Communication Research
http://crx.sagepub.com/

Explaining Knowledge Sharing : The Role of Team Communication Styles, Job Satisfaction, and Performance Beliefs

Reinout E. de Vries, Bart van den Hooff and Jan A. de Ridder

Communication Research 2006 33: 115
DOI: 10.1177/0093650205285366

The online version of this article can be found at:
http://crx.sagepub.com/content/33/2/115

Published by:
SAGE
http://www.sagepublications.com

Communication Research
Volume 33 Number 2
April 2006 115-135

10.1177/0093650205285366
http://cr.sagepub.com
hosted at
http://online.sagepub.com

Explaining Knowledge Sharing

The Role of Team Communication Styles, Job Satisfaction, and Performance Beliefs

Reinout E. de Vries
Bart van den Hooff
Vrije Universiteit, Amsterdam, Netherlands
Jan A. de Ridder
University of Amsterdam

In this study, the authors investigate the relationships between team communication styles and job-related cognitions on one hand and knowledge-sharing attitudes and behaviors on the other using 424 members of different work-related teams. Both eagerness and willingness to share are positively related to knowledge sharing—both donating and collecting knowledge. These attitudes mediate the relationships of communication styles, job satisfaction, and performance beliefs with knowledge-collecting and donating behaviors. In terms of team communication styles, an agreeable style is positively related to team members' willingness to share their knowledge, whereas an extravert communication style of a team is positively related to both eagerness and willingness to share. Performance beliefs and job satisfaction are both related to willingness and eagerness to share knowledge. However, in contrast with the authors' expectations, the relationship between eagerness to share knowledge and knowledge donating is not stronger than the one between eagerness and knowledge collecting.

Keywords: *knowledge sharing; communication styles; job satisfaction; performance; structural equation model*

Effectively managing the organizational resource of knowledge is one of the most important challenges for organizations and their managers. To make knowledge become available, it is crucial that individuals and departments are involved in the process of knowledge sharing (O'Dell & Grayson, 1998; Osterloh & Frey, 2000). Conse-

Authors' Note: The study was carried out while the first two authors were members of the Amsterdam School of Communications Research (ASCoR) at the University of Amsterdam. We thank Tom Heijnen and Netpanel for their help during the project. Questions regarding this study should be addressed to Reinout de Vries, Department of Work and Organizational Psychology, Vrije Universiteit, Van der Boechorststraat 1, 1081 BT, Amsterdam, the Netherlands; e-mail: re.de.vries@psy.vu.nl, or Bart van den Hooff, Department of Business Administration, Vrije Universiteit, De Boelelaan 1105, 1081 HV, Amsterdam, the Netherlands; e-mail: bvandenhooff@feweb.vu.nl

quently, research concerning the different factors influencing the degree and way in which people share their knowledge is increasingly relevant. Such research has identified a number of different variables, from hard issues such as technologies and tools (Hlupic, Pouloudi, & Rzevski, 2002) to soft issues such as motivations, organizational climate, and communication climate (Ardichvili, Page, & Wentling, 2003; Bock & Kim, 2002; Hall, 2001; Hinds & Pfeffer, 2003; Inkpen & Tsang, 2005; Moffett, McAdam & Parkinson, 2003; Reagans & McEvily, 2003; Van den Hooff & De Ridder, 2004; Zárraga & García-Falcón, 2003).

In this article, we focus on the relationships between team communication styles and job-related cognitions (the soft issues in this article) on one hand and knowledge sharing on the other. Knowledge sharing is conceptualized in terms of two knowledge-sharing behaviors (i.e., knowledge donating and knowledge collecting) and two knowledge-sharing attitudes (i.e., eagerness to share knowledge and willingness to share knowledge). A model is proposed in which team communication styles and job-related cognitions have an effect on knowledge-sharing behaviors through knowledge-sharing attitudes. To flesh out our reasoning, we will first of all explain these two different knowledge-sharing behaviors and two different attitudes toward knowledge sharing and then move on to explain the theoretical notions that lead us to hypothesize the relationship between team communication styles and job-related cognitions on the one hand and knowledge-sharing attitudes and behaviors on the other.

Knowledge-Sharing Behaviors and Attitudes

Knowledge sharing is the process where individuals mutually exchange their (tacit and explicit) knowledge and jointly create new knowledge (Van den Hooff & De Ridder, 2004). This definition implies that every knowledge-sharing behavior consists of both bringing (or donating) knowledge and getting (or collecting knowledge). Ardichvili, Page, and Wentling (2003) for instance, note that knowledge sharing consists of both the supply of new knowledge and the demand for new knowledge. Weggeman (2000) distinguishes between a knowledge source and a knowledge receiver in knowledge-sharing processes, and Oldenkamp (2001) discusses how knowledge sharing involves both a knowledge carrier and a knowledge requester. Following Van den Hooff and De Ridder (2004), we label the two central behaviors as follows: (a) knowledge donating, communicating one's personal intellectual capital to others; and (b) knowledge collecting, consulting others to get them to share their intellectual capital.

Both behaviors distinguished here are active processes—either actively communicating to others what one knows or actively consulting others to learn what they know. Both behaviors have a different nature and can be expected to be differentially influenced by different factors. Therefore, in our discussion on the relationship of knowledge-sharing attitudes, communication styles, job satisfaction and performance beliefs, we will maintain this distinction.

The distinction between willingness and eagerness to share was originally made in an effort to explain the results of a field experiment on the relationship between group

norms and knowledge sharing (Van den Hooff, De Ridder & Aukema, 2004). *Willingness* is defined as the extent to which an individual is prepared to grant other group members access to his or her individual intellectual capital. *Eagerness*, on the other hand, is defined as the extent to which an individual has a strong internal drive to communicate his or her individual intellectual capital to other group members.

Although we believe both willingness and eagerness to be attitudes that gear people toward knowledge sharing, there are some important differences. Willingness implies a positive attitude to other members of a group, a readiness to reply to colleagues kindly. Therefore, willingness to share is related to a somewhat conditional way of knowledge sharing. Actors are willing to provide access to their personal knowledge, but because their focus is on the group's interest, they expect others to behave similarly—and focus on the group's interest as well. They will not easily take the initiative to actively share their knowledge if they are uncertain about whether others are also willing to contribute to the group's interest by donating and collecting knowledge. Eagerness, on the other hand, implies a positive attitude to actively show knowledge about a certain subject. An actor who is eager to share knowledge will spout his or her knowledge, invited or uninvited. Where willingness can be characterized by an orientation toward the group, eagerness can be characterized by an orientation toward the subject about which knowledge is being shared. For eager individuals, others' behavior is much less important: Whether other group members will also share their knowledge is not really relevant to them—it is the subject about which knowledge is being shared that triggers them. People are eager to let others know what they know because they themselves consider it valuable and expect their individual knowledge to be appreciated by others.

For people who are willing to share their knowledge, the norm of reciprocity is important—they expect others to contribute as well (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998; Putnam, 1993). Therefore, people who are willing to share their knowledge seek to attain a balance between donating and collecting knowledge. Eager people, on the other hand, want to spread the word, regardless of the group's goals or any directly tangible benefits they can expect from it. Eager people expect soft benefits such as elevated reputation and peer recognition in return (Boer, Van Baalen, & Kumar, 2002; Butler Sproull, Kiesler, & Kraut, in press; Hall, 2001; Hinds & Pfeffer, 2003; Lerner & Tirole, 2000; Von Hippel, 2001; Von Hippel & Von Krogh, 2003). In line with Chen, Chen, and Meindl (1998), we argue that those eager to share are more geared toward sending information and focus on their own views about creating a common view (Ting-Toomey, 1988). Consequently, we expect that people who are willing to share aim for a balance between donating and collecting and thus do not differ in the extent to which they donate or collect knowledge, respectively. We also expect that eager people will be more geared toward donating their knowledge than to collecting others' knowledge. Based on this, we hypothesize

H1: There is a stronger relationship between eagerness to share knowledge and donating knowledge than between eagerness and collecting knowledge.

