify the significant indicators of each variable for gossip. This was done in a backward selection process. This process began with a full model for the dyadic variables, which included all two-way interactions and the three-way interaction effect in order to capture all possible triadic configurations. The procedure started from the sender of gossip (i) and pointed to the object (k), in accordance with Figure 2.

This process was carried out twice for the directed networks (friendship and contact) in order to be sure about the direction of the relationships and to also check for reciprocity (interaction) effects between the pairs of actors of the triad. First, the process was carried out in the direction as described above, and, second, in the reverse direction, namely, by pointing to the sender (i) but starting from the object (k). Next, both directions were combined, including accompanying reciprocity effects, to obtain a complete model per dyadic covariate. The effect of job satisfaction was investigated at the actor level for each of the three roles, and at the dyadic level to investigate a homophily or similarity effect by using the absolute difference in job satisfaction as a dyadic covariate. The effect of a dummy actor covariate indicating the site manager, who had a special position in the network, was investigated as well.

In the second step, a joint model was constructed for the from step 1 remaining actor and dyadic control variables contact and group membership, again using backward selection with the purpose of retaining only the significant parameters. In the third step, the previously identified friendship effects were added to the model, leading to a final model using a backward model process.

7.4 Results

7.4.1 Descriptive Analyses

Employees had the roles of sending, receiving, and/or being the object gossip. Figure 7.4 gives an overview of the degree distributions for these roles, separately for negative and positive gossip. For the sender roles, only the 30 actors who completed the questionnaire were included. One actor sending 109 positive gossip ties was also left out of the picture. Figure 7.4 shows that negative gossip was less frequent than positive gossip, especially being the object of negative gossip. All degree distributions were quite skewed due to the many actors not involved in positive or negative gossip.

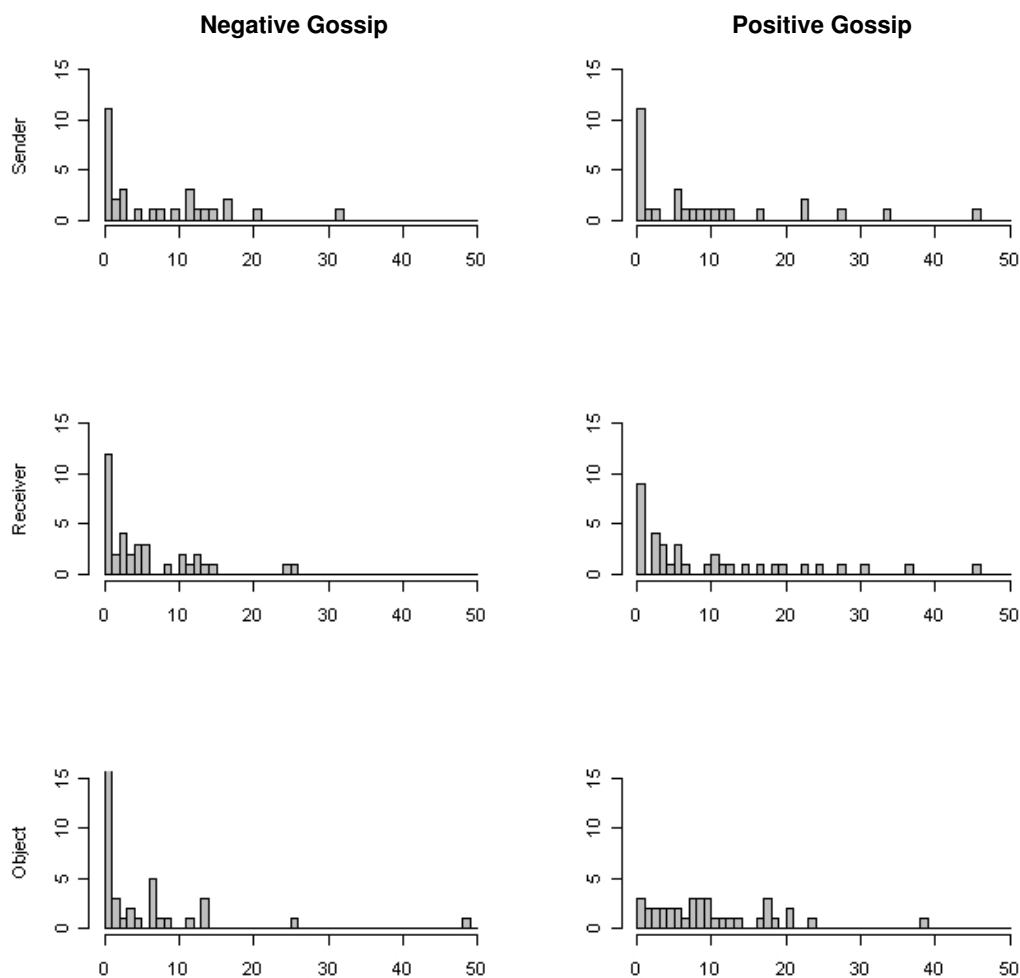


Figure 7.4 Degree Distributions of Negative and Positive Gossip for the Three Roles

More descriptive information and the ranked correlations between all gossip roles are given in Table 7.2. The median and spread in the negative gossip was lower than in the positive gossip network. The highest association was found between the negative and positive gossip degree for senders. Interesting was also the association between negative gossip degree of receivers and positive gossip degree of objects: employees receiving more negative gossip tended to be objects of positive gossip.

