University of Groningen

Knowledge sharing within teams

Rosendaal, Bastiaan; Bijlsma-Frankema, Katinka

Published in:
 Knowledge Management Research and Practice

DOI:
[10.1057/kmrp.2013.45](https://doi.org/10.1057/kmrp.2013.45)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
 Publisher's PDF, also known as Version of record

Publication date:
 2015

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Rosendaal, B., & Bijlsma-Frankema, K. (2015). Knowledge sharing within teams: Enabling and constraining factors. *Knowledge Management Research and Practice*, 13(3), 235-247.
<https://doi.org/10.1057/kmrp.2013.45>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Knowledge sharing within teams: enabling and constraining factors

Bastiaan Rosendaal¹ and
Katinka Bijlsma-Frankema²

¹Department of Organization Science,
VU University Amsterdam, Amsterdam,
The Netherlands; ²Department of Organization
Psychology, University of Groningen, Groningen,
The Netherlands

Correspondence: Bastiaan Rosendaal,
Department of Organization Science, VU
University Amsterdam, De Boelelaan 1081,
Amsterdam 1081 HV, The Netherlands.
Tel: 0031205986876, 0031204033272

Abstract

In this study, we tested the effects of several team features on knowledge sharing within teams of primary school teachers. We hypothesized that trust in team leader and trust in colleagues, mediated by team identification, will have a positive effect on knowledge sharing. We found indirect effects of both trust variables through team identification and a direct effect of trust in team members on knowledge sharing. We explored, furthermore, a moderator effect of team identification on the relation between team work value diversity and knowledge sharing to examine if team identification diminishes the potential negative effects of team work value diversity on knowledge sharing. Contrary to our expectations, we found no relation between work value diversity and knowledge sharing if team identification is low, while the relation takes a negative curvilinear form if team identification is high. This outcome is explained by the notion that signals of un-sameness in values can produce perceptions of threat and subsequent reactions in high identification teams.

Knowledge Management Research & Practice (2015) 13(3), 235–247.

doi:10.1057/kmrp.2013.45; published online 30 September 2013

Keywords: team; knowledge sharing; trust in team members; trust in team leader; team identification; work value diversity

Introduction

In the past decades, knowledge creation and transfer have been increasing in importance as critical factors to competitive advantages of modern organizations (Kogut & Zander, 1996). Knowledge creation is often represented as a cyclic process, of which knowledge sharing is a vital element that positively affects performance, as several studies argued (Boisot, 1995; Nonaka & Takeuchi, 1995) and found (Bontis *et al.*, 2002; Cummings, 2004; Zellmer-Bruhn & Gibson, 2006; Mesmer-Magnus & DeChurch, 2009). Tacit knowledge, that is, implicit and low-codified knowledge, is seen, especially, as crucial for knowledge creation because this person- and action-bound knowledge (Boisot, 1995; Nonaka & Takeuchi, 1995; Brown & Duguid, 2001) is often a hidden source of improvement and innovation. Sharing tacit knowledge is, however, a matter of individual discretion, which cannot be enforced by contract or safeguarded by control. Therefore, the question as to which factors promote (tacit) knowledge sharing is an enduring focus of attention within the field. In studies of teams, social relations between team members have increasingly been recognized as relevant in promoting (tacit) knowledge sharing and other extra-role behaviours (Nonaka & Takeuchi, 1995; Brown & Duguid, 2001; Wickstrøm Jensen, 2010). As a consequence, several authors have conceptualized knowledge sharing as a group level phenomenon, which is embedded in social relations (Nahapiet & Ghoshal, 1998; Edmondson, 2002). In this study, we follow this conceptualization by conducting a group level analysis of how (tacit) knowledge

Received: 31 May 2012

Revised: 4 March 2013

Accepted: 6 August 2013

sharing in teams of primary school teachers is influenced by characteristics of the social relations within the teams.

Like other professionals, teachers have to deal with a combination of individual and common tasks. Following Cohen & Bailey (1997), school teams meet the criteria of what can be understood as a team. They are a *collection of individuals who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems* (p. 241). Knowledge sharing within teams can be defined as a group activity, which enables learning and increases the group's ability to achieve the goals (Hsiu-Fen Lin, 2006). Teams are, furthermore, important in organizational learning processes because the dialogue and knowledge exchange needed to develop and combine knowledge for innovation within organizations mainly takes place at group level (Edmondson, 2002). Team learning functions as a linchpin between learning at individual and organizational levels (Crossan *et al.*, 1999; Bogenrieder & Nooteboom, 2004).

Our study focuses on teams of teachers because, given the degree of autonomy granted to teachers as professionals (Abbott, 1988), these teams can vary widely in how much tacit knowledge they share. Teachers can be typified as working 'alone together'. They are responsible for the cognitive and social progress of their pupils, and as long as the results are satisfying to the parents and the school board, limited interaction with colleagues is not necessarily seen as a shortcoming. As a consequence, teams of teachers may vary from a collection of loners, hardly sharing their knowledge, to tightly forged teams that actively engage in knowledge-sharing practices. This may include exchanging best practices, exchanging problems encountered in teaching, developing teaching materials and keeping up with new developments in the field. We aim to explain this variance in knowledge sharing by the antecedents we included in our study.

Our central goal is to clarify how social relations within teams make a difference to knowledge sharing and how characteristics of these relations are linked in promoting or constraining knowledge sharing. Given that we conceive of knowledge sharing as risk-taking behaviour, we included three characteristics of social relations we expect to promote knowledge sharing: trust in team leader, trust in team members and team identification. The fourth antecedent is work value diversity, which we expect to constrain knowledge sharing. However, little is known about how these four variables relate to knowledge sharing and how they are interrelated. So far, only a few studies included trust in team leader (O'Reilly, 1978), trust in team members (Zand, 1972), team identification or work value diversity (Van der Vegt & Bunderson, 2005) as antecedents of knowledge sharing. With this study, we aim to make three contributions. First, a specific matter in need of clarification is how trust and team identification associate in promoting knowledge sharing. On the basis of the few studies available, we will develop the argument that trust, as a positive characteristic of teams, will not only directly enhance knowledge sharing, but also

indirectly through team identification. Second, we aim to clarify the relative importance of trust in the team leader, and trust in team members, to team identification and knowledge sharing, a matter not addressed before in studies of knowledge sharing within teams. In the few studies available, trust in one of these relations is studied as a stand-alone factor in explaining aspects of team learning (Zand, 1972; O'Reilly, 1978). We intend to offer a more adequate representation of the social relations team members are embedded in by simultaneously examining both types of trust as possible boosters of knowledge sharing. Third, we aim to contribute to our understanding of how divergent and convergent forces affect knowledge sharing within teams. Where in most studies the converging forces of trust and team identification were shown to promote knowledge sharing, the results regarding the divergent force of diversity are equivocal. Despite ample attention paid to this matter in the past years, diversity still appears a two-faced phenomenon. On the one hand, by promoting richness of inputs it may enhance the quality of knowledge that is shared (Cummings, 2004). On the other, differences in members' cognitive schemata information environments and distinctive values can cause difficulties in mutual understanding and coordination of efforts (Jehn *et al.*, 1999; Cummings, 2004). Milliken & Martins (1996), for instance, reported several adverse effects of diversity, like diminished intra- and extra-role behaviour, and a negative effect of work value diversity on team identification. We build on the negative relation between work value diversity and team identification found in earlier studies by hypothesizing an inverse relation, for example, that team identification can diminish the negative effects of work value diversity on knowledge sharing.