Team and Job-related Cognitions and Knowledge Sharing

In their effort to explain knowledge sharing, Hinds and Pfeffer (2003) distinguish both cognitive and motivational factors. Whereas cognitive factors are primarily related to an individual's ability to share knowledge (e.g., make expert knowledge comprehensible to laymen, make tacit knowledge explicit), motivational factors concern their willingness and eagerness to share. One of the factors that may motivate employees to contribute their knowledge is the way team members communicate with each other. Horizontal communication is considered to be an important determinant of involvement in the organization or the group (Foy, 1994; Smith, 1997), and communication with proximate others is found to increase attachment and cohesiveness (Levine & Moreland, 1990; Lott & Lott, 1965). In general, positive interindividual and team relationships have been found to be based on how people communicate with each other (Camden & Kennedy, 1986; Inglis, 1993; Jones, 2004; Williams, Weinman, & Dale, 1998; Wong & Tjosvold, 1995), and these positive relationships seem to be vital to knowledge sharing in teams (Zakaria, Amelinckx, & Wilemon, 2004).

The way people communicate with each other can be approached from three perspectives: (a) an individual perspective, which focuses on the individual communication styles of the persons communicating with each other (e.g., Norton, 1978); (b) a dyadic perspective, which focuses on specific patterns of communication between two individuals (e.g., Watzlawick, Beavin, & Jackson, 1967); (c) and a group perspective, which focuses on the communication style of a group as a whole. Of these, the approach that treats communication as a group attribute has received the least amount of attention. Only recently, research has started to investigate the relationships between group attributes, such as the personality of a team, and team effectiveness (e.g., Barrick, Stewart, Neubert, & Mount, 1998; Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005). These studies have shown that group attributes—such as team extraversion, team agreeableness, and team conscientiousness—have positive effects on team effectiveness (Barrick et al., 1998; Halfhill, Nielsen, Sundstrom, & Weilbaechear, 2005; Molleman, Nauta, & Jehn, 2004) and that these group effects are stronger than the effects in individual-level research (English, Griffith, & Steelman, 2004).

Although group-level communication concepts, such as a group's openness to communication (Barrick et al., 1998), have been proposed, there has not been a clear-cut distinction in different team communication styles. At the individual level, however, a number of communication style dimensions have been proposed (Burgoon & Hale, 1987; Dillard, Solomon, & Palmer, 1999; Norton, 1978; Sorenson & Savage, 1989), which have been found to be important predictors of attitudes both inside and outside the workplace (Camden & Kennedy, 1986; Inglis, 1993). For example, communication styles determine whether partners are satisfied with their relationship (Butler & Wampler, 1999), whether somebody is seen as a leader (Awamleh & Gardner, 1999), whether doctors have satisfied patients (Levinson, Roter, Mullooly, Dull, & Frankel, 1997; Williams et al., 1998), whether Bank employees create customer satisfaction (Wong & Tjosvold, 1995), and whether intercultural communica-

tion is successful (Brew & Cairns, 2004). The main two individual-level communication dimensions that have emerged (Dillard, Solomon, & Palmer, 1999; Sorenson & Savage, 1989) are strongly aligned to the dimensions of the interpersonal circumplex (i.e., dominance and affiliation; Leary, 1957) or the two major interpersonal dimensions of personality (i.e., extraversion and agreeableness; McCrae & Costa, 1989; Trapnell & Wiggins, 1990).

Although no comparable group-level studies on communication styles are present, individual-level extraversion and agreeableness have been found to have differential effects on outcomes. In medical practice, agreeable communication (which comprises friendliness, empathy, and affiliativeness) of a doctor is most often cited as causing patient satisfaction (Williams et al., 1998). Especially nonverbal displays of positive affect have been found to elicit positive affect toward the communicator. Newcombe and Ashkanasy (2002) found that displays of positive nonverbal affect by a communicator give him or her more negotiation latitude. Positive affect or mutual liking of communication partners may increase knowledge sharing. For instance, studies have shown a strong positive effect of liking on sharing knowledge about oneself (Collins & Miller, 1994; Dindia, 2002), and this effect seems to be stronger than the effect of sharing knowledge about oneself on liking. Although these latter studies focused on individual level processes, in line with English et al. (2004) and Barrick et al. (1998), we believe that similar processes are likely to occur at the group level. Consequently, we believe that teams that communicate in an agreeable manner are more likely to create willingness on the part of the communication partner to share knowledge and we propose the following hypothesis:

H2: The degree of agreeableness of a team's communication style is positively related to an individual team member's willingness to share knowledge.

Conceptually, extraversion is probably more closely aligned to eagerness to share knowledge than to willingness to share knowledge. Extraversion as a communication style contains two important components i.e., talkativeness and enthusiasm. First of all, a team culture in which talkativeness is the norm may engender talkativeness in participants of such a culture.[1] Although talkativeness does not necessarily preclude topical conversations, an absence of talk logically also precludes an absence of content-oriented conversations. Secondly, extraversion has also been equated to enthusiasm. For instance, in research on leadership, extraversion has been found to be related to charisma (Bono & Judge, 2004), which in turn has been found to create enthusiasm, extra effort, and motivation in employees (Cherulnik, Donley, Wiewel, & Miller, 2001; Podsakoff, MacKenzie, Moorman, & Fetter, 1990; Yammarino & Bass, 1990). A communication climate in which extraversion is the norm may create enthusiasm in its participants, which enhances the eagerness to share knowledge with team members. Thus, although team agreeableness may create a willingness on the recipient's part to reciprocate, team extraversion may have an effect through the contagion of enthusiasm, making participants eager to spout knowledge about their areas of exper-

tise themselves. Accordingly, based on these premises, we expect the following to be true:

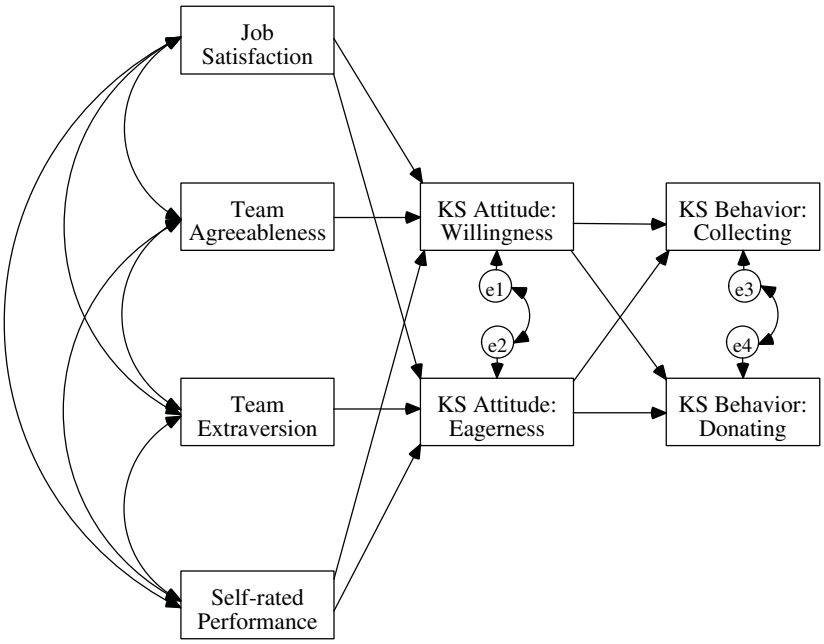
H3: The degree of extraversion of a team's communication style is positively related to an individual team member's eagerness to share knowledge.