Table 7.2 Kendall’s Tau, Median and Interquartile Range (IQR) for the Sender, Receiver and Object Degrees of Positive and Negative Gossip

	Role	2.	3.	4.	5.	6.	Median	IQR
Negative Gossip Degree	1. Sender	0.21	0.18	0.53	0.08	0.18	2.5	11.5
	2. Receiver		0.23	0.00	0.28	0.36	3.5	8.75
	3. Object			0.10	0.07	0.21	2	7
Positive Gossip Degree	4. Sender				0.17	0.05	4.5	12.75
	5. Receiver					0.24	6	13
	6. Object						9	10

Negative gossip degrees correlated negatively with job satisfaction, especially with receiving ($r = -0.74$, $p < 0.001$) and sending ($r = -0.31$, $p = 0.10$), whereas positive gossip degrees correlated negatively with the objects' job satisfaction ($r = -0.42$, $p = 0.02$).

For descriptive purposes, the three-way positive and negative gossip data were summarized in three ways by summing over sender, receiver, or object dimension. The resulting matrices are represented as networks (where any positive number is represented as a tie) in Figure 7.5, together with the friendship and contact networks.

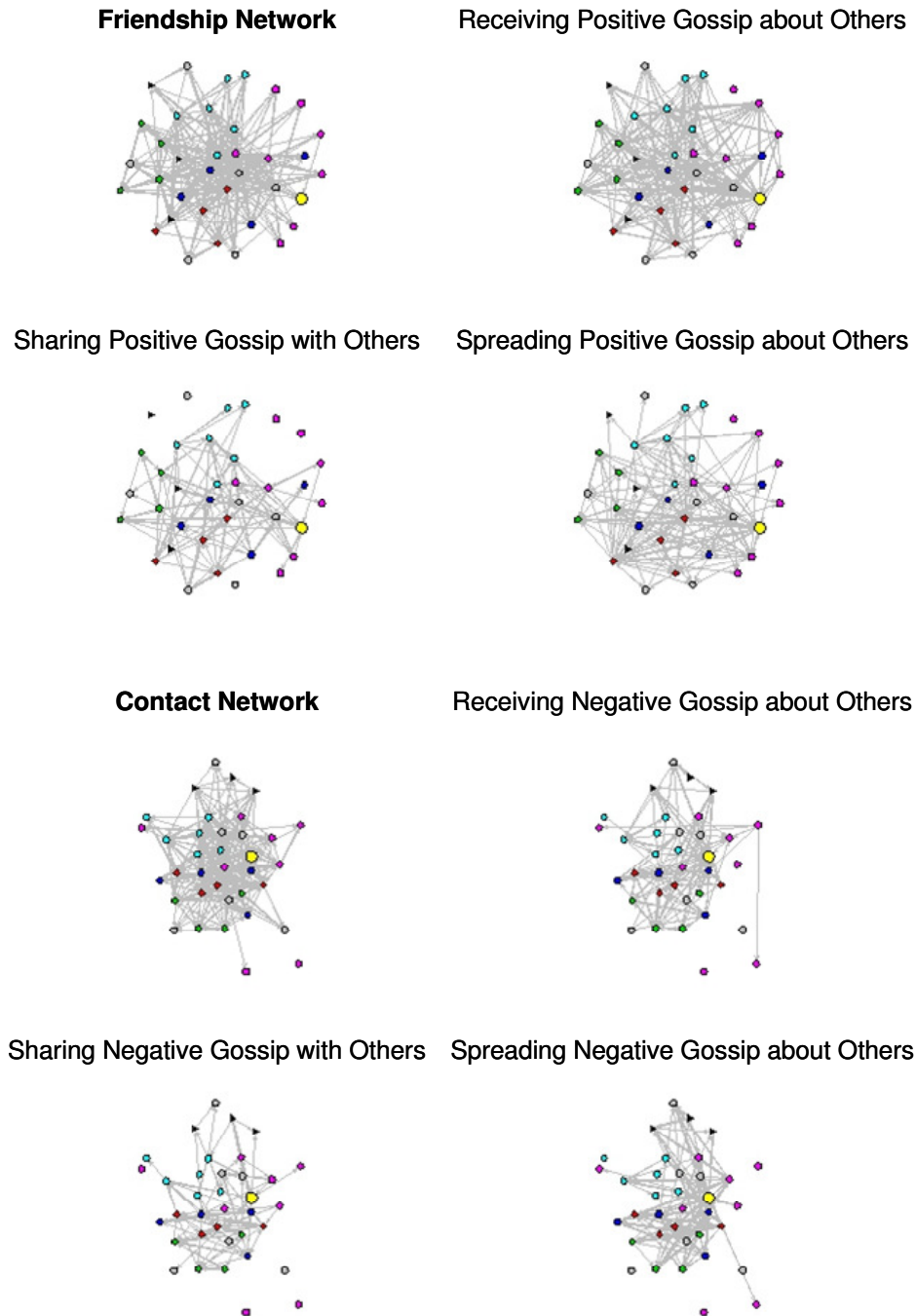


Figure 7.5 Social Networks of Friendship, Contact, and Gossip









As an example, the network “Receiving positive gossip about” is a result of collapsing the gossip three-way data over the senders. It indicates whether an actor (j) received positive gossip about an object (k) irrespective of the sender of the gossip. After positioning actors according to a Kamada-Kawai representation of the friendship network, the “Receiving positive gossip about” network seemed to resemble the friendship network. From the less dense “Sharing positive gossip with” network (collapsing over receivers), it can be deduced that the senders were most selective in choosing receivers. On the other hand, senders talked about more objects, as shown by the “Spreading positive gossip about” network. The negative gossip networks were organized according to contact, a slightly less dense network with a larger core, and some hardly connected actors (with one isolate). The site manager, represented by the larger light-colored node, was more central in the contact network than in the friendship network. The patterns of the negative gossip network were similar to the ones of positive gossip.