Our study, moreover, is a survey study, hypothesis testing in nature, that draws from a sample of 766 teachers working in 79 teams across the country. It addresses two limits of scholarly work often mentioned in the field of organizational learning, that is, a lack of empirical research in general (Crossan *et al.*, 2011), and among empirical studies (see, for instance, Ford & Chan, 2003), a lack of studies drawing on more encompassing samples than case studies do (Klein, 2008).

This paper is structured into four parts. First, the theoretical ideas that have inspired the research are given. In the second part, the research design and methodology are described, followed by the results. In the last part, the results are discussed, conclusions are drawn and directions for future research are formulated.

Knowledge sharing as risk-taking behaviour

The point of departure of our argument is that knowledge sharing within teams is a risk-taking behaviour, related to a social dilemma (Cabrera & Cabrera, 2002). First, knowledge-sharing team members run the risk of becoming a 'sucker', who has invested energy in improving team performance while other team members feed on their efforts. As a consequence, collective benefits stay out of

reach. Second, knowledge-sharing team members run the risk that their tacit knowledge is exploited for individual benefits by other team members, leaving no benefits for themselves. As a result, team members may not be willing to share their tacit knowledge. However, if all team members shared their knowledge with each other, higher benefits for all would accrue. Sharing knowledge can be considered a form of altruistic extra-role behaviour, based on the willingness to contribute to a common goal and to see organizational knowledge as a common good, a willingness that is argued to be promoted by both trust (Bijlsma-Frankema *et al.*, 2008) and team identification (Moorman & Harland, 2002).

Apart from willingness to share, knowledge sharing is not without complications. In sharing tacit knowledge, team members are confronted with incongruity of interpretations among them. These incongruities have to be bridged by a process of translation that connects situated and abstract knowledge, practice and theory, know-how and 'know-why' (Gherardi & Nicolini, 2000). Szulanski (1996) argues that several factors may constrain knowledge sharing. The first constraint is a low retentive and absorptive capacity, which is a low ability to recognize the value, to apply and to integrate new knowledge in the organization. The second constraint is causal ambiguity, the inevitable uncertainty about the applicability of knowledge, embedded in tacit skills, which makes it difficult for others to adopt the knowledge-skill combination and to know how to apply it under different conditions. Third, the arduousness of the relationship complicates the exchange of knowledge, especially where the tacitness requires a degree of intimacy between source and recipient. As Nonaka & Takeuchi (1995) contend, trust provides the quality of relations needed for the exchange of tacit knowledge and to promote bridging of interpretation incongruities (Bogenrieder & Nooteboom, 2004). Both trust in the team leader and in colleagues can be expected to contribute to knowledge sharing within the team by affecting different relations. Knowledge sharing between the team leader and team members will be enabled by trust in the team leader, while trust in team members can be expected to enable knowledge sharing in lateral relations.

Team identification and knowledge sharing

Several studies have proposed or found that team identification promotes extra-role behaviours that advance group goal realization and performance of individuals and teams (Ashforth & Mael, 1989; Tyler & Blader, 2001; Dukerich *et al.*, 2002; Ellemers *et al.*, 2004). When knowledge sharing is seen as a special form of extra-role behaviour, it is obvious that team identification is an important antecedent.

Social identity theory helps to understand social behaviour that is primarily relevant at the collective level (Ellemers *et al.*, 2004). Group or team identification can be defined as a process that *refers to the inclination of particular*

individuals to perceive themselves as representatives of a particular group, which makes them perceive characteristic group features as self-descriptive and leads them to adapt distinctive group norms as guidelines for their own behavior (Ellemers *et al.*, 2004).

Group identification is considered the strongest drive for people to adapt their behaviour to their group membership and to define their work in terms of group goals and group roles (Ellemers *et al.*, 1999). Employees who identify themselves with their team are more likely to give support to team members, they tend to cooperate more and they define themselves by the characteristics that are observed as typical for their group.

While the relation between team identification and organizational citizenship behaviour (OCB) has received ample attention, and strong relations between social identification and OCB are often found (O'Reilly & Chatman, 1986; Moorman *et al.*, 1993), the relation with knowledge sharing has not been considered sufficiently. Podsakoff *et al.* (2000) consider altruism, sharing resources, organizational compliance and individual initiative as important elements of OCB. These aspects can also be applied to knowledge sharing: individuals take the initiative to share their knowledge, it involves contribution to common goals (organizational compliance), support to colleagues (altruism), sharing information (sharing resources) and actively searching for solutions others may look for (individual initiative, altruism, sharing resources). As such, knowledge sharing can be considered as a specific kind of OCB. Considering the similarities between knowledge sharing and OCB and the often strong relation between social identification and OCB found, a positive relation between team identification and knowledge sharing can be expected. This expectation is supported by the few studies that did address this relation. Nahapiet & Ghoshal (1998) argued that identification is an important resource to motivate employees to share their knowledge. Van der Vegt & Bunderson (2005) indeed demonstrate the positive effect of team identification in multi-disciplinary teams. When team identification is stronger, team members show more learning behaviour and their team performs better. We therefore hypothesize:

Hypothesis 1: *Team identification will be positively related to knowledge sharing within teams.*

Trust, team identification and knowledge sharing

Trust is commonly understood as a starting mechanism in support of cooperation between actors (Gambetta, 1988). In the case of risk-taking behaviours such as knowledge sharing, trust helps to overcome notions of individual risk and vulnerabilities in favour of a collective orientation and positive expectations of the others and what the relation may bring. Following the highly cited definition of Rousseau *et al.* (1998), in this study trust is defined as *a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or the*

behaviour of another (p. 395). Trust begins where rational prediction ends (e.g., Luhmann, 1979; Gambetta, 1988), enabling actors to take a leap of faith beyond that which reason alone would warrant (Simmel, 1950; Lewis & Weigert, 1985; Bradach & Eccles, 1989). Building on these authors, it is argued that this leap of faith implies suspension of doubt about the possibility that another's action will be based on self-interest (that is 'I'-rationality), assuming that the other will reciprocate the 'we'-rationality that is signalled by trust (Möllering, 2005). By expecting reciprocation of the 'we'-rationality', the leap of faith can be taken.

Dirks (1999) follows a similar reasoning that in low trust situations, work motivation of individuals is transformed into effort to reach individual goals, while in high trust situations motivation stirs effort directed at team goal realization. Sabel (1993), inspired by social dilemma theory, similarly argues that if trust is low or absent in a team, no one will risk moving first and all team members will sacrifice the gains from cooperation in increasing individual effectiveness. These authors thus argue that if trust increases, sense making in terms of 'I' and individual interests is replaced by sense making in terms of 'we' and collective interests, thus promoting team goal directedness. In other words, trust between team members will promote team identification and effort to reach team goals.

Other authors have also alluded to differences in meaning giving and behaviours of actors in low trust and higher trust situations. Next to 'I'- vs 'we'-focused meaning giving, a shift in meaning giving from a focus on risks to a focus on opportunities is mentioned in the literature. On the basis of a cognitive resources framework, Mayer & Gavin (2005) argue that in situations of low trust in managers, individuals are immersed in risk perceptions and spend much energy in non-productive issues such as vigilantly watching the team leader or colleagues, defensive behaviours, self-protection (Lee *et al.*, 1990; Deming, 1994) and worries. As a consequence, their ability to focus on the tasks at hand diminishes. If trust grows, cognitive resources will be more fully used to focus on the tasks, because risk is less salient, and self-protective cognitions and actions are diminished (Mayer & Gavin, 2005). Therefore, we contend that trust, besides promoting collective goal directedness, will diminish the salience of risks in favour of opportunity salience. As knowledge sharing is a form of risk-taking behaviour, which implies contributing to collective goals and seeking opportunities for learning, we expect trust in team leader and in colleagues to promote knowledge sharing in teams.

