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The Relative Importance of Leadership Behaviours in Virtual and Face-to-Face Communication Settings

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Abstract *How does the degree of virtualness in team members' daily work affect the perceived importance of various leadership behaviours in virtual and face-to-face communication settings? A survey of 419 technical engineers working as members of teams at Shell Global Solutions International suggests that, with a few exceptions, most task-oriented as well as relationship-oriented leadership behaviours are considered to be more important in virtual settings than in face-to-face settings. The relative importance of many leadership behaviours increases the higher the degree of virtualness in team members' daily work. Team members working at a very high level of virtualness, however, consider some task-and-relationship-oriented leadership behaviours about equally important in virtual as in face-to-face settings. The applied implications are discussed as well as theoretical questions that need to be answered in future research.*

Keywords *e-leadership; task and relationship oriented leadership; virtual leadership*

Introduction

As globalization continues, virtual communication plays an increasingly important role in organizations (Avolio et al., 2001; Bell & Kozlowski, 2002; Cascio, 2000; Cascio & Shurygailo, 2003; Kayworth & Leidner, 2002; McDonough III et al., 2001; Mowshowitz, 1997). Communication is at the heart of the leadership process. Does the change from a face-to-face work environment to virtual settings with 'faceless workers' (Lipnack & Stamps, 2000: 44) require that leaders pay more attention to particular communicative behaviours to influence the members of their team? Although members of a team may share or rotate leadership roles, the present study focuses on team members' need for various leadership behaviours from the formal leader of their team. Taking a situational approach (cf. DeVries et al., 2002) the question arises as to whether team members consider some behaviours of their leader

to be more (or less) important in virtual communication settings than in face-to-face communication settings. In the present study, virtual settings are defined as,

> interactions between people who are working at different locations and often in different time zones. Communication is mainly computer-mediated (for example e-mail, video-conferencing and teleconferencing), but face-to-face interactions are used in addition. Each of the team members as well as the leader is located in a different place.

By contrast, face-to-face settings are defined as,

> interactions between people at the same location and at the same time. Face-to-face communication is the primary method of interacting, although computer-mediated communications are used in addition. Most of the time the leader is physically present at the same location as the members of the team.

Research on e-business versus traditional business (Horner-Long & Schoenberg, 2002) suggests that, although many leadership behaviours may be about equally important in both settings, some behaviours (e.g. priority setting and networking) are more important in virtual settings than in face-to-face settings.

The present research focuses on several aspects of leadership, such as vision, shared values, mission goals, strategy defining tasks and roles, commitment, trust, and empowerment. Leadership roles may be contrasted with the various roles of a manager (e.g. Adair, 1988; Zaleznik, 2004), for example, developing performance indicators, diagnosing and resolving operational problems, and implementing reward systems that support cooperation. However, at the level of behaviours that can be observed by ordinary team members there is considerable overlap. To fulfil their roles successfully, leaders and managers alike have to ensure a common understanding of the task, organize the interactions with the members and promote members' commitment to the task and to the team. In doing so, leaders as well as managers have to prevent misunderstandings in communications, stimulate information sharing within and between teams and elicit contributions from their team members. Moreover, in global teams, they have to coordinate interactions between different time zones and show sensitivity to cultural diversity among team members. The present research therefore focuses on a wide range of behaviours that are instrumental in the communication practices of individuals who lead and manage teams in a rapidly globalizing organization. In the organizational context of the present study, the formal leaders of the teams are called 'managers'. Questioning respondents about the importance of various behaviours of their 'leader', rather than their 'manager', would most likely confuse them.

At a conceptual level, one can also distinguish between task-oriented and relationship-oriented leadership behaviours. These two broadly defined behavioural categories often appear under different labels, such as initiating structure versus consideration or production-centred versus employee-centred behaviours, respectively (Bass, 1990; Bowers & Seashore, 1966; Burns, 1978; Cartwright & Zander, 1968; Judge et al., 2004; Likert, 1967; Mann, 1965; Misumi, 1995). Examples of task-oriented behaviours are setting clear goals, defining tasks and roles, coordinating group members' activities and promoting their task commitment. Does working at a high level of virtualness increase the importance of task-oriented leadership, as

suggested by Bell and Kozlowski (2002), Davis (2004), Griffith and Meader (2004), Hinds (1999, in Loughran, 2000) and Sproull and Kiesler (1991) (see also Abernathy, 1998; Shields, 2003, and VanderVlist et al., 1995)?