Table 7.3 shows the QAP correlations (Hubert, 1987; Krackhardt, 1987) using the numbers from the previously described two-dimensionally summarized gossip data (now called sender-receiver intensity for example for the “Sharing gossip with” network). Most correlations were weak. Correlations originating from sending gossip were strongest: 0.36 for negative and 0.44 for positive gossip. Shared group membership was positively associated with all other variables, i.e. gossip (except receiver-object), friendship, and contact frequency. Positive gossip correlated with friendship among the three actors in the triad, while negative gossip correlated only with friendship between sender and receiver. For consistency, the dichotomized friendship and contact networks are reported (correlations of the valued networks are slightly higher).

Before testing our hypothesis, we counted the friendship configurations (and the contact configurations) in every gossip triad, as shown in Table 7.4. Note that due to missing friendship and contact ties, the total numbers of positive and negative gossip for the friendship configurations were smaller than the observed counts in the data. Absolute numbers of counts by themselves, however, did not yet give an indication of effect sizes. For better comparison, and with the logistic regression model in mind, we computed log-odds ratios. Triads without friendships (000) served as the reference category, which by default had a log-odds ratio of zero. The results show, for example, that having a friendship tie with the object increased sending positive gossip but reduced sending negative gossip (log-odds ratios $n_{010(\text{pos.})} = 0.6$, $n_{010(\text{neg.})} = -0.7$).

Positive gossip triads were most often characterized by friendship among all three actors ($n_{111} = 86$, log-odds ratio = 2.8). This indicates closure, as stated in Hypothesis 2a. In triads of negative gossip, most often the sender was friends with the receiver, while they both were not friends with the object ($n_{100} = 54$, log-odds ratio = 2.2). This hints at the coalition structure proposed in Hypothesis 2b. These results on friendship are in-line with the above QAP correlations. Contact frequency was included as a control variable in our study. The tie counts show that both positive and negative gossip triads were mostly characterized by frequent contacts between sender and receiver, or by frequent contacts among the combination of all three actors.

Table 7.4 Counts and Log-odds Ratios of Friendship and Contact in Positive and Negative Gossip Triads

<i>ijk</i> Triad	Counts						Log-odds ratio			
	Friendship			Contact			Friendship		Contact	
	<i>N</i>	Pos.	Neg.	<i>N</i>	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
 000	6828	24	22	5026	8	13	0	0	0	0
 100	1912	28	54	2362	41	25	1.4	2.2	2.4	1.4
 010	1932	12	3	2028	9	2	0.6	-0.7	1.0	-1.0
 001	3346	40	9	2740	11	16	1.2	-0.2	0.9	0.8
 110	2382	63	22	1653	62	30	2.0	1.1	3.2	2.0
 101	968	24	24	941	19	12	2.0	2.1	2.6	1.6
 011	948	14	4	1275	3	3	1.4	0.3	0.4	-0.1
 111	1598	86	18	1417	91	42	2.8	1.3	3.8	2.5
Total	19914	291	156	17299	244	143				

Note. Dark arrows indicate presence of friendship or contact, light arrows indicate absence of friendship or contact.

7.4.2 Hypotheses Tests: Logistic Regression Models with Three Correlated Random Effects

To test our hypotheses, we computed two sets of models, one set for positive and one set for negative gossip. Each set was comprised of a number of simple models and one joint model. First, separate models were estimated for every covariate (i.e., explanatory and control variables) to investigate the single effects of the covariates. The logistic regression parameter estimates of the resulting models after a backward selection process are presented in Tables 7.5 and 7.7. Second, a joint model was selected, backwardly from all variables in the separate models. The parameter estimates for the final model for positive and negative gossip are presented in Tables 7.6 and 7.8, respectively. Estimates of the covariance matrix and correlation between the random sender, receiver, and object effects are given in Table A.1 in the Appendix. In the following, we first test the hypotheses formulated earlier using the joint models. Second, further down after this section, we describe the results of the model selection process for

positive and negative gossip by comparing separate and joint models. Third, we discuss the impact of missing data.

The *interdependency hypothesis* (Hypothesis 1) stated that sending positive and negative gossip about an object would become more likely when sender, receiver, and object were instrumentally tied by shared group membership. The data yielded support for this prediction, as can be seen from the joint model on positive gossip in Table 7.6 and the joint model on negative gossip in Table 7.8. The likelihood of spreading gossip increased significantly if sender and receiver (positive gossip: $\beta = 0.61$, $p < 0.001$; negative gossip: $\beta = 0.91$, $p < 0.001$), or sender and object (positive gossip: $\beta = 0.89$, $p < 0.001$; negative gossip: $\beta = 0.97$, $p < 0.01$), or receiver and object (positive gossip: $\beta = 1.05$, $p < 0.001$; negative gossip: $\beta = 1.27$, $p < 0.001$) belonged to the same group. However, there were no triadic interaction effects, suggesting that combinations of several shared group memberships in a triad did not lead to an additional increase in gossip activities. Based on these results, the highest increase can be expected when *any two* of the three actors are members of the same work group. Note that some configurations of the dyadic covariates did not need testing, since the variable of shared group membership was non-directional, and thus did not distinguish between out-coming and in-coming ties.