The two psychological states, collective goal directedness ('we'-rationality) and opportunity salience, that are furthered by trust, in turn result in several behaviours that can be typified as approach behaviours. *Approach* encompasses several sorts of benevolent behaviour or behavioural tendencies, such as open communication, willingness to cooperate, attribution of positive motives and knowledge sharing. March & Olsen (1975) propose

that trust leads to interaction seeking, to willingness to share views, preferences and central concerns with trusted others. Furthermore, the behaviour of trusted others is attributed to benevolent motives. In line with this reasoning, Zand (1972) found that in low trust situations group members are less involved in team processes, share less information and ideas, show lack of openness and avoid influence of others. In high trust situations, however, team members are more open to discussion, communicate more openly, develop more innovative solutions and solve their problems more effectively as a group. Later studies support the relation between trust and approach behaviours – as well as the relation between distrust and avoidance behaviour – in different relations (Bromiley & Cummings, 1995; Costa, 2003; Khazanchi & Masterson, 2011).

The three positive effects of trust discussed are intended as general effects of trust, not restricted to trust in team members. We contend that trust in the team leader will also contribute to knowledge sharing. Employees easily feel vulnerable towards their leader, for instance, when they are assigned tasks, when they are involved in conflicts or when their work is evaluated. 'Fear of exploitation' and 'the nagging suspicion that they are treated unfairly' by their manager, is a common phenomenon (Kramer, 1996). A trustworthy team leader can take away this fear or suspicion and thus pave the road to a stronger identification with and contribution to the team.

If the proposed workings of trust are applied to the team member–manager relation, it can be expected that where trust in the supervisor is higher, team members are more likely to adopt a 'we'-rationality' with the supervisor and tend to seek interaction with him. Meaning giving in terms of shared goals and opportunities for success will be more salient. As realizing a satisfactory level of team performance is a central concern to managers, trust in managers will contribute to team members' directedness at team goals, as defined by the organization, as the studies of Oldham (1975 in Dirks & Ferrin, 2001) and Pillai *et al.* (1999) show, and to behaviour that contributes to attainment of these goals (Dirks, 2000). Dirks (2000) concludes that trust in supervisors makes team members suspend their personal motives and channel their energy towards 'the roles specified by the leader' and 'to work towards the performance-related objectives and strategies set by the leader' (p. 1005). Next to team goal directedness, opportunity salience can be expected to grow with higher trust. Mayer & Gavin (2005) indeed found support for the idea that if trust in supervisors rises, salience of vulnerability diminishes and the ability to focus on the tasks increases (Mayer & Gavin, 2005). Several studies, moreover, found a positive relation between trust in managers and approach behaviours towards managers, including acceptance of their decisions (Tyler & DeGoey, 1995), compliance with their decisions or demands (Dirks & Ferrin, 2002) and accuracy and amount of information sharing with them (Dirks & Ferrin, 2001; Khazanchi & Masterson, 2011). These theoretical ideas and research findings support a positive relation between

the levels of trust within teams, whether trust in colleagues or trust in team leader, team identification and the degree of knowledge sharing. Supported by research outcomes so far, we expect both trust in team members and in team leader to contribute to team identification and knowledge sharing over and above the effect of trust in the other focus. The characteristics of higher trust, that is, thinking in terms of 'we' (team identification) and attentiveness based on opportunity salience, are factors that have been found to promote learning and knowledge sharing within teams. On the basis of the theoretical ideas discussed, we expect that team identification partly or fully mediates the relation between trust and knowledge sharing.

Hypothesis 2: *Trust in team members will be positively related to team identification.*

Hypothesis 3: *Trust in the team leader will be positively related to team identification.*

Hypothesis 4: *Trust in team members will be positively related to knowledge sharing.*

Hypothesis 4a: *The relation between trust in team members and knowledge sharing is partly or fully mediated by team identification.*

Hypothesis 5: *Trust in the team leader will be positively related to knowledge sharing.*

Hypothesis 5a: *The relation between trust in the team leader and knowledge sharing is partly or fully mediated by team identification.*

Diversity and knowledge sharing

Team identification and knowledge sharing are expected to have a positive relation. An element that complicates this relation is the composition of teams. As argued before, knowledge sharing can be complicated by incongruity of interpretations, which have to be bridged. Teams can be more or less diverse in the interpretations of members and the degree of incongruity between those interpretations. The more homogeneous a team, the easier the team members identify with others in the team. Differences in team members' cognitive schemata and work values can cause difficulties in mutual understanding and coordination of efforts (Milliken & Martins, 1996). In international companies, knowledge sharing, team learning and innovativeness were found to be lower if teams were multinational in nature, compared with single nationality teams (Cummings, 2004; Gibson & Gibbs, 2006; Zellmer-Bruhn & Gibson, 2006). As soon as other team members are categorized as different, harmful effects like inter-group biases and threatened psychological safety may arise (Sitkin & Stickel, 1996), which may work as barriers for cooperation and knowledge sharing. On the other hand, some diversity can be considered a contribution to the team's requisite variety. Heterogeneous teams have more knowledge at their disposal and members can challenge

each other with diverging views, resulting in higher quality solutions. Some differences have a larger and longer lasting impact than others for the cooperation in teams. This is especially true when team members have different values, because in teams with value diversity, members are more prone to categorize others as different than in teams with task-related knowledge diversity (Sitkin & Stickel, 1996).

Work value diversity, the concept included in our study, refers to the variety in assumptions and ideas about tasks, work approach and goals (Jehn *et al*, 1999). Jehn found work value diversity to be negatively related to work performance, group efficiency and positively related to task conflicts. Van Knippenberg *et al* (2004) emphasize the negative effect of work value diversity on team performance. A study of Chou *et al* (2008) mirrors these findings with positive relations between shared work values and team member performance.

Yet, the inference that value diversity in general and work value diversity in particular constrains knowledge sharing must not be drawn too soon because of positive effects of diversity that appear to apply to work value diversity as well. There are reasons to believe that diversity in teams can help to improve the process of knowledge creation, knowledge sharing and innovation, in specific, but not in all, circumstances (Hoever *et al*, 2011). Nooteboom (2000), for instance, argues that a certain degree of cognitive distance between knowledge domains, or distance between values is such a specific circumstance, needed as a condition for learning. A large distance causes problems of understanding since there is a lack of overlap in cognitive frames, while a large overlap makes knowledge sharing inefficient or even superfluous. Instead, he suggests an optimal cognitive or value distance, with sufficient understanding to communicate and sufficient diversity to discover new insights and complementary knowledge, to stimulate learning processes.

Inspired by this idea of specific circumstances, under which value diversity can contribute to learning processes, authors have tried to clarify conditions that moderate the relation between diversity and team learning. Schippers (2003), for instance, found positive effects of overall diversity on reflexivity in teams with high (but not with low) team interdependence and in teams with low (but not with high) longevity. Van der Vegt & Bunderson (2005) were the first to propose team identification as a moderator. They found that in teams with low team identification, expertise diversity was negatively related to team learning. If team identification was high, however, the relationship was positive. These findings are in line with outcomes of studies that show effects of diversity to be moderated by a positive team climate. Gibson & Gibbs (2006), for instance, showed that higher psychological safety in the communication climate of international virtual teams helped elucidate differences in norms, culture and nationalities. Conflicts were better resolved and members felt more comfortable to speak up and ask for clarifications. Rosendaal (2009) also found that

Figure 1 Research model.

a potential negative influence of work value diversity on knowledge sharing is reduced if team identification is high.

In summary, the potential negative influence of work value diversity on knowledge sharing does not seem to be inevitable, given a sufficient level of team identification. It is likely that team identification is a moderating factor in the relation between work value diversity and knowledge sharing in teams. We expect an interaction effect between work value diversity and team identification in such a way that the negative effect of work value diversity on knowledge sharing will disappear in case of high team identification (Figure 1).