Apart from deriving motivation to share knowledge from the group-related attributes such as team communication styles, we believe it is also likely that people derive motivation to share knowledge from job-related attributes. In other words, it's not only the relationships employees have with their coworkers that determine their willingness or eagerness to contribute to the common good but also the extent to which they are satisfied with their daily work—and feel that they are performing well in that work. Pascoe, Ali, and Warne (2002), for instance, describe how different dimensions of job satisfaction influence one's motivation to perform as well as one's willingness to share corporate knowledge. Salancik and Pfeffer (1977) posit that job satisfaction results in positive effects on attitudes, motivation, and behavior. In other words, as people are more satisfied with their work, their motivation to contribute to the common interest of the context in which they perform their work (donate knowledge) increases as well as their interest in what others within that context do (collect knowledge). Also, in line with Pascoe et al.'s argument, when they believe they are performing well, they are also more willing and eager to both donate (showing how well they perform) and collect (helping them to perform well) knowledge. Generally, in work settings, people are quick to establish who knows what and who performs better in which area to make the group more productive (Hollingshead, 1998, 2000; Stasser, Stewart, & Wittenbaum, 1995). Thus, people who perform better and have more valuable expertise are more likely to have and provide valuable resources to group members (Borgatti & Cross, 2003). Although in some circumstances, people may strategically choose to withhold information (Wittenbaum, Hollingshead, & Botero, 2004) because of the status they may receive from sharing their knowledge, they are also more likely to be eager and willing to share their knowledge than group members whose knowledge is of less import. Thus, we present two distinct hypotheses for these variables, which (as argued earlier) we believe both to be positively related to an individual's attitude toward knowledge sharing—that is

H4: Job satisfaction is positively related to both an individual's willingness and eagerness to share knowledge.
H5: Self-rated performance is positively related to both an individual's willingness and eagerness to share knowledge.

All in all, this leads to the theoretical model presented in Figure 1. The model posits (a) that job satisfaction and self-rated performance both have an effect on the eagerness and willingness to share knowledge; (b) that team members' agreeableness has a positive effect on the willingness to share knowledge, whereas team members' extraversion has a positive effect on the eagerness to share knowledge; and (c) that

FIGURE 1:
The Research Model



eagerness and willingness are both related to collecting and donating (bringing) knowledge, although we expect the relation between eagerness and donating knowledge to be stronger than the relation between eagerness and collecting knowledge. Additionally, we expect both willingness and eagerness and knowledge collecting and donating to be correlated. However, because we did not have a causal ordering of the variables in mind, we decided to add covariances to model these relationships.

Method

Sample and Procedure

To ensure sufficient variation in individual, team, and job characteristics, we decided to recruit people from a variety of organizations with the restriction that each of the organizations should consist of at least 10 people. Through an Internet research panel, 2,499 people who did not share a relationship with each other were selected and were asked to fill out a questionnaire. The final sample consisted of 424 participants (17%) who were willing to fill out the questionnaire. The sample consisted of 40.3% men, and the mean age was 36.0 ($SD = 9.8$). Of the respondents, 377 (88.9%) fulfilled a paid job and 90 (21.2%) were in a leadership position of the group they reported

about. To compensate for the time spent on the questionnaire, 10 gift certificates were put up for raffle among the participants.

Measures

All variables, unless otherwise reported, were measured using 5-point (*strongly disagree* to *strongly agree*) Likert-type scales. Correlations among the variables, reliabilities, means obtained by averaging items in a scale, and standard deviations are noted in Table 1. The dependent variables consisted of the two knowledge-sharing behavior scales developed by Van den Hooff and Hendrix (2004). These items are listed in the appendix. In previous studies, the reliabilities of the knowledge collecting and donating scales were respectively .72 and .68, and they correlated .54 with each other. In this study, a principal component analysis with varimax rotation of the eight items produced a two-factor solution, which explained 62.8% of the variance, and which clearly separated knowledge collecting from knowledge donating items. The reliability (Cronbach alpha) of knowledge collecting was .75; the reliability of knowledge donating was .84. The intercorrelation of the scales was .69 ($p < .01$).

The mediating variables of the model are the two knowledge-sharing attitudes of the participants (i.e., the willingness and eagerness to share knowledge). Although an earlier instrument existed to measure the willingness and eagerness to share knowledge (Van den Hooff & Hendrix, 2004), to boost the reliabilities and the distinctiveness of the two scales, we decided to ameliorate the existing instrument. Prior to this study, a three-step procedure was employed to obtain a set of willingness and eagerness items. In the first phase, three communication science scholars and one masters student each generated 40 eagerness and 40 willingness items based on the definitions provided and the instruction to write items that represented an individual's attitude both in terms of affect (such as feelings, needs, and commitments) and values (such as norms, goals, and expectations). After removal of duplicates, 88 willingness and 82 eagerness items were retained. In the second phase, the same four people rated a randomized list of these items on comprehensibility, face validity, and social desirability. After removal of items with low comprehensibility, low face validity, and extreme social desirability ratings, 79 items (32 willingness and 47 eagerness) were retained. Subsequently, in the third phase, a randomized list of these 79 items were presented to four different communication science scholars and four communication science masters students, who were provided a definition of *willingness* and *eagerness* and were asked to sort the items based on these definitions. To restrict the final number of items, we selected 20 willingness and 20 eagerness items, which were correctly classified respectively 87.5% and 92.5% of the times. To restrict the influence of answering tendencies, the final list of items contained an equal number of positively and negatively worded knowledge attitude items.

The willingness and eagerness items were submitted to a principal component analysis with varimax rotation. The first two factors with eigenvalue > 2 and explaining 28.3% of the variance were selected. Except for a few exceptions, these two factors corresponded with the distinction between willingness and eagerness. Based on con-

tent and loading, 9 items were selected for the willingness and 9 for the eagerness scales. All of the final items measuring eagerness mentioned either "my (area of) expertise," "my subject," or similar terms; all of the final willingness items were concerned with the group, its common interest, commitment, or reciprocity. The eagerness scale has a reliability (Cronbach's alpha) of .76. The willingness scale has a comparable reliability of .78. Two examples of eagerness items are "I want to convince others of the importance of 'my subject'" and "I don't really feel a need to talk about 'my subject'" (reverse-coded). Two examples of willingness items are "I try to improve the group's performance by sharing knowledge" and "Sharing knowledge is not in our common interest" (reverse-coded). The two scales correlated .37 ($p < .01$) with each other.