The *closure hypothesis* (Hypothesis 2a) predicted that a sender would spread positive gossip about an object when all three actors in the triad – namely, sender, receiver, and object – were tied by an expressive friendship tie. The results in Table 7.6 provide substantial support for this prediction. Positive gossip activities increased when the sender perceived the receiver as a friend ($\beta = 1.49$, $p < 0.01$), and when the sender perceived the object as a friend ($\beta = 1.39$, $p < 0.01$). Furthermore, friendship between receiver and object had a positive effect on the sender's tendency to gossip positively about this object ($\beta = 1.33$, $p < 0.01$). However, the relationship similarity of sender and receiver was not a precondition, as indicated by the lack of significant positive interactions of the dyadic covariates. This means sender and receiver did not both need to be friends with the object but may have differed in relationship quality. The dyadic interaction effects indicated the extra effect of two ties present in a triad. The negative estimates (for sender-object \times receiver-object) implies that the total effect was not simply the addition of the two single-tie effects, but that it was actually equivalent to the effect of just a sender-receiver tie (total effect is 1.48, $p < 0.001$). Similarly, the sender-receiver \times receiver-object interaction effect showed that the indirect friendship effect was not (significantly) larger than the sender-receiver friendship tie (total effect is 1.78, $p < 0.001$). Only if the sender reported friendship ties with receiver and object, this increased the likelihood of a positive gossip tie, but not more than was to be expected on the basis of the single sender-receiver and sender-object friendship ties (in view of the non-significant interaction effect). Interestingly, the likelihood of positive gossip was further enhanced when friendship was reciprocated, i.e. when the sender was also perceived as a friend by the receiver ($\beta = 0.68$, $p < 0.001$) or by the object ($\beta = 0.57$, $p < 0.01$). Generally speaking, it can be concluded that additional friendship ties advanced the

Table 7.5 Correlated Random Effects Logistic Regression Models for Positive Gossip: Separate Models by Covariate

			MODEL 1 Job Satisfaction ^b		MODEL 2 Contact		MODEL 3 Shared Group ^a		MODEL 4 Friendship	
			<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>
Intercept			-5.65	0.33	-10.29	0.47	-8.18	0.33	-11.68	0.50
Main Effects of Dyadic Covariates										
→	<i>ij</i>	Sender-receiver	-0.74**	0.11	2.03**	0.37	1.78**	0.16	2.45**	0.34
↗	<i>ik</i>	Sender-object	-0.36**	0.11	1.20**	0.50	1.39**	0.14	1.91**	0.38
↘	<i>jk</i>	Receiver-object	-0.29**	0.08	0.87**	0.42	1.39**	0.14	1.68**	0.29
←	<i>ji</i>	Receiver-sender			0.36	0.42			1.51**	0.22
↖	<i>ki</i>	Object-sender			0.86**	0.16			0.44	0.25
↙	<i>kj</i>	Object-receiver			0.90**	0.16			0.94**	0.17
Interactions of Dyadic Covariates^c										
↗↘	<i>ij × ik</i>	Sender-receiver × sender-object			-0.22 (3.00)	0.52 (0.40)			0.29 (4.66)	0.43 (0.37)
↗↘	<i>ik × jk</i>	Sender-object × receiver-object			-0.83 (1.24)	0.73 (0.60)			-1.20** (2.39)	0.46 (0.46)
→↘	<i>ij × jk</i>	Sender-receiver × receiver-object			-0.51 (2.40)	0.47 (0.42)			-0.73* (3.41)	0.40 (0.38)
↖←	<i>ji × ki</i>	Receiver-sender × object-sender							0.56* (2.51)	0.27 (0.26)
↔	<i>ij × ji</i>	Sender-receiver × receiver-sender			1.36** (3.76)	0.44 (0.36)				
Interactions in Complete Triad^c										
↗↘↙	<i>ij × ik × jk</i>	Sen-rec × sen-obj × rec-obj			1.55** (4.08)	0.80 (0.41)			1.20* (5.61)	0.59 (0.39)











Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. ^a Because the shared group variable is undirected (i.e., symmetric), some effects are not applicable. ^b Burnin 1,500; sample size 6,000. ^c Statistics in parantheses indicate the total effects.

Table 7.6 Correlated Random Effects Logistic Regression Model for Positive Gossip: Joint Model for all Covariates