Hypothesis 6: *If team identification is low, work value diversity will have a negative effect on knowledge sharing, while if team identification is high, work value diversity will have no effect or a positive effect on knowledge sharing.*

Methodology

The aim of this study is to explore the antecedents of knowledge sharing in teams and to test the proposed relations between the variables. Previous research has yielded validated instruments to measure these variables, which we used in our cross-sectional survey study. The research has been conducted in Dutch primary school teams. The schools are of different denominations and are scattered all over the country with a slight underrepresentation of Roman Catholic schools and of the southern part of the country. Age and gender are in line with the population features. The medium school size is somewhat larger than that of the population (271 against 220), probably because of a higher percentage of city schools (Centraal Bureau voor de Statistiek (CBS), 2008).

Some 182 schools were invited to participate, 102 of which met this request. Another 21 schools were removed from the sample either because of a response rate below 50% or because the team numbered fewer than four

members. The final sample encompasses 78 school teams. From the original sample of schools, 766 teachers completed the questionnaire (response rate 41%). About 85% of the teachers are female and half of the sample is working fewer than 4 days a week. The median age is 46 and the median experience in education is 18 years.

The questionnaire for teachers comprised 69 questions, mostly Likert scale items (see Table A1 in Appendix) of which only part is used in this study. For *knowledge sharing*, five items were used from Van den Hooff & De Leeuw van Weenen (2004), supplemented with three items that address specific elements of knowledge sharing within school teams (italics in Table A1 in Appendix). Another instrument to measure knowledge sharing (Yi, 2009) was considered less appropriate for our project because it is more focused on knowledge sharing in larger companies and less suitable to work teams in rather small organizations like elementary schools. For *team identification*, an adjusted scale of Mael & Ashforth (1992) with six items has been used because of better adaptation to the team level of identification (Van Knippenberg, 2000).

Work value diversity has been measured by the six-item instrument of Jehn *et al* (1999). *Trust in team members*, a five-item scale was derived from Cook & Wall (1980). *Trust in team leader* was measured with a seven-item scale, developed and tested in several studies by Bijlsma & Van de Bunt (2003). The validity of the variables has been verified by factor analyses, followed by reliability analyses. A clear five-factor solution has been found with almost all loadings above 0.60 (principal components analysis with promax rotation). An oblique rotation has been chosen because of the probable interdependence of the variables. The factor analysis resulted in a solution with five separate factors in which the items of each variable are part of a one-dimensional scale, one item measuring *team identification* with a lower loading than 0.50 has been removed (see Table A1 in Appendix). The reliability of the variables ranges from 0.81 to 0.91 (Table 1).

In this study, given the focus on teams, we conducted a team level analysis. The individual data of the teachers have been aggregated to the school team level. Aggregation was possible because the size of the intra-class correlations exceed the minimal value of 0.12 (Bliese & Halverson, 1998).

Results

As a first step, the correlations of the key variables are presented (Table 1). The analysis shows significant associations between most variables involved in the research model. The directions of the correlations are in line with the expectations. *Value diversity* correlates negatively with the other variables. All correlations are lower than 0.80, but *trust in team members* shows a rather high negative correlation with *value diversity*. Therefore extra attention has been paid to multi-collinearity in the regression analyses. No multi-collinearity problems were found.

Table 1 Reliability and correlation

	Cronbach's α	Trust in team members	Trust in team leader	Team identification	Work value diversity
Trust in team members	0.84				
Trust in team leader	0.91	0.52**			
Team identification	0.81	0.43**	0.40**		
Work value diversity	0.89	-0.75**	-0.41**	-0.51**	
Knowledge sharing	0.87	0.65**	0.44**	0.48**	-0.54**

** is significant at the 0.001 level.

Test of hypotheses

We used stepwise multiple regression analyses (MRA) to test the hypotheses, to be able to compare the variance in knowledge sharing explained by more parsimonious and more extended models. MRA is preferred over a structural equation approach (SEM) in this case as it allows a stepwise procedure in which phenomena as moderation and mediation can be isolated and tested separately. A clear advantage of SEM, the integrated treatment of measurement error and statistical analysis, has somewhat less weight in our project as we made use of mostly extensively used and validated scales (Schumacker & Lomax, 2004).

Table 2 shows that trust in team members ($\beta=0.30^{**}$) and trust in team leader ($\beta=0.25^{*}$) are both positively related to team identification. As expected, trust in both team members and team leader contributes to team identification over and above the effect of trust in the other relation. These findings corroborate Hypotheses 2 and 3 and support our theoretical notion that trust promotes thinking in terms of *we* instead of *I*.

Next, the entire model with knowledge sharing as dependent variable was tested to see whether Hypotheses 1, 4, 4a, 5, 5a and 6 are supported by the data. Table 3 shows a significant positive effect of team identification on knowledge sharing found ($\beta=0.23^{*}$) that lends support to Hypothesis 1. This finding corroborates earlier studies that also found this positive relation (Moorman & Harland, 2002; Van der Vegt & Bunderson, 2005). Although the correlation between trust in team members and work value diversity is quite high (-0.75), the tolerance value in the regression analysis rates well above the critical limit of 0.1 (0.39). These values indicate that there is no multi-collinearity problem between the variables (Stevens, 2002).

The positive direct effect of trust in team members on knowledge sharing ($\beta=0.49^{**}$) supports Hypothesis 4, but the non-significant direct effect of trust in the team leader on knowledge sharing falsifies Hypothesis 5 (see Model 1, Table 3). The two hypotheses that proposed team identification to partly or fully mediate the positive trust – knowledge sharing relation must be refuted. Hypothesis 4a, because the β of the direct effect of trust in team members on knowledge sharing did not change significantly after entering team identification in the model (Model 2, Table 3), while a significant fall in the β value is a necessary condition for mediation. Hypothesis 5a, because the direct effect of trust in team leader was non-significant to begin with, while a significant direct effect is a necessary

Table 2 MRA trust and team identification

Variables	Team identification standard β
Trust in team members	0.30**
Trust in team leader	0.25*

*, ** show significance at $P<0.05$, $P<0.01$ respectively; adjusted $R^2=0.23$.

Table 3 MRA standardized regressions reported

Variables	Knowledge sharing		
	Model 1	Model 2	Model 3
Trust in team members	0.58***	0.49**	0.44**
Trust in team leader	0.14	0.08	0.12
Work value diversity		-0.02	-0.04
Team identification		0.23*	0.19*
Interaction work value diversity $\times$ team identification			-0.26**
Model adjusted R^2	0.42	0.44	0.51
ΔR^2		0.042*	0.07**

*, ** and *** show significance at $P<0.05$, $P<0.01$ and *** $P<0.001$, respectively.

condition for mediation (Baron & Kenny, 1986). However, as trust in both foci had a significant effect on team identification, and team identification in turn has a significant effect on knowledge sharing, the data show indirect effects of trust in both foci on knowledge sharing through team identification, besides a direct effect of trust in team members on knowledge sharing. Building on studies that proposed and found trust to promote a 'we'-rationality (Dirks, 1999; Möllering, 2005) and to enhance approach behaviours, such as accuracy and amount of information sharing (Khazanchi & Masterson, 2011; Zand, 1972), and on studies showing that approach behaviours result from group identification (Ellemers *et al*, 1999), we modelled the effects as a chain. The trust-team identification knowledge sharing chain is supported by the indirect effects of trust on knowledge sharing through team identification that we found. This support is only partial as we found a direct effect of trust in team members as well.

Regarding the effect of work value diversity on knowledge sharing (Table 3), which in the first two additive models is not significant, it proves to be significant in interaction with team identification, but not as proposed in Hypothesis 6.