The four independent variables in the model are the two team communication styles, respondents' job satisfaction, and his or her own performance beliefs. The team communication styles are derived from a lexical research on communication styles (de Vries, 2005). The first two dimensions of this lexical study were comparable to the first two dimensions most often found in lexical personality research (i.e., extraversion and agreeableness; Ashton et al., 2004), so we decided to use these terms to describe a group's communication style. Each of the two scales consisted of the 11 (absolute) highest-loading adjectives of the respective lexical dimensions. The extraversion scale consisted of the adjectives *articulate*, *eloquent*, *talkative*, *energetic*, *extraverted*, and *catchy* versus the reverse-coded adjectives *tight-lipped*, *boring*, *uneasy*, *introverted*, and *restrained*. The agreeable scale consisted of the adjectives *patient*, *kind*, *sympathetic*, and *friendly* versus the reverse-coded *hot-headed*, *rock-hard*, *vicious*, *obstinate*, *stubborn*, *contrary*, and *reproachful*. The instruction asked participants to rate these 22 adjectives on a 1 to 5 (*totally disagree* to *totally agree*) Likert-type scale as to whether these represented the way team members communicate with each other. Due to a mistake, one extraversion item (*talkative*) was accidentally omitted from the final questionnaire. In a principal component analysis, two factors with eigenvalue > 2 explaining 45.3% of the variance were extracted. Except for one item (*uneasy*), which loaded (negatively) on agreeableness instead of extraversion and which was subsequently removed, the factors clearly replicated extraversion and agreeableness. The reliability of the 9-item team extraversion scale is .83; the reliability of the 11-item team agreeableness scale is .86. The correlation between the two scales is .34 ($p < .01$).

The job satisfaction and self-rated performance scales were derived from earlier studies (de Vries, Roe, & Taillieu, 2002; Roe, Zinovieva, Dienes, & Ten Horn, 2000; Taillieu, 1987). The job satisfaction scale in this study consists of 7 items and is derived from a longer 11-item version. The scale pertains to the degree of job satisfaction derived from the amount of variation, responsibility, autonomy, etc. in one's work (de Vries et al., 2002; Taillieu, 1987) and has a reliability of .84 in this study. The self-rated performance scale consists of seven items and is a composite of a task- and role-performance measure by Roe et al. (2000). An example of a task-performance item is "It is known that I perform better than other team members"; an example of a role-performance item is "Difficult assignments are usually given to me". The reliability of

the composite scale is .79. In this study, job satisfaction and self-rated performance correlated .21 ($p < .01$).

Analyses and Results

Age and gender did not have any significant relations with the other variables in the model; consequently, they were not considered in any further analyses. Although structural equation modeling was employed to test Hypotheses 2 through 5, the zero-order correlations in Table 1 generally confirm the expected relationships. In accordance with respectively Hypotheses 2 and 3, team agreeableness is positively and significantly related to the willingness to share knowledge and team extraversion is positively and significantly related to eagerness to share knowledge. However, it should be noted that the relation between team extraversion and willingness appears to be somewhat stronger ($r = .32$) than the relationship between team extraversion and eagerness ($r = .19$). With respect to Hypotheses 4 and 5, data in the correlation matrix also confirm these relationships (i.e., job satisfaction and self-rated performance are positively and significantly related to both willingness and eagerness to share knowledge).

We expected the relationship between eagerness and donating knowledge ($r = .51$) to be stronger than the relation between eagerness and collecting knowledge ($r = .44$; Hypothesis 1). This hypothesis was tested by converting both correlations to z scores using Fisher's r-to-z transformation. Subsequently, these correlations were compared using the method suggested by Meng, Rosenthal, and Rubin (1992). The analysis revealed that the correlations are not significantly different from each other ($z = 0.91$, $p = .36$). Consequently, we are unable to conclude that people who are eager to share knowledge are more likely to donate knowledge than to collect it, thereby finding no support for Hypothesis 1.

Structural equation modeling using AMOS was employed to test the full model shown in Figure 1 and the various relationships proposed in Hypotheses 2 through 5. First of all, because there was virtually no relation between the team communication styles and self-rated performance (see Table 1), we fixed the covariances between these variables to 0. We left the remaining covariances between the independent variables free. Note that our observed correlation of .21 (in Table 1; .24 in Figure 2) between job satisfaction and self-rated performance is close to the meta-analytically derived correlation between these two variables of .30 (Judge, Thoresen, Bono, & Patton, 2001).

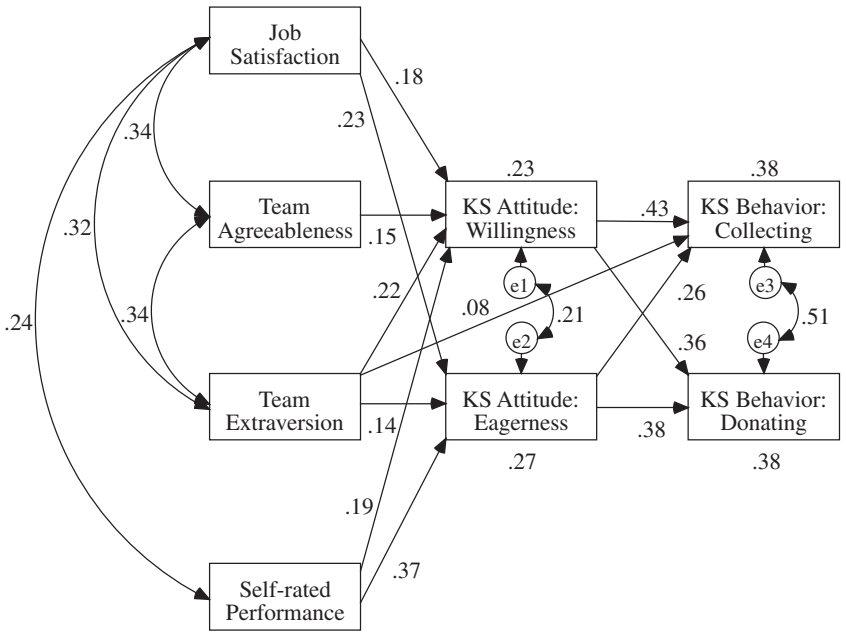
The model that resulted had acceptable fit ($\chi^2(12) = 42.15$, $p < .01$; Tucker-Lewis Index (TLI) = .92; Comparative Fit Index (CFI) = .97; RMSEA = .08) but could be improved by considering the relation between team extraversion and the willingness to share knowledge. An adjusted model with the path between extraversion and willingness to share knowledge freed up resulted in a significant improvement of the model ($\chi^2(1) = 22.39$, $p < .01$) and provided close fit to the data ($\chi^2(11) = 20.77$, $p = .04$; TLI = .97; CFI = .99; RMSEA = .05). Further improvements to the model could be

Table 1:
Descriptives, Correlations, and Reliabilities (on Diagonal) of Variables (N = 424)

	1	2	3	4	5	6	7	8	9	10
1: Gender (Male = 1, Female = 2)										
2: Age	–0.17									
3: Team agreeableness	0.00	0.05	*0.86*							
4: Team extraversion	0.02	–0.05	0.34	*0.83*						
5: Job satisfaction	–0.07	0.11	0.33	0.31	*0.84*					
6: Self-rated performance	–0.12	0.02	–0.06	–0.05	0.21	*0.79*				
7: Knowledge-sharing attitude: Willingness	–0.02	0.02	0.28	0.32	0.34	0.21	*0.78*			
8: Knowledge-sharing attitude: Eagerness	–0.01	0.07	0.15	0.19	0.35	0.41	0.37	*0.76*		
9: Knowledge-sharing behavior: Collecting	0.06	0.02	0.22	0.29	0.27	0.24	0.55	0.44	*0.75*	
10: Knowledge-sharing behavior: Donating	0.01	0.12	0.24	0.23	0.29	0.30	0.50	0.51	0.69	*0.84*
Number of items	1	1	11	9	6	7	9	9	4	4
M	1.60	35.98	3.57	3.56	3.82	3.45	4.12	3.57	4.07	3.93
SD	0.49	9.79	0.54	0.51	0.58	0.51	0.49	0.46	0.46	0.54

Note: Correlations > .12 are significant at $p < .01$.