Examples of relationship-oriented leadership are making people feel part of the team, emphasizing shared values, and building and sustaining effective interpersonal relationships. Should a leader pay more attention to group identification and a sense of belonging at higher levels of virtualness (Ahuja & Galvin, 2003; Avolio & Kahai, 2003; Baumgartner & Künzler, 2002; Cascio, 2000; Coutu, 1998; Feng et al., 2004; Irving, 2000; Ishaya & Macaulay, 1999; Jarvenpaa & Leidner, 1999; Jarvenpaa & Tanriverdi, 2003; Pauleen, 2003; Pulley et al., 2000; Yukl, 2002; Zaccaro & Bader, 2003; Zigurs, 2003)?

In the present research these two broadly defined categories are not used to simply dichotomize the whole variety of leadership behaviours that exist. Most behaviours serve task functions as well as relational functions. More importantly, however, recent work on the theory and practice of leadership (e.g. Adair, 2007; Gill, 2006; Judge et al., 2004) conceptualizes successful leadership as a function of overlapping attention to tasks, relationships, and individual needs. Since leadership is about task orientation as well as relationship orientation, both separately and in combination, we use these behavioural categories not ontologically but descriptively to order the 30 behaviours under study in terms of their relative orientation towards tasks (8) and towards relationships (5), while the vast majority (17) are behaviours with both orientations, i.e. in the task-and-relationship domain.

The present research explores team members' perceptions of the relative importance of task-oriented and/or relationship-oriented leadership behaviours in virtual versus face-to-face communication settings. Moreover, if (some) task-oriented and/or relationship-oriented behaviours are perceived to be more important in virtual settings, the question arises as to whether the relative importance of these behaviours increases when team members' daily work becomes increasingly virtual.

The aim of the present research is to further our understanding of the challenges of leadership communication in rapidly globalizing organizations as a basis for developing virtual leadership programmes, in particular at Shell Global Solutions International [GSI] and more generally in other companies.

Method

Participants

Of a random sample of 1500 employees at Shell GSI, 412 employees responded to the web-based survey questionnaire. Participants, technical experts working in one of 42 teams, were based in the Netherlands ($n = 238$), the USA ($n = 125$), the United Kingdom ($n = 32$), Malaysia ($n = 13$) and Germany ($n = 4$).

In terms of Dubé and Paré's (2004) characteristics that describe virtual team work as more complex than face-to-face team work, members of teams at Shell GSI have access to a large variety of computer-mediated communication (CMC) tools and work in relatively large teams (in our sample, $M = 43.1$ members per team, $SD = 9.9$) with a large geographical dispersion. In the teams at Shell GSI, task interdependence is relatively low because a substantial amount of work is carried out on a part-time

basis in multi-disciplinary projects of a relatively short duration. At an interpersonal level, therefore, team members have relatively little shared work experience. At a professional level, however, team members share a common background as technical engineers and their experience with standardized work routines at Shell GSI. In the teams at Shell GSI, ethnic diversity is relatively high.

Measurements

Participants were asked to rate 'how important is it for you that your manager demonstrates this particular behaviour in face-to-face interactions' and '. . . in virtual interactions' respectively, on two identical five-point Likert scales (from 1 = not important to 5 = very important). Face-to-face interactions and virtual interactions were defined in the same words as in the Introduction of this article. Line by line, participants rated the importance of 30 behaviours in a virtual setting and in a face-to-face setting (see Figure 1; cf. DeVries, 1997; DeVries et al., 2002).