Table 4 Standardized regressions reported

Variables	Knowledge sharing (low team identification condition)	Knowledge sharing (high team identification condition)	
	Model 1	Model 1	Model 2
Work value diversity	-0.11 ^{n.s}	-0.65***	-0.56***
(Work value diversity) ²			0.30**
Model Adj. R^2	0.01	0.40	0.48
ΔR^2			0.08

*, ** and *** show significance at $P < 0.05$, $P < 0.01$ and $P < 0.001$, respectively; n.s. = not significant.

Hypothesis 6 predicts a negative relation between work value diversity and knowledge sharing in the low team identification condition, a negative effect that would disappear in the high team identification condition. The findings do not support the neutralizing effect of high team identification as was expected, following the studies of Van der Vegt & Bunderson (2005) and of Gibson & Gibbs (2006). In the low team identification case the relation between work value diversity and knowledge sharing is not significant ($P < 0.52$), signifying that in this group of teams, knowledge sharing is not influenced by the degree of work value diversity experienced (Table 4). This finding suggests that in these teams, work value diversity is not a relevant factor to the degree of knowledge sharing.

In the high team identification teams, also contrary to our expectations, *work value diversity* has a negative effect on *knowledge sharing* ($P < 0.001$). The more *work value diversity* in a high identification team, the less members are inclined to share their knowledge. Team identification does not make the negative effects of work value diversity on knowledge sharing disappear, it rather seems to foster the relation.

The slopes show that if *work value diversity* is low, *knowledge sharing* is higher in a high team identification group, than in a low identity group. But when the level of work value diversity rises, knowledge sharing in the high team identification teams becomes even lower than in the low team identification teams. This suggests a negative reaction to work value diversity in the form of less knowledge sharing is more keenly given in the high identity teams. Work value diversity does not seem to trigger such a reaction in the low identification teams.

Following the plea of Van der Vegt & Bunderson (2005) for more complex and non-linear regression analyses, we conducted a curvilinear regression analysis, which resulted in a more understandable outcome (Figure 2).

The regression of *work value diversity* on *knowledge sharing* is, in the condition of higher team identification, better approached by a decreasing curvilinear relation, given

Figure 2 Linear and curvilinear relations between knowledge sharing(y) and work value diversity(x).

that this quadratic function is significant over and above the linear one (Table 4). Although the high identification teams display a higher level of knowledge sharing when work value diversity is low, which is in accord with our initial expectations, an increase in work value diversity causes a considerable drop of knowledge sharing behaviour, which is more or less stabilized when this form of diversity surpasses its mean score. It can be concluded that team identification particularly makes a positive difference to *knowledge sharing* when *work value diversity* is lower. In situations of higher work value diversity, high identification teams appear to display a negative receptiveness to this diversity. This negative effect, however, appears to reach a ceiling, beyond which knowledge sharing is hardly affected by further rises in work value diversity. When comparing knowledge sharing for high and low team identification, moreover, the mean of high identification teams is significantly higher ($P < 0.001$). Table 5 summarizes the results of hypothesis testing.

Discussion

Our central goal was to clarify if and how the nature of social relations within teams makes a difference to knowledge sharing. The findings suggest that all four explanatory variables do make a difference to knowledge sharing, partly as hypothesized, partly challenging our expectations and earlier research findings, giving rise to several afterthoughts.

Modelling the effects of trust through team identification

The way we model the relation between trust and team identification is supported by most studies (Sheppard & Tuschinski, 1996; Kitapci *et al.*, 2005), but not all. Brodt & Korsgaard (2003), for instance, propose that identification is an antecedent of trust. Our theoretical ideas suggest that both trust in team members and trust in team leader will operate through two psychological states to enhance knowledge sharing: thinking in terms of 'we'

Table 5 Overview of hypothesis testing

Hypotheses	Accepted or rejected
1 Team identification will be positively related to knowledge sharing within teams	A
2 Trust in team members will be positively related to team identification	A
3 Trust in team leader will be positively related to team identification	A
4 Trust in team members will be positively related to knowledge sharing	A
4a The relation between trust in team members and knowledge sharing is partly or fully mediated by team identification	R
5 Trust in team leader will be positively related to knowledge sharing	R
5a The relation between trust in team leader and knowledge sharing is partly or fully mediated by team identification	R
6 If team identification is low, work value diversity will have a negative effect on knowledge sharing, while if team identification is high, work value diversity will have no effect or a positive effect on knowledge sharing	R

(identification) and salience of opportunities (as opposed to risk salience). In this study, we were able to explore whether team identification indeed is promoted by trust in both foci and whether team identification in turn enhanced knowledge sharing. The data support these indirect effects, but only partially as trust in team members also directly promotes knowledge sharing. We have not been able to test the chain through opportunity salience in the same way, because this variable was not included in this study. However, as we argued before, as knowledge sharing can be seen as risk-taking behaviour, it can be conjectured that only if the salience of risk is low enough, will team members engage in knowledge sharing. As we argue below, lower levels of knowledge sharing in teams may indicate a certain salience of risk and lower opportunity salience than in teams with high levels of knowledge sharing. We recommend that future studies include opportunity salience and risk salience to test this proposed relation. For practitioners, this direction for future research may generate insight into what constrains knowledge sharing in teams, a relevant matter given subsequent effects on team learning, innovation and performance found.

Relative effects of trust in team members and in team leader

By including trust in both foci, we were able to explore their relative effects, a comparison not possible in studies where trust in either relation is treated as a standalone factor. Our study adds to the few studies that instead try to adequately model the social relations in which team members are embedded. Earlier studies in which both foci were studied in relation to team performance produced equivocal results. Dirks (2000), in a study of sports teams, found an effect of trust in the coach, but no effect of trust in team members. Bijlsma-Frankema *et al* (2008), in a study of knowledge-intensive project teams found that trust in both foci affected team performance. The result of the present study showing that the two types of trust matter to knowledge sharing are in line with the findings of Bijlsma-Frankema *et al* (2008). It can be noted, however, that trust in team members contributes more strongly to knowledge sharing than trust in the team leader. This

outcome may be due to the specific position of team leaders in primary school teams, who have restricted formal authority over colleagues and mostly act as *primus inter pares*, the first among equals. As a consequence, they may partly be conceived of as a colleague and trust in them may have co-determined the trust in team members scores.

It is also worth noting that in the field of identification studies, it is suggested that both the behaviour of the leader and the group contribute to group identification (Tyler *et al*, 1996), a statement consistent with our findings. We contended, and found, that trust in both relations predicts team identification over and above the effect of the other.

The differences from the findings of Dirks (2000), who found no effect of trust in team members, may well be because of the type of teams studied. If future team studies include both types of trust and a set of relevant characterizations of the teams, then comparisons between studies can be conducted to promote our understanding of contextual factors that influence the relative effects of trust in team members and trust in team leader. Moderators worth considering include team interdependence, longevity (Schippers, 2003), psychological safety (Edmondson, 1999; Gibson & Gibbs, 2006), temporary vs permanent teams (De Jong & Elfring, 2010), member redundancy (Mesmer-Magnus & DeChurch, 2009) and knowledge intensiveness (Bijlsma-Frankema *et al*, 2008). This is consistent with the present search for moderators to understand the work value diversity-knowledge sharing relation. We propose to extend this plea to understanding how different characteristics of social relations in a team affect knowledge sharing in specific and team outcomes in general.

Work value diversity and identification: a counter intuitive outcome?