			JOINT MODEL							
			Job Satisfaction ^b		Contact		Shared Group ^a		Friendship	
			Est.	SE	Est.	SE	Est.	SE	Est.	SE
Intercept			-12.14	(0.57)						
Main Effects of Dyadic Covariates										
→	<i>ij</i>	Sender-receiver	-0.47*	0.15	1.76**	0.30	0.61***	0.20	1.49**	0.40
↗	<i>ik</i>	Sender-object			0.61**	0.18	0.89***	0.18	1.39**	0.39
↘	<i>jk</i>	Receiver-object					1.05***	0.19	1.33**	0.29
←	<i>ji</i>	Receiver-sender			-0.25	0.43			0.68***	0.23
↖	<i>ki</i>	Object-sender							0.57**	0.21
↙	<i>kj</i>	Object-receiver			0.60**	0.18			0.46**	0.19
Interactions of Dyadic Covariates^c										
↗↘	<i>ij × ik</i>	Sender-receiver × sender-object							0.40 (3.27)	0.45 (0.40)
↗↙	<i>ik × jk</i>	Sender-object × receiver-object							-1.34** (1.48)	0.47 (0.59)
→↘	<i>ij × jk</i>	Sender-receiver × receiver-object							-1.04* (1.78)	0.40 (0.41)
↖←	<i>ji × ki</i>	Receiver-sender × object-sender								
↔	<i>ij × ji</i>	Sender-receiver × receiver-sender			1.41** (2.91)	0.47 (0.30)				
Interactions in Complete Triad^c										
↗↘↙	<i>ij × ik × jk</i>	Sen-rec × sen-obj × rec-obj							1.50* (3.72)	0.58 (0.43)










Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. ^a For the shared group some effects are not applicable. ^b Simple actor covariates for sender, receiver, and object are not reported because they were insignificant. ^c Statistics in brackets indicate total effects, that is, the sum of main effects plus the interaction effect.

Table 7.7 Correlated Random Effects Logistic Regression Models for Negative Gossip: Separate Models by Covariate

			MODEL 1		MODEL 2		MODEL 3		MODEL 4		MODEL 5	
			Site Manager		Job Satisfaction ^b		Contact		Shared Group ^a		Friendship	
			<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>	<i>Est.</i>	<i>SE</i>
Intercept			-8.22	0.38	-8.21	0.38	-12.99	0.60	-9.39	0.40	-9.82	0.48
Actor Covariates												
	<i>i</i>	Sender	2.79	2.15	-0.96*	0.41						
	<i>j</i>	Receiver	1.84	1.68	-1.02***	0.23						
	<i>k</i>	Object	3.59**	1.65	-0.81*	0.34						
Main Effects of Dyadic Covariates												
	<i>ij</i>	Sender-receiver			-0.35*	0.14	3.10***	0.33	2.11***	0.18	2.22***	0.28
	<i>ik</i>	Sender-object					0.82***	0.23	1.33***	0.22		
	<i>jk</i>	Receiver-object					0.47*	0.21	1.39***	0.21	0.87**	0.39
	<i>ji</i>	Receiver-sender					2.06***	0.24			1.70**	0.38
	<i>ki</i>	Object-sender					1.13***	0.23				
	<i>kj</i>	Object-receiver					0.88***	0.23				
Interactions of Dyadic Covariates^c												
	<i>ij × ik</i>	Sender-receiver × sender-object									-1.14*	0.42
											(1.95)	(0.36)

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. ^a Because shared group is undirected (i.e., symmetric), some effects are not applicable. ^b Burnin 1,500, sample size 7,500. ^c Statistics in brackets indicate total effects, that is, the sum of main effects plus the interaction effect.

Table 7.8 Correlated Random Effects Logistic Regression Model for Negative Gossip: Joint Model for all Covariates

	JOINT MODEL									
	Site Manager		Job Satisfaction		Contact		Shared Group ^a		Friendship	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Intercept	-13.1	0.63								
Actor Covariates										
 <i>i</i> Sender	5.18*	2.26	-1.12*	0.51						
 <i>j</i> Receiver	3.06**	0.96	-1.02***	0.21						
 <i>k</i> Object	4.89**	1.59	-0.83*	0.33						
Main Effects of Dyadic Covariates										
 <i>ij</i> Sender-receiver					2.54***	0.35	0.91***	0.23	0.99***	0.27
 <i>ik</i> Sender-object					0.77*	0.24	0.97**	0.26	-1.03***	0.26
 <i>jk</i> Receiver-object					0.45	0.21	1.27***	0.23		
 <i>ji</i> Receiver-sender					1.25***	0.29			0.76*	0.32
 <i>ki</i> Object-sender					1.04***	0.25				
 <i>kj</i> Object-receiver					0.48*	0.24				

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. ^a Because the shared group variable is undirected (i.e., symmetric), some effects are not applicable.

chances of positive gossip in employee triads. This argument was eventually supported by a significant triadic interaction effect ($\beta = 1.50$, $p < 0.05$, with a total effect of 3.72, $p < 0.001$): The likelihood of positive gossip was highest when all three actors are friends with one another.

The *coalition hypothesis* (Hypothesis 2b) proposed that negative gossip about an object would be facilitated when sender and receiver were tied by a friendship relationship with each other but not with the object. The results in Table 7.8 yield partial support for this hypothesis.¹⁶ In accordance with our expectation, friendship between sender and receiver was positively related to sharing negative gossip ($\beta = 0.99$, $p < 0.001$ and $\beta = 0.76$, $p < 0.05$), especially when mutual. In line with our prediction, the findings also highlight that friendship of the sender with the object reduced negative gossip activities ($\beta = -1.03$, $p < 0.001$). However, in contrast to sending, negative gossip was not significantly reduced by lack of friendship of the receiver with the object of negative gossip (the non-significant negative effect in the separate model is not reported in the table). Apparently, senders spread gossip regardless of the receiver's relationship quality with the object. The latter finding did not support the hypothesized relationship similarity of sender and receiver with regard to the object.