The middle part of Table 1 shows our sample of 17 behaviours in the task-and-relationship domain. Some of these behaviours referred to preconditions for effective task-and-relationship-oriented leadership in a virtual context. A leader should have computer-mediated communication (CMC) skills to exchange information with his or her team members. Therefore we included 'demonstrate proficiency with CMC' (item 1), 'encourage use of different computer-mediated communications' (item 2), 'coordinate interactions between different time zones' (item 3), 'communicate clearly in writing' (item 5) and 'prevent misunderstandings in communications' (item 6) at the beginning of the questionnaire. The above-mentioned five examples are not leadership behaviours per se, but most of the other

Figure 1 *Section of the web-based questionnaire*

Face-to-face (team) interactions						Virtual (team) interactions				
1	**2**	**3**	**4**	**5**	1=Not important, 2=Of little importance, 3=Moderately important, 4=Important, 5=Very important	**1**	**2**	**3**	**4**	**5**
❍	❍	❍	❍	❍	Prevent misunderstandings in communications	❍	❍	❍	❍	❍
❍	❍	❍	❍	❍	Ensure availability and accessibility of team members	❍	❍	❍	❍	❍
❍	❍	❍	❍	❍	Be sensitive to cultural diversity among team members	❍	❍	❍	❍	❍
❍	❍	❍	❍	❍	Stimulate information sharing among the team members	❍	❍	❍	❍	❍
❍	❍	❍	❍	❍	Stimulate information sharing with different teams	❍	❍	❍	❍	❍

behaviours, such as 'stimulate information sharing among the team members' (item 9), 'synchronize or prioritize contributions among team members' (item 18), 'organize regular face-to-face meetings' (item 20), 'solicit and listen to ideas and opinions from team members' (item 22), 'delegate responsibility for implementation of decisions to team members' (item 23) and 'demonstrate confidence in the professionalism of others' (item 28) are essential task-and-relationship-oriented behaviours for individuals who lead and manage teams.

Other leadership behaviours can be considered more task-oriented than relationship-oriented. For instance, 'set clear tasks for the team members' (item 12), 'set clear goals for teams' (item 11), 'define clear roles of what is expected of team members' (item 14), 'monitor commitment of the team members to their task' (item 15) and 'focus on outcomes and deliverables rather than on activities' (item 27). The upper part of Table 1 shows our sample of eight task-oriented behaviours.

The lower part of Table 1 shows our sample of five leadership behaviours that can be considered more relationship-oriented than task-oriented: 'include social content in communications' (item 26), 'make people feel part of the team' (item 29), 'be sensitive to cultural diversity among team members' (item 8), 'emphasize shared values among members of the team' (item 19) and 'quickly build and sustain effective relationships' (item 25).

The questionnaire asked respondents to give ratings of importance of the 30 behaviours in 'face-to face' and in 'virtual' settings separately. However, virtual settings in their pure form (i.e. without any face-to-face communication) are rare. The same holds for pure face-to-face settings. Since team members generally work under hybrid conditions, we asked respondents (after completing the two-fold importance ratings of all of the 30 behaviours) to rate the degree of virtualness in their daily work ('What percentage of your time at work do you engage in virtual interactions?', cf. Griffith & Meader, 2004). Their responses, ranging from 5 per cent to 95 per cent, with an average of $M = 32$ per cent ($SD = 26\%$), allowed us to explore their leadership communication needs as a function of working under least to most virtual conditions.

Results

To assess the relative importance of the behaviours in the two communication settings, a series of paired *t*-tests was conducted on the importance ratings of all 30 behaviours in face-to-face settings and virtual settings (repeated measures, see Table 1). For each behaviour a difference score (M_{diff}) was calculated for the importance rating in a virtual setting[1] (M_{virt}) minus the importance rating in a face-to-face setting (M_{f-t-f}). A positive difference score therefore indicates that participants rated the behaviour to be more important in virtual settings than in face-to-face settings. In Table 1 the behaviours are clustered in the task domain, the task-and-relationship domain or the relationship domain. These three domains are mainly used to systematically report our results, not as units for statistical analysis. As in earlier research with this questionnaire format (DeVries, 1997; DeVries et al., 2002), respondents' importance ratings showed very strong positive inter-correlations within and between each of the three behavioural domains. Moreover, importance ratings, like those in the present study, usually yield a uni-dimensional factor structure (VanBorselen,