On the basis of earlier research findings (Zellmer-Bruhn & Gibson, 2006), we expected a negative relation between work value diversity and knowledge sharing in low identification teams and a neutral or positive relation in high identity teams (Van der Vegt & Bunderson, 2005). Moreover, building on the negative relation found between

team identification and value diversity (Milliken & Martins, 1996), we proposed that high identity could diminish this negative effect, similar to the findings of Van der Vegt & Bunderson (2005), who found a positive relation between expertise diversity and team learning in high identification teams. Our findings, however, did not support Hypothesis 6. The difference in findings between our study and the study of Van der Vegt & Bunderson (2005) may be due to several factors of divergence. They studied multi-disciplinary teams while we studied all-teachers teams. Our teams can be characterized as having very low interdependence, which may make a difference; as Schippers (2003) found, they studied expertise diversity while we studied work value diversity, and the nature of the dependent variable, team learning vs knowledge sharing, may also have played a part. By taking these factors systematically into account in future studies of team learning, the comparability of studies and adequate interpretation of their findings will be greatly enhanced. The very low interdependence in the teams of teachers we studied may turn out to be a factor in explaining our findings in high and low identification teams.

A curvilinear solution, which better represented the data, enabled an alternative explanation of our findings that is more consistent with the theoretical insights presented in this paper. We found that if work value diversity is low, the teams behave as initially expected: the high identification teams shared significantly more knowledge than the low identification teams. The surprising outcome was that the low identification teams were not affected in their knowledge sharing behaviours by increasing work value diversity while high identification teams instead were affected, showing a decreasing curve of knowledge sharing with increasing work value diversity. Apparently, both groups of teams differed in the way they perceived work value diversity and how it affected their behaviour, a difference in framing and interpretation. We conjecture that high team identification promotes expectations of sameness in values, in norms, in behaviours and that counter evidence that threatens these expectations will loom large in high identity teams and affect the behaviours of team members. Work value diversity is such counter evidence. Team members may feel their expectations of sameness on which their team identification is built, threatened by others who display signs that they are not the same, and hold different work values. The threat felt may raise the salience of risk (at the cost of opportunity salience) in knowledge sharing and lead to diminishing of this risk-taking behaviour.

In low identification teams, which we have typified earlier as collections of 'lone wolves', teachers probably do not expect others to be the same, they expect others to be different and have adapted their level of knowledge sharing to the bare necessity or to the level they deem fit to meet the risks they perceive. This would explain why an increase of work value diversity does not affect the level of knowledge sharing in these teams.

This explanation is of course preliminary and in need of refinement and testing in future research. It is, however,

in line with and can profit from several streams of literature addressed in this paper. For instance, studies that have found barriers to organizational learning and knowledge sharing came up with factors such as a large cognitive or value distance (Nooteboom, 2000) or arduous relations (Szulanski, 1996). High identity teams may expect a smaller cognitive or value distance than low identity teams, or expect less arduousness in relations, expectations against which the reality is measured. From another field of research it is known that in small groups with close relations like family ties, conflicts are more likely to arise than in less strongly connected groups (Argyle & Furnham, 1983).

The explanation is also in line with the theoretical ideas of the working of trust in team members and in team leader. We proposed that trust will enhance two psychological states, team identification and diminished risk salience, in favour of opportunity salience. We contended that both these psychological states operate as antecedents of approach behaviour such as knowledge sharing. The data now appear not to contradict a contention we were unable to test in this study, that is that besides team identification, salience of risks/opportunities influences the level of knowledge sharing in teams. Following the explanation we proposed, in high identification teams with their expectations of sameness in values, we expect that work value diversity will raise the level of risk salience, and through that mechanism, lower the level of knowledge sharing. This idea can be refined and tested in future research to further our understanding of knowledge sharing behaviour, which is basic for team learning, innovation and team performance. This understanding will be beneficial to research and practice alike.

Practical implications

Knowledge sharing is important for teams (Edmondson, 2002). People who interact about how to do their jobs can rely on a considerable larger knowledge base than employees in an isolated position. Knowledge sharing in teams flourishes in a social habitat (Nahapiet & Ghoshal, 1998). Faced with the question of how to improve knowledge sharing by influencing the social environment, the following suggestions can be deduced from our results.

Building a social atmosphere in which there is trust within the team and trust in the leader, positively affects the willingness of team members to help each other in general and to share their knowledge in specific knowledge sharing. Intra-team trust prevents members seeing their colleagues as persons who may feed on their efforts to improve team performance or may misuse their knowledge for own purposes, while it promotes the willingness to invest in knowledge as a common good (Bijlsma-Frankema *et al*, 2008).

Trust in team members is also found to positively affect the development of a common identity within teams. Team identity surfaces as another keystone for the social atmosphere that fosters forms of OCB, like knowledge

sharing (Podsakoff *et al.*, 2000). Members who accept a team as part of their identity are better prepared to share their knowledge and thus tend to put in more effort to reach team goals. Our study shows that work value diversity, as a specific form of diversity, can spoil the positive effect of social factors on knowledge sharing. Especially in teams with high team identity, large differences in work values can lower knowledge-sharing behaviour to a level which is found for teams that are not much more than a set of isolated individuals. Unlike what we expected one

cannot assume that a high team identity neutralizes the problems that work value diversity can cause for knowledge sharing. Our study reveals that the benefits of trust and team identification for knowledge sharing disappear in teams of teachers where work value diversity surpasses a threshold. The value of the threshold may be lower in low interdependence teams, like the ones we studied, than in teams where team members need each other to perform as a team. Interdependence may induce team members to overlook value differences in the pursue of common goals.