Figure 2:
The Final Empirical Model (N = 424)†



† All estimates are standardized and significant at $p < .01$; $\chi^2(10) = 16.01$, $p = .10$; Comparative Fit Index = .99; RMSEA = .04 (close fit).

made by considering the relation between team extraversion and collecting knowledge. Freeing this path resulted in a slight but significant increase in the model fit ($\chi^2(1) = 4.76$, $p = .03$) and a model that provided the best fit to the data ($\chi^2(10) = 16.01$, $p = .10$; TLI = .98; CFI = .99; RMSEA = .04). This final model is shown in Figure 2.

Figure 2 depicts the standardized path coefficients in the model. As can be seen, Hypotheses 2 through 5 are confirmed in this model. In accordance with Hypothesis 2, team agreeableness is positively related to the willingness to share knowledge ($\gamma = .15$) and in accordance with Hypothesis 3, team extraversion is positively related to the eagerness to share knowledge ($\gamma = .14$). However, the relation between team extraversion and willingness to share knowledge appears to be somewhat stronger ($\gamma = .22$) than the one between team extraversion and eagerness. Apart from having an indirect effect through willingness on knowledge collecting, team extraversion also has a direct, albeit weak, effect on knowledge collecting ($\gamma = .08$).

Job satisfaction and self-rated performance have positive effects on knowledge-sharing attitudes, although for both, the effects are somewhat stronger on eagerness than on willingness to share knowledge (for job satisfaction respectively $\gamma = .23$ with eagerness and $\gamma = .18$ with willingness and for self-rated performance respectively $\gamma = .37$ with eagerness and $\gamma = .19$ with willingness). The four independent variables

explain 23% of the variance in willingness and 27% of the variance in eagerness to share knowledge. The four independent variables plus eagerness and willingness explain 38% of the variance in both collecting and donating knowledge.

A Sobel test was carried out to test the significance of the indirect effects of the four independent variables on knowledge collecting and donating (Sobel, 1982). Although the Sobel test has been shown to be a conservative test to test for intervening variables effects (i.e., having relatively low power to detect true effects; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), all of the indirect effects shown in Figure 2 turned out to be significant, with all $z > 2.81$ ($p < .005$). Separate regression analyses of mediation using Baron and Kenny's (1986) method also showed that all of the indirect effects presented in the model fulfilled the three conditions necessary to confirm (partial) mediation. Although according to MacKinnon et al. (2002) and Cohen and Cohen (1983), joint significance of the two regression coefficients making up the indirect effect is already sufficient to confirm mediation, combined, these methods provide further evidence for the indirect effects proposed.

Conclusions and Discussion

The results of this study provide support for the importance of soft issues, such as team-members' communication styles and job-related cognitions in explaining knowledge sharing in organizations. Additionally, the results show that the effects of these variables on knowledge-sharing behaviors are mediated by knowledge-sharing attitudes (i.e., the eagerness and willingness to share knowledge). Because knowledge-sharing processes have been found to be vitally important to organizations in terms of objective productivity (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000; Moreland & Myaskovsky, 2000), this study underscores the importance of managing the communication and job climate in an organization.

Specifically, the results show that team members' agreeableness, team members' extraversion, one's own job satisfaction, and performance beliefs have positive implications for the willingness to share knowledge with one's team members. The eagerness to share knowledge is mainly determined by one's own performance beliefs and job satisfaction and the extraversion of one's team members but not the agreeableness of team members. Willingness and eagerness, in turn, are both related to knowledge collecting and donating behaviors.

There are several possible mechanisms that may explain the results. Reciprocity may explain the relationship between agreeableness and willingness to share knowledge. According to Inkpen and Tsang (2005) and Reagans and McEvily (2003), trust plays a key role in the willingness to share knowledge. Agreeable communication styles may especially engender trust in the recipient. Trustworthiness of a communicator, in turn, has been found to increase the likelihood to cooperate (Insko, Kirchner, Pinter, Efaw, & Wildschut, 2005). More generally, agreeableness creates positive affect in the target (Williams et al., 1998) and may create stronger emotional attachment and commitment to the relationship (Reagans & McEvily, 2003), both of which

stimulate a willingness to reciprocate. One way to reciprocate is to offer heteromorphic benefits (i.e., benefits that are of a different kind than the benefit received; Gouldner, 1960; Roloff, 1987). Although agreeableness often implies that the agreeable person is willing to share knowledge, the act of agreeableness itself may already invoke a willingness to share information on the part of a recipient. Thus, in a team with more agreeable communication styles, persons are probably more likely to be willing to share knowledge with each other. A willing attitude, in turn, may set into motion a cycle of reciprocity, in which team members are more likely to exchange (i.e., both donate and collect) knowledge with each other.

Contagion may explain the observed relationship between extravert communication and eagerness to share knowledge. Both talkativeness and enthusiasm are common components of an extraverted communication style; these are for instance represented by the adjectives *talkative* and *energetic* in our questionnaire. Groups that have an extraverted communication style are more likely to generate the sort of enthusiasm that is present in transformational teams (Avolio, Jung, Murry, & Sivasbramaniam, 1996). Transformational behaviors, in turn, may generate a number of positive effects, such as extra effort and motivation of other employees (Podsakoff et al., 1990; Yammarino & Bass, 1990). Thus, this type of team communication may be contagious, inspiring a similar style in others (Cherulnik et al., 2001). Consequently, team extraversion may engender talkativeness and enthusiasm in the communication partner and an eagerness to share own experiences and knowledge with the extravert communication partner.

In this study, both job satisfaction and self-rated performance were found to be related to willingness and eagerness to share knowledge. A possible explanation for these two relations may lie in a positive organization-based self-esteem associated with performing well on intrinsically satisfying tasks. Organization-based self-esteem has been found to be related to organizational citizenship behaviors, such as altruism and compliance and to the motivation to mentor (Pierce & Gardner, 2004). Willingness to share knowledge can be regarded as a specific form of altruism (i.e., altruism to share one's own knowledge with someone else). Mentoring involves the dissemination of knowledge to someone else without expecting anything in return, except, maybe a feeling of status and accomplishment. However, although job satisfaction may affect both willingness and eagerness to an equal degree because job satisfaction includes both satisfaction with the task and satisfaction with team members, job performance may inspire greater eagerness than willingness to share knowledge. First of all, people who perform better because they possess valuable information and skills are more likely to be in a position to share knowledge (Borgatti & Cross, 2003). Additionally, a high organization-based self-esteem associated with job performance may stimulate people to readily and uninvited (i.e., eagerness) share their knowledge to show their mastery of the subject matter, irrespective of whether a reciprocal exchange will result from this (i.e., willingness). This is in line with our assumption that orientation toward the group is an important ingredient of willingness, whereas eagerness is characterized by an orientation toward the subject matter of one's work (and the appreciation of one's individual performance).

Although further research may validate or refute this reasoning, on the basis of the results shown in Figure 2, we decided to conduct a post-hoc test using Fisher's *r*-to-*z* transformation to test for significant differences between the correlations between self-rated performance on the one hand and willingness and eagerness to share knowledge on the other. The correlation between self-rated performance and eagerness was found to be significantly stronger than the one between self-rated performance and willingness ($z = 2.7$, $p < .01$). In other words, although self-rated performance is related to both willingness and eagerness, this relation is significantly stronger for eagerness.