Finally, the three control variables yielded some interesting findings. First, the site manager was very prominent in gossip triads: He was significantly more often involved in sending and receiving negative gossip than other employees at the site, and more often became the object of negative gossip. Unlike negative gossip, positive gossip activities were not affected by manager status but distributed more evenly across the network of employees. Models including manager status are therefore only reported for negative gossip. Second, job satisfaction had an impact on gossiping. While job satisfaction was not related to the individual's propensity to send, receive, or become the object of positive gossip, we observed a similarity effect in employee dyads: The more similar sender and receiver were in their job satisfaction, the more likely they exchanged positive gossip about their colleagues (Table 7.6; $\beta = -0.47$, $p < 0.05$). The same effect did not exist for negative gossip. Instead, we found that being satisfied with the job decreased the individual's likelihood to send and receive, and to become the object of negative gossip, as indicated by the three negative actor covariates for job satisfaction in Table 7.8. Last, the frequency of contact between employees was a strong predictor of sharing both positive and negative gossip, as demonstrated by the mainly significant and positive main effects. This effect was strongest for the relationship between sender and receiver, and

¹⁶ Note that from the separate model on friendship (Table 7.7, Model 5) it looks like there was positive closure in negative gossip triads, similar to the closure effect in positive gossip triads, meaning that all three actors were friends with one another. This effect, however, was observed due to the fact that the separate model did not contain and thus control for shared group membership, which correlated positively with friendship ($r = 0.32$, $p < 0.001$). The closure effect disappeared after shared group membership was added to the joint model.

weakest for the relationship between receiver and object of gossip (for positive gossip the latter effect between receiver and object disappears).

7.4.3 Comparing Separate and Joint Models for Positive Gossip

Model 1 in Table 7.5 investigated the single effect of job satisfaction on positive gossip. It shows that the effect of job satisfaction was best represented by the three dyadic effects of absolute difference between pairs of actors, whereas no significant effect of individual job satisfaction was found for the three roles. The larger the difference between two actors in job satisfaction, the lower the probability of a positive gossip tie became. This effect was strongest for the sender-receiver pair. This result seemed to contradict the QAP correlation, where the strongest correlation between the absolute difference scores of job satisfaction was found with intensity of gossip between receiver and object. This discrepancy could be due to the missing observations in job satisfaction and will be commented on further below. The dyadic effects found in the model for shared group (Model 3) showed a better correspondence with the QAP correlations by indicating a higher probability of positive gossip whenever sender, receiver, and/or object worked in the same group.

Contact also increased the likelihood of positive gossip for any (directed) contact tie between two actors, as shown in Model 2. In triads with more contact ties, this probability was even higher. The total effects are reported in parentheses below the interaction effect; e.g. for sender-receiver plus sender-object the total effect was 3.00 (this number resembled the log-odds ratio of 3.2 reported in Table 7.4; the other effects corresponded similarly). The effect of friendship (Model 4) was slightly stronger than that of contact, where single and total effects were all higher. For contact, there was a strong positive reciprocity (interaction) effect between sender and receiver (3.76), whereas for friendship the two separate effects (sender-receiver and receiver-sender) were both indicative of a larger probability of positive gossip.

In the joint model for positive gossip, presented in Table 7.6, job satisfaction only had a (diminished) sender-receiver dyadic effect. Furthermore, shared group had a reduced effect, especially in sender-receiver dyads. The effect of friendship proved to outweigh the effect of contact. Friendship in all directed ties enhanced the probability of positive gossip, and its effect increased if the friendship tie originated from the sender. The sender-receiver main and reciprocity effects of contact remained significant. Eventually, three dyadic effects remained: sender-receiver, sender-object, and object-receiver ties increased positive gossip. These ties together form a pattern of a *closed transitive triad*. Instead of the latter effect, object-receiver ties, we originally expected an effect in the other direction, i.e. for receiver-object ties. Transitivity indicates that senders may choose friends of friends as receivers for positive gossip to intensify expressive bonds with the receivers. However, without a causality test the sequential order of the tie formation between the three actors remains unknown.

7.4.4 *Comparing Separate and Joint Models for Negative Gossip*

In Table 7.7, the separate models for negative gossip are presented. They turned out to be simpler than the separate models for positive gossip: Fewer dyadic covariate effects were found. Instead, main dyadic effects and actor covariate effects turned out significant, except for a sender-receiver dyadic effect of job satisfaction (as in Model 2 for positive gossip, see Table 7.5) and a sender-receiver \times sender-object interaction effect of friendship (Model 4). The main actor job satisfaction effects were all negative, indicating that the higher an employee's job satisfaction, the less likely s/he engages in negative gossip, either as sender, receiver, or object. Model 1 shows the very large sender, receiver, and object effects of being the site manager. They are presented due to their size even though they are not significant except for the object effect (this is due to large standard errors, as there is only one supervisor). Belonging to the same work group increased the likelihood of gossip for all dyadic actor role combinations (Model 4). The dyadic effects found for contact (Model 3) were strongest for the ties involving the sender and receiver of negative gossip, followed by the sender-object dyad. There were fewer effects for friendship ties on negative gossip. Like for contact, the sender-receiver dyad was most important.

In the joint model (see Table 7.8), all of the earlier found effects remained, with the exception of the absolute difference between sender and receiver in job satisfaction and the dyadic interaction effect of friendship. This result implies that for negative gossip, contact ties between all actors were important (i.e., large enough to be significant), which was not the case for friendship. Next to strong sender-receiver effects in both directions, the object-sender contact tie (in both directions) had a relatively large effect in increasing negative gossip. Noteworthy is the large negative effect of a receiver-object friendship tie, which indicates that negative gossip was less likely in a triad where receiver was friends with object. This effect weakens the enhancing effect of contact on negative gossip.