Table 1 *Importance ratings (1 = not important, 5 = very important) of the 30 behaviours in virtual (M_{virt}) and in face-to-face (M_{f-t-f}) settings in task domain, task-and-relationship domain, and relationship domain. Difference scores (M_{diff}) are analysed as a function of the degree (Low, Medium, High) of virtualness in respondents' daily work*

Item	Behaviours	M_{virt}	M_{f-t-f}	M_{diff}	M_{diff} Low Medium High	F-value (2,404)
Task domain						
12	Set clear tasks for the team members	4.21	4.14	0.07*	−0.02 0.07 0.13	3.31*
13	Ensure a common understanding of tasks	4.36	4.31	0.05*	−0.03 0.11 0.08	3.83*
10	Stimulate information sharing with different teams	4.24	4.19	0.05*	−0.03 0.08 0.10	3.60*
15	Monitor commitment of the team members to their task	3.94	3.89	0.05*		
30	Be sensitive to new business opportunities	4.30	4.33	−0.03		
14	Define clear roles of what is expected of team members	4.40	4.37	0.03	−0.04 0.05 0.09	3.07*
27	Focus on outcomes and deliverables rather than on activities	4.03	4.01	0.02	−0.06 0.05 0.06	4.09*
11	Set clear goals for teams	4.60	4.58	0.02	−0.07 0.08 0.03	4.93*
Task-and-relationship domain						
3	Coordinate interactions between different time zones	4.16	3.13	1.03*		
2	Encourage use of different computer-mediated communications, e.g. video-conferencing, e-mail	4.09	3.12	0.97*		
1	Demonstrate proficiency with CMC	4.01	3.08	0.93*		
17	Have a very organized way of interacting with team members	3.96	3.61	0.35*	0.22 0.50 0.31	5.60**
5	Communicate clearly in writing	4.67	4.35	0.32*	0.11 0.40 0.45	8.70**
4	Communicate clearly verbally	4.49	4.65	−0.16*		
6	Prevent misunderstandings in communications	4.72	4.58	0.14*		
18	Synchronize or prioritize contributions among team members	3.83	3.70	0.13*		
20	Organize regular face-to-face meetings (travel, if required)	3.76	3.65	0.11*	−0.03 0.31 0.06	3.60*

Continued

Table 1 *Continued*

Item	Behaviours	M_{virt}	$M_{f\text{-}t\text{-}f}$	M_{diff}	M_{diff} Low Medium High	F-value (2,404)
7	Ensure availability and accessibility of team members	3.99	3.90	0.09*	−0.05 0.10 0.20	5.32**
9	Stimulate information sharing among the team members	4.49	4.41	0.08*	−0.04 0.17 0.09	6.50**
23	Delegate responsibility for implementation of decisions to team members	4.23	4.19	0.04	−0.05 0.06 0.10	3.68*
21	Let people participate in decision-making	4.21	4.25	−0.04		
16	Recognize individual team members' contributions	4.33	4.37	−0.04		
22	Solicit and listen to ideas and opinions from team members	4.51	4.54	−0.03		
24	Keep his/her own promises	4.69	4.72	−0.03		
28	Demonstrate confidence in the professionalism of others	4.37	4.35	0.02		
Relationship domain						
26	Include social content in communications	3.16	3.26	−0.10*		
29	Make people feel part of the team	4.59	4.51	0.08*	−0.01 0.17 0.10	4.12*
8	Be sensitive to cultural diversity among team members	4.19	4.12	0.07*		
19	Emphasize shared values among members of the team	3.79	3.74	0.05*		
25	Quickly build and sustain effective relationships	4.22	4.20	0.02	−0.04 0.12 −0.02	3.77*

Notes. M_{diff}: *p* < .05 (paired *t*-tests, controlled for multiple testing by Benjamini and Hochberg's, 1995, False Discovery Rate procedure); M_{diff} Low, Medium, High: **p* < .005, *p* < .05 (Univariate ANOVA, F(2,404)).