There are two possible explanations for this: enthusiasm and status. The feeling of performing well may lead to a general enthusiasm about the subject matter of one's work and, consequently, an eagerness to communicate about this. It may also lead to a (perceived) increase in status: Performing well means one is an expert in the area at hand, and consequently, one may become increasingly eager to confirm this expert status. For individuals who are willing to share, these mechanisms may be much less important. This would support our claim that eagerness appears to be more strongly related to individualistic behavior, the subject matter of work and appreciation for performance, whereas willingness may be more strongly rooted in collectivistic behavior, orientation toward the group and reciprocity in knowledge sharing.

Although the model receives general support, there were two unexpected results. First of all, we expected the relationship of eagerness to share knowledge with donating knowledge to be stronger than that with collecting knowledge. Although the results are in the predicted direction, this effect was not significant. We see two possible theoretical explanations for this lack of effect as well as a methodological one. Theoretically, first, the fact that eagerness implies passion for a subject could also mean that one would want to both donate and collect knowledge about this subject—depending, of course, on the subjects about which other team members possess knowledge. Therefore, in a team in which knowledge is narrowly focused, eagerness might lead to both knowledge donating and collecting. In a highly differentiated team (in terms of knowledge), on the other hand, eagerness might indeed be more strongly related to donating than collecting, because the knowledge that other team members possess does not concern the subject the eager individual is so passionate about.[1] In our study, this distinction was not made, but it would certainly be interesting to explicitly compare the way that eagerness influences knowledge-sharing behavior in narrowly focused and highly differentiated teams in future research. Second, it may be true that people who are eager to share knowledge and who receive peer recognition in return are willing to return this favor by asking for knowledge from those who have been willing to listen to them—thus reciprocating the favor of enabling the other party to spout their knowledge and receive peer recognition. Finally, a methodological reason for this finding may lie in the conceptualization of the instruments measuring knowledge sharing. Although it may be true that differential relations between the concepts do exist in reality, common method variance may mask these effects by causing overlap between the constructs. Although the factor analyses provided support for our claim that there are two distinct knowledge-sharing attitudes and two distinct

knowledge-sharing behaviors, future research might like to investigate whether it is possible to more clearly disentangle these concepts.

Other unexpected results are the relationships between extraversion and both willingness to share knowledge and knowledge collecting. The relationship between extraversion and willingness appears to be even stronger (although not significantly stronger, $z = 1.6$, $p = .10$) than the one between extraversion and eagerness. This result may be explained by referring to reciprocity, trust, and a team's social cohesion. Although as far as we know there is no explicit research linking extraversion, trust, and social cohesion, charismatic leaders, who score higher on extraversion (Bono & Judge, 2004), also engender more trust in employees than noncharismatic or transactional leaders (Conger, Kanungo, & Menon, 2000; Jung & Avolio, 2000; Pillai, Schriesheim, & Williams, 1999; Pillai & Williams, 2004). On a group level, an open style of communication of a group (which resembles extraversion) has been found to be strongly related to social cohesion, absence of team conflict, and the willingness to share the team's workload (Barrick et al., 1998). Thus, by virtue of being more trustworthy and enhancing social cohesion, extravert communicators may create a stronger willingness to share knowledge. More generally, this finding is in line with the idea that willingness is rooted to a greater extent in collective systems, in which communication styles, trust, and positive affect play a central role, whereas eagerness is rooted to a greater extent in individualistic tendencies, in which own attributes and beliefs (e.g., performance beliefs) are more important. Similar reasoning may apply for the direct relationship between team extraversion and knowledge collecting; in a team with extravert individuals team members may feel more welcome when collecting information. However, this direct relationship was not particularly strong in our study.

Future research might like to further explore the role of communication styles and job-related cognitions in knowledge-sharing processes. Although cross-sectional studies such as this one are an excellent tool to uncover the relationships between different variables, they are less well suited to settle issues surrounding causality. An additional limitation of this study is the use of self-report for the variables in this study and the resulting inability to adequately correct for different types of response biases. Consequently, future research should use an experimental design to test the model in a more controlled environment or should triangulate team members' ratings of communication styles and knowledge-sharing attitudes and behaviors in a field study. An avenue for experimental research would be to look at the effect of communication styles of previously unacquainted interactants on knowledge-sharing attitudes and behaviors. Alternatively, confederates could be used to more directly control the actual level and type of communication style. Additional research should also settle whether it is possible to further disentangle the measurement of the knowledge attitudes and behaviors, which were strongly correlated in this study.

This study shows that communication styles and job perceptions play an important part in explaining knowledge sharing. Additionally, the findings in this study do offer support for the existence of unique and differing relations between these team-related (communication styles) and job-related attributes (performance and job satisfaction) on the one hand and knowledge sharing on the other. Further exploring these

tendencies may well contribute to a further insight into what makes people share their knowledge—or not share their knowledge—with coworkers.

Appendix
Knowledge Donating and Knowledge-Collecting Items

Knowledge Donating

1. When I've learned something new, I tell my colleagues about it.
2. I share information I have with my colleagues.
3. I think it is important that my colleagues know what I am doing.
4. I regularly tell my colleagues what I am doing.

Knowledge Collecting

1. When I need certain knowledge, I ask my colleagues about it.
2. I like to be informed of what my colleagues know.
3. I ask my colleagues about their abilities when I need to learn something.
4. When a colleague is good at something, I ask them to teach me how to do it.

Note

1. We thank an anonymous reviewer for this suggestion.

References

Adler, P. S., & Kwon, S.-W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, *27*(1), 17-40.

Ardichvili, A., Page, V., & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management*, *7*(1), 64-77.

Ashton, M. C., Lee, K., Perugini, M., Szarota, P., de Vries, R. E., Di Blas, L., et al. (2004). A six-factor structure of personality-descriptive adjectives: Solutions from psycholexical studies in seven languages. *Journal of Personality and Social Psychology*, *86*(2), 356-366.

Avolio, B. J., Jung, D. I., Murry, W., & Sivasbramaniam, N. (1996). Building highly developed teams: Focusing on shared leadership process, efficacy, trust, and performance. In D. A. Johnson & M. M. Beyerlein (Eds.), *Advances in interdisciplinary studies of work teams: Vol. 3. Team leadership* (pp. 173-209). Greenwich, CT: JAI Press.

Awamleh, R., & Gardner, W. L. (1999). Perceptions of leader charisma and effectiveness: The effects of vision content, delivery, and organizational performance. *The Leadership Quarterly*, *10*(3), 345-373.

Barrick, M. R., Stewart, G. L., Neubert, M. J., & Mount, M. K. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of Applied Psychology*, *83*(3), 377-391.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.

Bock, G. W., & Kim, Y. G. (2002). Breaking the myths of rewards: an exploratory study of attitudes about knowledge sharing. *Information Resources Management Journal*, *15*(2), 14-21.

Boer, N. I., Van Baalen, P., & Kumar, K. (2002, April). *The implications of different models of social relationships for knowledge sharing*. Paper presented at the third European Conference on Organizational Knowledge, Learning and Capabilities, Athens, Greece.

Bono, J. E., & Judge, T. A. (2004). Personality and transformational and transactional leadership: A meta-analysis. *Journal of Applied Psychology*, *89*(5), 901-910.