7.4.5 *Influence of Missing Data on Results*

In our study, 30 out of 36 invited employees participated. Because the six non-respondents were still mentioned by their colleagues, missing data on actor covariates and dyadic covariates were imputed in a simple non-sophisticated manner. Thus, we could use all available triadic data. To check how sensitive the conclusions built on the models for 36 actors were for the imputed data, we also estimated the models for only complete data, which was available for 28 actors (two additional actors had provided data on job satisfaction and friendship but not on their contact relations).

As expected, the results suffered from loss of power in the sense that smaller effects found in the models for 36 actors were not significant anymore. No substantive other conclusions had to be drawn with regard to the joint models. For positive gossip, the dyadic interaction effects were reduced in size and therefore no longer significant. The total effects, however, were comparable in size. Both the sender-object and object-receiver effect increased, and together with the sender-receiver effect showed some evidence of the closed triad configurations found earlier in the joint model. For negative

gossip, the parameter estimates also showed some subtle differences, i.e. an increased (negative) effect of job satisfaction of receiver and object (apparently the imputation of the missing job satisfaction scores had a dampening effect on the estimates), and reduced dyadic sender-receiver and sender-object effects in favor of the receiver-object shared group effect (here no imputation was needed). The stronger effect of contact compared to friendship was confirmed by an increased (positive) object-sender effect of contact and a reduced (negative) effect of sender-object friendship.

Finally, because of the huge influence of the site manager in the joint model for negative gossip, we re-ran this model excluding the site manager – thus for 35 actors. Here, we found basically the same results (in terms of significance) but slightly weaker effects of the receiver-sender effect of contact, the receiver-object effect of shared group, and the sender-receiver effect of friendship. Taken everything together, the results appeared to be rather insensitive toward imputations. We now turn to the discussion of the findings.

7.5 Discussion

Researchers agree that gossip is a social phenomenon where multiple actors interact (Burt and Knez, 1996; Michelson et al., 2010; Shaw et al., 2010; Wittek and Wielers, 1998): People can play the roles of sending and receiving gossip, and be the object of gossip. Based on these three different roles, we conceptualized the so-called *gossip triad*, in which a sender spreads gossip to a receiver about an absent third person, in other words, the object. Using reasoning from social capital theory (Lin, 2001), it was proposed that the employees' involvement in these roles would depend on the multiple combinations of the social relationships that the employees in the gossip triad had with one another, more specifically, the degree to which they were tied instrumentally and expressively.

In line with our expectation, instrumental ties between the actors in the triad, based on shared membership in work groups, increased the flow of both positive and negative gossip. Furthermore, closed triads, in which all the actors shared an expressive friendship tie, were found to breed positive gossip. The findings yielded only partial support for the assumption that negative gossip flourishes in coalition triads, where sender and receiver share a friendship tie with each other but not with the object: Friendship between sender and receiver enhanced gossip, and friendship between sender and object inhibited negative gossip. However, negative gossip spread regardless of the receiver's relationship with the object, in contrast to what we expected.

To the best of our knowledge, the study at hand is the first to systematically examine the three roles and the interplay of the social relationships in the triad, using an empirical case study and triadic social network analysis. Data stemmed from one site in a Dutch childcare organization and contained information on the employees' sociometric network (i.e., three-way network data). Building on models for continuous triadic data and models for binary dyadic data, the statistical model developed specifically for this

study incorporated a logistic regression model with three correlated random effects for sender, receiver, and object. No random interaction effects were specified in the model. This represents the implicit assumption that the correlations between the different actor roles are adequately represented by the covariance matrix of the random effects. The model could be extended with more random effects to (in)validate this assumption.

The findings underpin the notion that individuals required to cooperate in groups have a broad interest in exchanging information about each other. Interestingly, this is the case both for positive and for negative information. A possible explanation for this is provided by arguments from evolutionary theory (Davis and McLeod, 2003; Dunbar, 2004; Kniffin and Wilson, 2005; McAndrew and Milenkovic, 2002). According to this line of reasoning, individuals of a functional group are goal-interdependent, for example, they work together on a project or compete against other teams in sporting events. First, appraisal may be used to encourage and promote cooperative behaviors that are beneficial for the group, for instance, when a group member puts additional effort into a group task or displays extra-role behavior. Second, criticism can help to discourage behavior that impairs group aims, for example, behavior such as social loafing and free-riding on the efforts of those who do contribute to the goals (Kniffin and Wilson, 2005). Through sharing negative information, group members become aware of norm deviations and coordinate sanctions collectively. This latter – criticisms of group members – seemed slightly more prevalent in our study, since the effect of shared group membership was stronger for negative than for positive gossip. Instrumental ties between *any* of the three actors increased gossip flow. There was no additional increase when all three actors were tied instrumentally. This means that not all three employees need to be part of the same work group, because gossipers also look for receivers and objects outside their group. This suggests that gossip is not necessarily an in-group phenomenon.