1976). Aggregating the data into three categorical scales did not provide useful additional information and would hide interesting differences between items. Within each of the three behavioural domains, Table 1 lists the behaviours in the order of magnitude of the M_{diff}.

Overall, the 30 behaviours were rated somewhat more important in virtual settings ($M = 4.24$) than in face-to-face settings ($M = 4.07$; $t(411) = 7.37$; $p < 0.002$). Are particular behaviours considered more (or less) important in virtual settings than in face-to-face settings as a function of the degree of virtualness in respondents' daily work?[2] Multivariate analysis of variance ($F(60,632) = 1.32$, $p < .06$) of the 30 difference scores jointly, as a function of degree of virtualness (at three levels with about equal numbers of respondents, i.e., low [5–14%; $n = 131$], medium [15–39%; $n = 132$] or high [40–95%; $n = 145$]) yielded significant moderating effects in 14 out of the 30 behaviours (see univariate F-statistics in the last two columns of Table 1).[3]

In the **task domain**, 'setting clear tasks for the team members' (item 12), 'ensuring a common understanding of the tasks' (item 13) and 'stimulating information sharing with different teams' (item 10) were rated more important in virtual settings than in face-to-face settings. The last two columns of Table 1 show that this was particularly true for respondents working at medium or high levels of virtualness, but to a lesser extent for respondents working at a low level of virtualness. Furthermore, the higher the degree of virtualness in respondents' daily work, the larger the perceived difference in importance of 'defining clear roles of what is expected of team members' (item 14), 'focusing on outcomes and deliverables rather than on team members' activities' (item 27) and 'setting clear goals for the team' (item 11). Participants considered 'monitoring team members' commitment' (item 15) and 'being sensitive to new business opportunities' (item 30) about equally important in virtual settings as in face-to-face settings, irrespective of the degree of virtualness in their daily work.

In the **task-and-relationship domain**, team members – not surprisingly – considered it much more important for their leader to 'coordinate interactions between different time zones' (item 3), 'encourage the use of different computer-mediated communications' (item 2) and 'demonstrate proficiency with CMC' (item 1) in virtual settings than in face-to-face settings. To a lesser extent, but still statistically significantly, team members (particularly those working at medium or high levels of virtualness) rated 'having a very organized way of interacting with team members' (item 17) and 'communicating clearly in writing' (item 5) more important in virtual settings than in face-to-face settings.

Other task-and-relationship-oriented behaviours, such as 'prevent misunderstandings in communications' (item 6), 'synchronize or prioritize contributions among team members' (item 18), 'organize regular face-to-face meetings (travel, if required)' (item 20), 'ensure availability and accessibility of team members' (item 7), 'stimulate information sharing among the team members' (item 9) and 'delegate responsibility for the implementation of decisions to team members' (item 23) were also perceived to be more important in virtual settings. Interestingly, respondents working at a medium level of virtualness perceived a greater difference in the importance of a leader's role to stimulate 'information sharing' (item 9), to organize interactions with team members well (item 17) and to 'organize regular face-to-face meetings' (item 20) in comparing the face-to-face and virtual settings than did respondents working at either low or high levels of virtualness. We will discuss this pattern of results later.

Irrespective of the communication setting and the degree of virtualness in their daily work, respondents indicated that their leader should 'let people participate in decision-making' (item 21), 'recognize individual team members' contributions' (item 16), 'solicit and listen to ideas and opinions from team members' (item 22), 'keep his/her own promises' (item 24) and 'demonstrate confidence in the professionalism of others' (item 28).

Only one behaviour, 'communicate clearly verbally' (item 4; $M_{\text{diff}} = -0.16$), was rated *less* important in virtual settings than in face-to-face settings. Respondents may have interpreted 'verbally' in a very narrow sense, as 'in spoken words' (which is a common interpretation in English, though strictly speaking incorrect) rather than 'in words'. As a result, they may have associated 'verbally' with face-to-face

communication, although clear wording is at least equally important in e-mailing and video- and tele-conferencing.