References

- ABBOTT A (1988) *The System of Professions: An Essay on the Division of Expert Labor*. University of Chicago Press, Chicago.
- ARGYLE M and FURNHAM A (1983) Sources of satisfaction and conflict in long-term relationships. *Journal of Marriage and the Family* **45**(3), 481–493.
- ASHFORTH BE and MAEL F (1989) Social identity theory and the organization. *Academy of Management Review* **14**(1), 20–39.
- BARON RM and KENNY DA (1986) The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* **51**(6), 1173–1182.
- BIJLSMA KM and VAN DE BUNT GG (2003) Antecedents of trust in managers: a 'bottom up' approach. *Personnel Review* **32**(5), 638–664.
- BIJLSMA-FRANKEMA KM, DE JONG BA and VAN DE BUNT GG (2008) Heed, a missing link between trust, monitoring and performance in knowledge intensive teams. *International Journal of Human Resource Management* **19**(1), 19–40.
- BLIESE PD and HALVERSON RR (1998) Group size and measures of group-level properties: an examination of eta-squared and ICC values. *Journal of Management* **24**(2), 157–172.
- BOGENRIEDER I and NOOTEBOOM B (2004) Learning groups: what types are there? A theoretical analysis and an empirical study in a consultancy firm. *Organization Studies* **25**(2), 287–313.
- BOISOT MH (1995) *Information Space: A Framework for Learning in Organizations, Institutions and Cultures*. Routledge, London.
- BONTIS N, CROSSAN MM and HULLAND J (2002) Managing an organizational learning system by aligning stocks and flows. *Journal of Management Studies* **39**(4), 437–469.
- BRADACH JL and ECCLES RG (1989) Price, authority, and trust: from ideal types to plural forms. *Annual Review of Sociology* **15**, 97–118.
- BRODT S and KORSGAARD MA (2003) Group identity and attachment: two paths to trust and cooperation in groups. Paper presented at the 16th annual IACM conference, Melbourne, Australia.
- BROMILEY P and CUMMINGS LL (1995) Transaction costs in firms with trust. In *Research on Negotiation in Firms* (BIES RJ, SHEPPARD BH and LEWICKI RJ, Eds), JAI Press, Greenwich, CT.
- BROWN JS and DUGUID P (2001) Knowledge and organization: a social-practice perspective. *Organization Science* **12**(2), 198–213.
- CABRERA A and CABRERA EF (2002) Knowledge-sharing dilemmas. *Organization Studies* **23**(5), 687–710.
- CENTRAAL BUREAU VOOR DE STATISTIEK (CBS) (2008) Central office for statistics of social, economic, demographic and other data that are relevant for government policy. [WWW document] <http://www.cbs.nl/nl-NL/default.htm> (accessed 20 April 2010).
- CHOU A, WANG T-Y, HUANG M-P and CHENG B-S (2008) Shared work values and team member effectiveness: the mediation of trustfulness and trustworthiness. *Human Relations* **61**(12), 1713–1742.
- COHEN SG and BAILEY DE (1997) What makes teams work: group effectiveness research from the shop floor to the executive suite. *Journal of Management* **23**(3), 239–290.
- COOK J and WALL T (1980) New work attitude measures of trust, organizational commitment and personal need non-fulfilment. *Journal of Occupational Psychology* **53**(1), 39–52.
- COSTA AC (2003) Work team trust and effectiveness. *Personnel Review* **32**(5), 605–622.
- CROSSAN MM, LANE HW and WHITE RE (1999) An organizational learning framework: from intuition to institution. *Academy of Management Review* **24**(3), 522–537.
- CROSSAN MM, MAURER CC and WHITE RE (2011) Reflections on the 2009 AMR Decade Award: do we have a theory of organizational learning? *Academy of Management Review* **36**(3), 446–460.
- CUMMINGS JN (2004) Work groups, structural diversity and knowledge sharing in a global organization. *Management Science* **50**(3), 352–364.
- DE JONG BA and ELFRING T (2010) How does trust affect the performance of ongoing teams? The mediating role of reflexivity, monitoring and effort. *Academy of Management Journal* **53**(3), 535–550.
- DEMING WE (1994) Foreword. In *The Trust Factor: Liberating Profits and Restoring Corporate Viability* (WHITNEY JO, Ed), pp vii–viii, McGraw-Hill, New York.
- DIRKS KT (1999) The effects of interpersonal trust on work group performance. *Journal of Applied Psychology* **84**(3), 445–455.
- DIRKS KT (2000) Trust in leadership and team performance: evidence from NCAA basketball. *Journal of Applied Psychology* **85**(6), 1004–1012.
- DIRKS KT and FERRIN DL (2001) The role of trust in organizational settings. *Organization Science* **12**(4), 450–467.
- DIRKS KT and FERRIN DL (2002) Trust in leadership: meta-analytic findings and implications for research and practice. *Journal of Applied Psychology* **87**(4), 611–628.
- DUKERICH JM, GOLDEN BR and SHORTELL SM (2002) Beauty is in the eye of the beholder: the impact of organizational identification, identity, and image on the cooperative behaviors of physicians. *Administrative Science Quarterly* **47**(3), 507–533.
- EDMONDSON AC (1999) Psychological safety and learning behavior in work teams. *Administrative Science Quarterly* **44**(2), 350–383.
- EDMONDSON AC (2002) The local and variegated nature of learning in organizations: a group-level perspective. *Organization Science* **13**(2), 128–146.
- ELLEMERS N, DE GILDER D and HASLAM SA (2004) Motivating individuals and groups at work: a social identity perspective on leadership and group performance. *Academy of Management Review* **29**(3), 459–478.
- ELLEMERS N, KORTEKAAS P and OUWERKERK J (1999) Self-categorisation, commitment to the group and group self-esteem as related but distinct aspects of social identity. *European Journal of Social Psychology* **29**(2/3), 371–389.
- FORD OP and CHAN YE (2003) Knowledge sharing in a multi-cultural setting: a case study. *Knowledge Management Research and Practice* **1**(1), 11–27.
- GAMBETTA DG (1988) Can we trust trust? In *Trust: Making and Breaking Cooperative Relation* (GAMBETTA DG, Ed), pp 213–237, Basil Blackwell, New York.
- GERARDI S and NICOLINI D (2000) To transfer is to transform: the circulation of safety knowledge. *Organization* **7**(2), 329–348.
- GIBSON CB and GIBBS JL (2006) Unpacking the concept of virtuality: the effects of geographic dispersion, electronic dependence, dynamic structure, and national diversity on team innovation. *Administrative Science Quarterly* **51**(3), 451–495.
- HOEVER IJ, VAN KNIPPENBERG D and VAN GINKEL WP (2011) Fostering team creativity: perspective taking as key to unlocking diversity's potential. *Journal of Applied Psychology* **97**(5), 982–996.