The substantial support for our closure hypothesis and the partial support for the coalition hypothesis indicated that gossip also originates in expressive ties. More specifically, we found friendship effects over and above shared group membership and contact frequency, which we controlled for in the models. The existence of many (mutual) friendship ties in the gossip triad potentially enhanced the likelihood of positive gossip, as indicated by the significant interactions. Previous research has also shown that gossip is mainly observed between friends (Bosson et al., 2006; Jaeger et al., 1994), and that people have an enhanced interest in positive information about friends (McAndrew et al., 2007). Contrarily, people are more interested in gossip about non-friends and rivals when it is negative (De Backer and Gurven, 2006; Keltner et al., 2008; McAndrew et al., 2007).

Our findings lacked support for the argument that senders of negative gossip would seek receivers who have a similar relationship with the object in order to reduce the risks of social repercussions, including tensions with both the receivers as well as the objects. This may be explained as follows. On the one hand, the sender simply may not find relationship similarity important. In fact, the sender may be concerned with dissimilarities in opinions about the object and may even attempt to change the receiver's

(i.e., his or her friend's) opinion of the object. However, this would appear to be unlikely because we have seen that, if receiver and object are friends, the likelihood of sending *positive* gossip increases. On the other hand, the sender may misperceive the actual relationship quality between the receiver and the object. It could well be that the sender approaches a receiver who he or she *thinks* has a negative relationship with the object, but which in fact is not the case, i.e. not reported by the receiver.¹⁷

From the results we can conclude that positive gossip is most influenced by expressive ties, in view of the strong friendship effects. In contrast, negative gossip is influenced by weaker, instrumental ties, given the stronger and exclusively positive effects of shared group membership compared to the mixed friendship effects. Involvement in negative gossip further increased for employees with low job satisfaction (however, this should be interpreted with caution because low satisfaction could also be a consequence). Thus, the data point out that negative gossip may be used to release frustration on the job (Fine and Rosnow, 1978; Foster, 2004; Noon and Delbridge, 1993). Furthermore, the site manager tended to attract negative gossip. Interestingly, the site manager was also actively (though not extremely) involved in receiving and sending negative gossip, which was actually mostly blended.

One limitation of the present study concerns its generalizability. Our findings were based on a case study in a childcare organization and should ideally be replicated in an organizational network with a more balanced gender composition and one characterized by a more competitive context (i.e., in the for-profit sector). Future studies might compare several networks and also elaborate on the structural antecedents of social networks beyond triads (Shaw et al., 2010). Some other subjects for investigation could also be, for instance, to what extent density in employee cliques enhances gossip, and how far communication constraints and brokerage (e.g., structural holes) in the network impair employees in their gossip behavior (Witteck and Wielers, 1998). Furthermore, future studies might go on to address the outcomes of gossip. Those consequences relevant for organizations would involve, for example, employee wellbeing, job satisfaction, organizational citizenship behavior, cooperation, performance, and other relevant concepts from the organizational literature on social capital (Brass et al., 2004; Flap and Volker, 2001). It is crucial to differentiate between the consequences for gossipers and gossip objects. Sharing gossip may have beneficial effects for an employee's wellbeing and performance, while being the object of gossip may have detrimental effects.

¹⁷ Note that the lacking support did not result from data power issues as friendship was significant in the separate model. Instead, it can be argued that other covariates like contact frequency and group membership were more powerful predictors of negative gossip than friendship.

Appendix

Table A.1 reports the random effect covariance matrix estimates as well as the correlations between the random effects. Three general patterns are visible:

1. Sender variance was always largest for positive and negative gossip, whereas sender-receiver and sender-object correlations were lowest. We interpret this as: (fixed) sender effects were strongest (as was also seen in Tables 7.5-7.8).
2. Variances were highest (and correlations were lowest) for positive gossip. Again, this means that the positive gossip model explained more than the negative gossip model, or alternatively that the power was larger for the positive gossip data. This was because there were more positive gossip triadic relations.
3. The joint models always explained more than the separate models.

Table A.1 Estimated variances, covariances, and correlations of random effects for all models on positive and negative gossip

	MODEL 1	MODEL 1/2	MODEL 2/3	MODEL 3/4	MODEL 4/5	MODEL
	Site Manager	Job Satisfaction	Contact	Shared Group	Friendship	JOINT
	<i>Est.</i>	<i>Est.</i>	<i>Est.</i>	<i>Est.</i>	<i>Est.</i>	<i>Est.</i>
POSITIVE GOSSIP						
Variance						
Sender		4.55	5.56	5.11	7.99	8.94
Receiver		3.00	1.60	3.59	2.93	2.24
Object		0.98	0.85	2.58	1.14	1.14
Covar./correlation						
Sender-receiver		1.0/0.27	0.74/0.25	0.89/0.21	1.58/0.33	0.80/0.18
Sender-object		0.50/0.23	0.37/0.17	0.94/0.26	1.34/0.45	0.97/0.30
Receiver-object		0.99/0.57	0.29/0.25	1.88/0.61	0.59/0.32	0.19/0.12
NEGATIVE GOSSIP						
Variance						
Sender	4.33	3.58	6.87	4.51	4.79	4.69
Receiver	2.55	1.16	2.39	2.87	2.01	0.70
Object	2.57	2.62	4.10	3.65	3.29	2.27
Covar./correlation						
Sender-receiver	1.91/0.57	0.91/0.45	2.18/0.53	2.17/0.60	1.67/0.54	-0.07/-0.03
Sender-object	1.82/0.53	1.51/0.49	3.34/0.63	2.51/0.62	2.33/0.58	1.08/0.33
Receiver-object	1.77/0.66	1.07/0.61	2.13/0.68	2.37/0.73	2.01/0.78	0.51/0.40