In the **relationship domain**, 'making people feel part of a team' (item 29), 'being sensitive to cultural diversity among team members' (item 8) and 'emphasizing shared values among members of the team' (item 19) were rated somewhat more important leadership behaviours in virtual settings than in face-to-face settings. In comparing the face-to-face and virtual settings, some respondents also perceived a difference in the importance of a leader's role to 'quickly build and sustain effective relationships' (item 25).

Interestingly, as in the case of the behaviours described above, 'having a very organized way of interacting with team members' (item 17), 'organizing face-to-face meetings' (item 20) and 'stimulating information sharing among team members' (item 9), behaviour items 29 and 25 were rated more important in virtual settings than in face-to-face settings by respondents working at a medium level of virtualness, while respondents working at a very low or a high level of virtualness perceived only little difference in the importance of these leadership behaviours in comparing the face-to-face and virtual settings. Again, we will return to this pattern of results in the Discussion.

Maintaining relationships by having their leader 'include social content in communications' (item 26) was not very important in the opinion of our respondents. Our sample of technical engineers apparently felt even less need ($M_{\text{diff}} = -.10$) to get involved in social talk with their leader in virtual settings than they did in face-to-face settings.

Discussion

Our aim was to assess differences in the perceived importance of various leadership behaviours in virtual communication settings compared to face-to-face communication settings, as a function of the degree of virtualness in respondents' daily work. Before formulating some tentative recommendations to promote effective leadership in global teams, we first summarize and discuss our main findings. These findings are illustrated with anecdotal evidence from qualitative interviews with four senior leaders of global teams at Shell GSI.

Overall, the 30 listed behaviours were considered to be somewhat more important in virtual settings than in face-to-face settings. Moreover, the degree of virtualness in respondents' daily work moderated the extent to which 14 out of the 30 behaviours were considered more important in virtual settings than in face-to-face settings.

In the broad task-and-relationship domain, clear communication may be more difficult in virtual settings owing to the lack of visual and auditory cues that are present in face-to-face communication settings. In virtual settings, there is less opportunity to signal and correct a misinterpreted tone or meaning than in face-to-face settings (Avolio et al., 2001; DeSanctis & Monge, 1999; Kasper-Fuehrer & Ashkanasy, 2001; Kayworth & Leidner, 2002; Panteli, 2003; Smith & Sinclair, 2003). Although some conventions for expressing mood and meaning are emerging in e-mail interactions between peers (e.g. emoticons such as ☺ or ☹) it is not common for leaders to communicate such signals to members of their teams.

Moreover, such flat and stereotyped cues may easily be misunderstood if sent by a leader (Sproull & Kiesler, 1991). Our respondents indeed considered 'communicate clearly in writing' (item 5) and 'prevent misunderstandings in communications' (item 6) much more important in virtual settings than in face-to-face settings. Particularly respondents working at medium or high levels of virtualness acknowledged the relative importance of 'communicate clearly in writing' in virtual settings. Leaders of global teams at Shell GSI also seem to be aware of this requirement, evidenced by the comments: 'We must write down more clearly what we mean', 'Humour is often badly understood in e-communication' and 'I most often go through my own mail messages before sending, to correct ambiguities'.

Although a virtual work environment allows for easier access to information at all levels of the organization and leaders are no longer the main channels through which information flows (McCauley et al., 1998; Sproull & Kiesler, 1991), there may be less opportunity to signal and correct an uneven distribution of information in virtual settings than in face-to-face communication settings. In our interviews, leaders of global teams said: 'Since I have people located in many different places around the world, it is essential that information relevant to their work is shared on a regular basis' and, 'I take personal responsibility for ensuring that I stay closely connected with my team members. I consistently contact the people in different time zones. It puts a lot of pressure on me to work this way'. Our data show that team members, particularly those working at medium or high levels of virtualness, indeed considered it more important in virtual settings than in face-to-face settings that their leader 'stimulates information sharing among team members' (item 9), 'has a very organized way of interacting with team members' (item 17) and, 'ensures availability and accessibility of team members' (item 7). However, irrespective of the communication setting (virtual vs. face-to-face) and of the degree of virtualness in their daily work (low, medium or high), our respondents indicated that their leader should, 'let people participate in decision-making' (item 21), 'recognize individual team members' contributions' (item 16), 'solicit and listen to ideas and opinions from team members' (item 22), 'keep his/her own promises' (item 24) and 'demonstrate confidence in the professionalism of others' (item 28).