Borgatti, S. P., & Cross, R. (2003). A relational view of information seeking and learning in social networks. *Management Science*, *49*, 432-445.

Brew, F. P., & Cairns, D. R. (2004). Do culture or situational constraints determine choice of direct or indirect styles in intercultural workplace conflicts? *International Journal of Intercultural Relations*, *28*, 331-352.

Burgoon, J. K., & Hale, J. L. (1987). Validation and measurement of the fundamental themes of relational communication. *Communication Monographs*, *54*(1), 19-41.

Butler, M. H., & Wampler, K. S. (1999). A meta-analytical update of research on the couple communication program. *American Journal of Family Therapy*, *27*, 223-237.

Butler, B., Sproull, L., Kiesler, S., & Kraut, R. (in press). Community efforts in online groups: Who does the work and why? In S. Weisband (Ed.), *Leadership at a distance*. Mahwah, NJ: Lawrence Erlbaum.

Camden, C. T., & Kennedy, C. W. (1986). Manager communicative style and nurse morale. *Human Communication Research*, *12*, 551-563.

Chen, C., Chen, X., & Meindl, J. R. (1998). How can cooperation be fostered: The cultural effects of individualism-collectivism. *Academy of Management Review*, *23*, 285-304.

Cherulnik, P. D., Donley, K. A., Wiewel, T. S. R., & Miller, S. R. (2001). Charisma is contagious: The effect of leaders' charisma on observers' affect. *Journal of Applied Social Psychology*, *31*, 2149-2159.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum.

Collins, N. L., & Miller, L. C. (1994). Self-disclosure and liking: A meta-analytic review. *Psychological Bulletin*, *116*, 457-475.

Conger, J. A., Kanungo, R. N., & Menon, S. T. (2000). Charismatic leadership and follower effects. *Journal of Organizational Behavior*, *21*(7), 747-767.

de Vries, R. E. (2005, May). *A lexical study of communication adjectives: The dimensionality of communication styles*. Paper presented at the International Communication Association Conference, New York.

de Vries, R. E., Roe, R. A., & Taillieu, T. C. B. (2002). Need for leadership as a moderator of the relationships between leadership and individual outcomes. *The Leadership Quarterly*, *13*, 121-137.

Dillard, J. P., Solomon, D. H., & Palmer, M. T. (1999). Structuring the concept of relational communication. *Communication Monographs*, *66*, 49-65.

Dindia, K. (2002). Self-disclosure research: Knowledge through meta-analysis. In M. Allen, R. W. Preiss, B. M. Gayle, & N. Burrell (Eds.), *Interpersonal communication research: Advances through meta-analysis* (pp. 169-185). Mahwah, NJ: Lawrence Erlbaum.

English, A., Griffith, R. L., & Steelman, L. A. (2004). Team performance: The effect of team conscientiousness and task type. *Small Group Research*, *35*, 643-665.

Foy, N. (1994). *Empowering people at work*. Aldershot, UK: Gower.

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, *25*, 161-178.

Halfhill, T., Nielsen, T. M., Sundstrom, E., & Weilbaechear, A. (2005). Group personality composition and performance in military service teams. *Military Psychology*, *17*(1), 41-54.

Halfhill, T., Sundstrom, E., Lahner, J., Calderone, W., & Nielsen, T. M. (2005). Group personality composition and group effectiveness: An integrative review of empirical research. *Small Group Research*, *36*(1), 83-105.

Hall, H. (2001). Input-friendliness: Motivating knowledge sharing across intranets. *Journal of Information Science*, *27*, 139-146.

Hinds, P., & Pfeffer, J. (2003). Why organizations don't "know what they know": Cognitive and motivational factors affecting the transfer of expertise. In M. Ackerman, V. Pipek, & V. Wulf (Eds.), *Beyond knowledge management: Sharing expertise* (pp. 3-26) Cambridge, MA: MIT Press.

Hlupic, V., Pouloudi, A., & Rzevski, G. (2002). Towards an integrated approach to knowledge management: 'Hard', 'soft' and 'abstract' issues. *Knowledge and Process Management*, *9*, 90-102.

Hollingshead, A. B. (1998). Communication, learning, and retrieval in transactive memory systems. *Journal of Experimental Social Psychology*, *34*, 423-442.

Hollingshead, A. B. (2000). Perceptions of expertise and transactive memory in work relationships. *Group Processes & Intergroup Relations*, *3*, 257-267.

Inglis, M. (1993). The communicator style measure applied to nonnative speaking teaching assistants. *International Journal of Intercultural Relations*, *17*(1), 89-105.

Inkpen, A. C., & Tsang, E. W. (2005). Social capital, networks, and knowledge transfer. *Academy of Management Review*, *30*(1), 146-165.

Insko, C. A., Kirchner, J. L., Pinter, B., Efaw, J., & Wildschut, T. (2005). Interindividual-intergroup discontinuity as a function of trust and categorization: The paradox of expected cooperation. *Journal of Personality and Social Psychology*, *88*, 365-385.

Jones, S. (2004). Putting the person into person-centered and immediate emotional support: Emotional change and perceived helper competence as outcomes of comforting in helping situations. *Communication Research*, *31*, 338-360.

Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, *127*, 376-407.

Jung, D. I., & Avolio, B. J. (2000). Opening the black box: An experimental investigation of the mediating effects of trust and value congruence on transformational and transactional leadership. *Journal of Organizational Behavior*, *21*, 949-964.

Leary, T. (1957). *Interpersonal diagnosis of personality: A functional theory and methodology for personality evaluation.* Oxford, UK: Ronald.

Lerner, J., & Tirole, J. (2000). *The simple economics of open source*. National Bureau of Economic Research Working Paper # 7600. Retrieved April, 2002, from http://opensource.mit.edu/papers/Josh Lerner and Jean Triole - The Simple Economics of Open Source.pdf

Levine, J. M., & Moreland, R. L. (1990). Progress in small group research. *Annual Review of Psychology*, *41*, 585-634.

Levinson, W., Roter, D. L., Mullooly, J. P., & Dull, V. T. (1997). Physician-patient communication: The relationship with malpractice claims among primary care physicians and surgeons. *JAMA: Journal of the American Medical Association*, *277*, 553-559.

Lott, A. J., & Lott, B. J. (1965). Group cohesiveness as interpersonal attraction. *Psychological Bulletin*, *64*, 259-309.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*(1), 83-104.

Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology*, *85*, 273-283.

McCrae, R. R., & Costa, P. T. (1989). The structure of interpersonal traits: Wiggins' circumplex and the five-factor model. *Journal of Personality and Social Psychology*, *56*, 586-595.

Meng, X. L., Rosenthal, R., & Rubin, D. B. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin*, *111*(1), 172-175.

Moffett, S., McAdam, R., & Parkinson, S. (2003). An empirical analysis of knowledge management applications. *Journal of Knowledge Management*, *7*(3), 6-26.

Molleman, E., Nauta, A., & Jehn, K. A. (2004). Person-job fit applied to teamwork: A multilevel approach. *Small Group Research*, *35*, 515-539.

Moreland, R. L., & Myaskovsky, L. (2000). Exploring the performance benefits of group training: Transactive memory or improved communication? *Organizational Behavior & Human Decision Processes*, *82*(1), 117-133.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, *40*, 242-266.

Newcombe, M. J., & Ashkanasy, N. M. (2002). The role of affect and affective congruence in perceptions of leaders: An experimental study. *The Leadership Quarterly*, *13*, 601-614.