- HSIU-FEN LIN GGL (2006) Effects of socio-technical factors on organizational intention to encourage knowledge sharing. *Management Decision* 44(1), 74–89.
- JEHN KA, NORTHRAFT GB and NEALE MA (1999) Why differences make a difference: a field study of diversity, conflict, and performance in workgroups. *Administrative Science Quarterly* 44(4), 741–763.
- KHAZANCHI S and MASTERTON SS (2011) Who and what is fair matters: a multi-foci social exchange model of creativity. *Journal of Organizational Behavior* 32(1), 86–106.
- KITAPCI H, ÇAKAR ND and SEZEN B (2005) The combined effects of trust and employee identification on intention to quit. *Elektronik Sosyal Bilimler Dergisi* 3(12), 33–41.
- KLEIN JH (2008) Some directions for research in knowledge sharing. *Knowledge Management Research & Practice* 6(1), 41–46.
- KOGUT B and ZANDER U (1996) What firms do? Coordination, identity, and learning. *Organization Science* 7(5), 502–518.
- KRAMER RM (1996) Divergent realities and convergent disappointments in the hierarchic relation: the intuitive auditor at work. In *Trust in Organizations, Frontiers of Theory and Research* (KRAMER RM and TYLER TR, Eds), pp 216–245, Sage Publications, Thousand Oaks, CA.
- LEE C, ASHFORD SJ and BOBKO P (1990) Interactive effects of 'Type A' behavior and perceived control on worker performance, job satisfaction and somatic complaints. *Academy of Management Journal* 33(4), 870–881.
- LEWIS DJ and WEIGERT A (1985) Trust as a social reality. *Social Forces* 63(4), 967–985.
- LUHMANN N (1979) *Trust and Power*. Wiley, Chichester, UK.
- MAEL F and ASHFORTH BE (1992) Alumni and their alma mater: a partial test of the reformulated model of organizational identification. *Journal of Organizational Behavior* 13(2), 103–123.
- MARCH JG and OLSEN J (1975) The uncertainty of the past: organizational learning under ambiguity. *European Journal of Political Research* 3(2), 149–171.
- MAYER RC and GAVIN MB (2005) Trust in management and performance: who minds the shop while the employees watch the boss? *Academy Of Management Journal* 48(5), 874–888.
- MESMER-MAGNUS JR and DECHURCH LA (2009) Information sharing and team performance: a meta-analysis. *Journal of Applied Psychology* 99(2), 535–546.
- MILLIKEN FJM and MARTINS LL (1996) Searching for common threads: understanding the multiple effects of diversity in organizational groups. *Academy of Management Review* 21(2), 402–433.
- MÖLLERING G (2005) Rational, institutional and active trust: just do it! In *Trust Under Pressure: Empirical Investigations of Trust and Trust Building in Uncertain Circumstances* (BIJLSMA-FRANKEMA KM and KLEIN WOOLTHUIS RJA, Eds), pp 17–30, Edward Elgar, Cheltenham, UK.
- MOORMAN RH and HARLAND LK (2002) Temporary employees as good citizens: factors influencing their OCB performance. *Journal of Business and Psychology* 17(2), 171–187.
- MOORMAN RH, NIEHOFF BP and ORGAN DW (1993) Treating employees fairly and organizational citizenship behavior: sorting the effects of job satisfaction, organizational commitment, and procedural justice. *Employee Responsibilities and Rights Journal* 6(3), 209–225.
- NAHAPIET J and GHOSHAL S (1998) Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review* 23(2), 242–266.
- NONAKA I and TAKEUCHI H (1995) *The Knowledge Creating Company*. Oxford University Press, Oxford.
- NOOTEBOOM B (2000) Learning by interaction: absorptive capacity, cognitive distance and governance. *Journal of Management and Governance* 4(1/2), 69–92.
- O'REILLY C (1978) The intentional distortion of information in organizational communication: a laboratory and field investigation. *Human Relations* 31(2), 173–193.
- O'REILLY C and CHATMAN J (1986) Organizational commitment and psychological attachment: the effects of compliance, identification and internalization on prosocial behavior. *Journal of Applied Psychology* 71(3), 492–499.
- PILLAI R, SCHRIESHEIM C and WILLIAMS E (1999) Fairness perceptions and trust as mediators for transformational and transactional leadership: a two study sample. *Journal of Management* 25(6), 897–933.
- PODSAKOFF PM, PAINE JB and BACHRACH DG (2000) Organizational citizenship behaviors: a critical review of the theoretical and empirical literature and suggestions for future research. *Journal of Management* 26(3), 513–563.
- ROSENDAAL BW (2009) Sharing knowledge, being different and working as a team. *Knowledge Management Research & Practice* 7(1), 4–14.
- ROUSSEAU DM, SITKIN SB, BURT RS and CAMERER C (1998) Not so different after all: a cross-discipline view of trust. *Academy of Management Review* 23(3), 393–404.
- SABEL CF (1993) Studied trust, building new forms of cooperation in a volatile economy. *American Psychologist* 46(9), 1–7.
- SCHIPPERS MC (2003) Reflexivity in teams. Doctoral dissertation. Ridderprint, Ridderkerk, Netherlands.
- SCHUMACKER RE and LOMAX RG (2004) *Structural Equation Modeling*. Lawrence Erlbaum Ass, London.
- SHEPPARD BH and TUSCHINSKI M (1996) Micro-OB and the network organization. In *Trust in Organizations: Frontiers of Theory and Research* (KRAMER RM and TYLER TR, Eds), pp 140–165, Sage, Thousand Oaks, CA.
- SIMMEL G (1950) *The Sociology of George Simmel*. Free Press, New York.
- SITKIN SB and STICKEL D (1996) The road to hell: the dynamics of distrust in an era of quality. In *Trust in Organizations, Frontiers of Theory and Research* (KRAMER RM and TYLER TR, Ed), pp 196–215, Sage Publications, Thousand Oaks.
- STEVENS JP (2002) *Applied Multivariate Statistics for the Social Sciences*. Lawrence Erlbaum Ass, London.
- SZULANSKI G (1996) Exploring internal stickiness: impediments to the transfer of best practice within the firm. *Strategic Management Journal* 17(Winter Special Issue), 27–43.
- TYLER TR and BLADER SL (2001) Identity and cooperative behavior in groups. *Group Processes & Intergroup Relations* 4(3), 207–226.
- TYLER TR and DEGOEY P (1995) Collective restraint in social dilemmas: procedural justice and social identification effects on support for authorities. *Journal of Personality and Social Psychology* 69(3), 482–497.
- TYLER TR, DEGOEY P and SMITH H (1996) Understanding why the justice of group procedures matters: a test of the psychological dynamics of the group-value model. *Journal of Personality and Social Psychology* 70(5), 913–930.
- VAN DEN HOOFF B and DE LEEUW VAN WEENEN F DE (2004) Committed to share: commitment and CMC use as antecedents of knowledge sharing. *Knowledge and Process Management* 11(2), 13–24.
- VAN DER VEGT GS and BUNDERSON JS (2005) Learning and performance in multidisciplinary teams: the importance of collective team identification. *Academy of Management Journal* 48(3), 532–547.
- VAN KNIPPENBERG D (2000) Work motivation and performance: a social identity perspective. *Applied Psychology: An International Review* 49(3), 357–371.
- VAN KNIPPENBERG D, DE DREU CKW and HOMAN AC (2004) Work group diversity and group performance: an integrative model and research agenda. *Journal of Applied Psychology* 89(6), 1008–1022.
- WICKSTRÖM JENSEN K (2010) Relational effects on knowledge integration: the differential effects on search and transfer. *Knowledge Management Research & Practice* 8(2), 146–160.
- YI J (2009) A measure of knowledge sharing behavior: scale development and validation. *Knowledge Management Research & Practice* 7(1), 65–81.
- ZAND DE (1972) Trust and managerial problem solving. *Administrative Science Quarterly* 17(2), 229–239.
- ZELLMER-BRUHN M and GIBSON C (2006) Multinational organization context: implications for team learning and performance. *Academy of Management Journal* 49(3), 501–518.

Appendix

Table A1 Questionnaire

<i>Variables</i>	<i>items</i>
Trust in team	<ul style="list-style-type: none"> ● I trust my co-team members ● My co-team members will keep their word to me ● My co-team members are sincere in informing me about matters that concern my work ● I can count on my co-team members if I need help ● I can count on my co-team workers to take my interests into account
Trust in team leader	<ul style="list-style-type: none"> ● Our team leader offers me help and guidance to improve my performance ● Our team leader deals with me in an open and honest way ● Our team leader is fair in assessing our performance ● Our team leader solves the problems of my team adequately ● Our team leader will always support me in cases of problems with others outside our team ● Our team leader is open to constructive criticism about his functioning ● I trust my manager
Team identification	<ul style="list-style-type: none"> ● When someone criticizes (name of school), I feel personally affected ● I am very interested in what others think about (name of school) ● When I talk about this school, I usually say 'we' rather than 'they' (removed) ● This school's successes are my successes ● When someone praises this school, it feels like a personal compliment ● If a story in the media criticized the school, I would feel embarrassed
Value Diversity <i>Items were reverse-coded: higher scores = higher diversity</i>	<ul style="list-style-type: none"> ● In our team all group members have similar values in our work ● My colleagues and I have similar goals in our work ● In our work we strongly hold beliefs about what is important within the work team ● Our team is committed to reach the same objectives ● We as team members agree on what is important to the school ● We share a strong conviction about what is important in our team
Knowledge sharing	<ul style="list-style-type: none"> ● When I've learned something new, I tell my colleagues in my team about it ● I share the information I have with colleagues within my team, when they ask me to ● I think it important that my colleagues have specific knowledge of my work ● I regularly tell my colleagues about the ins and outs of my work ● Colleagues within my team tell me what they know, when I ask them about it ● When they've learned something new, colleagues within my department tell me about it ● When I have to know or to learn something, I use my colleagues as a source of knowledge ● Knowledge sharing with my colleagues within my department is considered a normal thing

About the Authors

Bastiaan W. Rosendaal is a Lecturer at the Free University in Amsterdam, Department of Organisational Studies. His major fields of research are Organisational Learning and Knowledge Development. Previously he at the University of Amsterdam in the Department of Adult Education and the Department of Organisational Sociology. In addition to his academic career, he worked for 13 years as an Independent Researcher and Consultant in the field of Human Resources Development and Knowledge Support Systems.

Katinka Bijlsma-Frankema is Senior Researcher at the University of Groningen and Professor of Organization Sciences at the European Institute for Advanced Studies in Management (EIASM) in Brussels. Her current publications are on trust, control, learning processes and performance of teams and organizations. She has edited special issues on control of *Journal of Managerial Psychology* (2004), on trust of *Personnel Review* (2003), and on trust and control of *International Sociology* (2005) and *Group and Organization Management* (2007).