Norton, R. W. (1978). Foundation of a communicator style construct. *Human Communication Research*, *4*, 99-112.

O'Dell, C., & Grayson, C. J. (1998). If only we knew what we know: Identification and transfer of internal best practices. *California Management Review*, *40*, 154-174.

Oldenkamp, J. H. (2001). *Succesvol overdragen van kennis* [Successful knowledge transfer] Utrecht, Netherlands: Lemma.

Osterloh, M., & Frey, B. S. (2000). Motivation, knowledge transfer, and organizational forms. *Organization Science*, *11*, 538-550.

Pascoe, C., Ali, I. M., & Warne, L. (2002). Yet another role for job satisfaction and work motivation—Enabler of knowledge creation and knowledge sharing. *Proceedings of the Informing Science + IT Education Conference*, 1239-1248.

Pierce, J. L., & Gardner, D. G. (2004). Self-esteem within the work and organizational context: A review of the organization-based self-esteem literature. *Journal of Management*, *30*, 591-622.

Pillai, R., Schriesheim, C. A., & Williams, E. S. (1999). Fairness perceptions and trust as mediators for transformational and transactional leadership: A two-sample study. *Journal of Management*, *25*, 897-933.

Pillai, R., & Williams, E. S. (2004). Transformational leadership, self-efficacy, group cohesiveness, commitment, and performance. *Journal of Organizational Change Management*, *17*, 144-159.

Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, *1*, 107-142.

Putnam, R. D. (1993). The prosperous community: Social capital and public life. *American Prospect*, *13*, 35-42.

Reagans, R., & McEvily, B. (2003). Network structure and knowledge transfer: The effects of cohesion and range. *Administrative Science Quarterly*, *48*, 240-267.

Roe, R. A., Zinovieva, I. L., Dienes, E., & Ten Horn, L. A. (2000). A comparison of work motivation in Bulgaria, Hungary, and the Netherlands: Test of a model. *Applied Psychology: An International Review*, *49*, 658-687.

Roloff, M. E. (1987). Communication and reciprocity within intimate relationships. In M. E. Roloff & G. R. Miller (Eds.), *Interpersonal processes: New directions in communication research* (Vol. 14, pp. 11-38). Newbury Park, CA: Sage.

Salancik, G. R., & Pfeffer, J. (1977). An examination of need-satisfaction models of job attitudes. *Administrative Science Quarterly*, *22*, 427-456.

Smith, V. (1997). New forms of work organization. *Annual Review of Sociology*, *23*, 315-339.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp. 290-312). Washington, DC: American Sociological Association.

Sorenson, R. L., & Savage, G. T. (1989). Signaling participation through relational communication: A test of the Leader Interpersonal Influence Model. *Group and Organization Studies*, *14*, 325-354.

Stasser, G., Stewart, D. D., & Wittenbaum, G. M. (1995). Expert roles and information exchange during discussion: The importance of knowing who knows what. *Journal of Experimental Social Psychology*, *31*, 244-265.

Taillieu, T. C. B. (1987, October). *Meaning of work: Relationships between personal and contextual factors*. Paper presented at the Research Meeting for the European Committee for Work and Pay, Oisterwijk.

Trapnell, P. D., & Wiggins, J. S. (1990). Extension of the Interpersonal Adjective Scales to include the Big Five dimensions of personality. *Journal of Personality and Social Psychology*, *59*, 781-790.

Ting-Toomey, S. (1988). Social categorization, social identity and social comparison. In H. Tajfel (Ed.), *Differentiation between social groups* (pp. 61-76). London: Academic.

Van den Hooff, B., & Hendrix, L. (2004, April). *Eagerness and willingness to share: The relevance of different attitudes towards knowledge sharing*. Paper presented at the Fifth European Conference on Organizational Knowledge, Learning and Capabilities, Innsbruck, Austria.

Van den Hooff, B., & De Ridder, J. A. (2004) Knowledge sharing in context: The influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management*, *8*(6), 117-130.

Van den Hooff, B., De Ridder, J. A., & Aukema, E. J. (2004) Exploring the eagerness to share knowledge: The role of ICT and social capital in knowledge sharing. In M. H. Huysman & V. Wulf (Eds.), *Social capital and information technology* (pp. 163-186). Cambridge, MA: MIT Press.

Von Hippel, E. (2001). *Open source shows the way: Innovation by and for users—No manufacturer required!* Retrieved April 12, 2002, from http://opensource.mit.edu/papers/evhippel-osuserinnovation.pdf

Von Hippel, E., & Von Krogh, G. (2003). Open source software and the 'private-collective' innovation model: Issues for organization science. *Organization Science*, *14*, 209-224.

Watzlawick, P., Beavin, J. H., & Jackson, D. D. (1967). *Pragmatics of human communication: A study of interactional patterns, pathologies, and paradoxes*. New York: W.W. Norton.

Weggeman, M. (2000). *Kennismanagement: De praktijk* [Knowledge management: Practice]. Schiedam, Netherlands: Scriptum Management.

Williams, S., Weinman, J., & Dale, J. (1998). Doctor-patient communication and patient satisfaction: A review. *Family Practice*, *15*, 480-492.

Wittenbaum, G. M., Hollingshead, A. B., & Botero, I. C. (2004). From cooperative to motivated information sharing in groups: Moving beyond the hidden profile paradigm. *Communication Monographs*, *71*, 286-310.

Wong, C. L., & Tjosvold, D. (1995). Goal interdependence and quality of services marketing. *Psychology and Marketing*, *12*, 189-205.

Yammarino, F. J., & Bass, B. M. (1990). Transformational leadership and multiple levels of analysis. *Human Relations*, *43*, 975-995.

Zakaria, N., Amelinckx, A., & Wilemon, D. (2004). Working together apart? Building a knowledge-sharing culture for global virtual teams. *Creativity and Innovation Management*, *13*(1), 15-29.

Zárraga, C., & García-Falcón, J. M. (2003). Factors favoring knowledge management in work teams. *Journal of Knowledge Management*, *7*(2), 81-96.

Reinout E. de Vries is assistant professor at the Department of Work and Organizational Psychology at the Vrije Universiteit Amsterdam. At the time of the study, he worked as an assistant professor at the Amsterdam School of Communications Research. Currently, his main research topics are communication styles, leadership, personality, and interethnic conflicts. He has authored and coauthored articles on these and related topics in *The Leadership Quarterly*, *International Journal of Intercultural Relations*, *Journal of Applied Social Psychology*, *European Journal of Social Psychology*, *Human Performance*, *Journal of Personality and Social Behavior*, *Journal of Applied Behavioral Science*, *European Journal of Work and Organizational Psychology*, and *Journal of Personality and Social Psychology.*

Bart van den Hooff is assistant professor of knowledge and organization at the Vrije Universiteit Amsterdam, Department of Business Administration. At the time of the study, he worked as an assistant professor at the Amsterdam School of Communications Research. He received his MA (with honors) in Communications in 1991 and his Ph.D in Communications (with honors) in 1997. His research interests include knowledge sharing in organizations and the adoption, use, and effects of ICT in organizations. He has presented his work at international conferences and has published in national and international journals such as *Information & Management*, *Behaviour & Information Technology*, *Journal of Knowledge Management*, and *Journal of Business Communication.*

Jan A. de Ridder is senior associate professor of communication at the Amsterdam School of Communications Research. His research interests include performance of organizational communication, use of ICTs within organizations, content analysis methodology (computer based), and the role and influences of media in election campaigns.