Does the need for task-oriented leadership behaviour increase in the virtual communication context (Bell & Kozlowski, 2002; Davis, 2004; Griffith & Meader, 2004; Hinds, 1999 in Loughran, 2000)? Our results suggest that, in virtual settings, six of the eight task-oriented leadership behaviours in our list become more important as the degree of virtualness in respondents' daily work increases. In comparison to respondents working at a low level of virtualness, those working at medium or high levels of virtualness indicated an increased importance of 'setting clear tasks for the team members' (item 12), 'ensuring a common understanding of the tasks' (item 13), 'stimulating information sharing with different teams' (item 10), 'defining clear roles of what is expected of team members' (item 14), 'focusing on outcomes and deliverables rather than on team members' activities' (item 27) and, 'setting clear goals for teams' (item 11). Leaders of global teams at Shell GSI who were interviewed stated: 'Clear goal and task setting is more important in a virtual setting: We set tasks and targets at the start of the year, but need to follow-up in mid-year reviews and on the phone' and 'Since it is more difficult to monitor task progress in the virtual context, we rely much more on

reports about outcomes, such as customer satisfaction than on team members' self-reports about their activities'.

As for the relationship domain, the present results suggest that it is also a greater challenge for leaders to promote group identification in a virtual setting than it is in a face-to-face setting. In line with theorizing by Avolio and Kahai (2003), Baumgartner and Künzler (2002), Kasper-Fuerhrer and Ashkanasy (2001) and Yukl (2002) our respondents considered it more important in virtual settings than in face-to-face settings that their leader, 'makes people feel part of a team' (item 29), 'emphasizes shared values among team members' (item 19) and 'quickly build and sustain effective relationships' (item 25). In the interviews, leaders of global teams said, 'we meet each other from time to time, so that we can do some team building. This could include a social event', 'we are spending time together, a hell of a lot of socialising to build the team', 'we organize workshops so that we can socialise as well' and 'I make the effort to meet with my people as much as I can when I am in the region'.

In sum, our study shows that most task-oriented leadership behaviours as well as relationship-oriented leadership behaviours are perceived to be somewhat more important in virtual communication settings than in face-to-face communication settings. What are the implications of our findings for practice, theory and future research?

Implications for practice

Effective communication is essential to promote successful task completion as well as effective interpersonal relationships. As the importance of *clearly written* messages increases with the degree of virtualness, leadership development programmes should enhance leaders' sensitivity to prevent misunderstandings and promote clarity in writing, not only in their own e-communication but also in the messages of their team members. Advanced writing skills may be a prerequisite for leaders as they attempt to enact their leadership functions.

In some situations, however, face-to-face communication may still be preferred. Misunderstandings are particularly likely and harmful when managing multi-ethnic or multi-cultural teams or communicating new goals, strategies or bad news (Burtha & Connaughton, 2004; Davis, 2004; the Leadership Trust, 1999; Mazneski & Chudoba, 2000; Smith & Sinclair, 2003). Face-to-face communication may help leaders to understand the challenges that their team members are facing and it may increase team members' comfort in interacting with their leader (Sproull & Kiesler, 1991). In the interviews, leaders stated: 'whenever possible I will do my staff discussions face-to-face' and, 'when there are issues such as personal stuff, it is important to meet face-to-face'.

Given the availability of well-developed CMC tools, however, many globalizing companies continue to implement cost-saving regulations that limit international travel for face-to-face meetings. Do people working in different parts of the world attach equal value to face-to-face team meetings with their leader? In individualistic cultures (e.g. North America) people may feel less personal commitment to groups than do people in collectivistic cultures (e.g. Asia, Africa; cf. Hall, 1976, in Duarte & Tennant-Snyder, 1999; Hofstede, 1991; Jarvenpaa & Leidner, 1999). Regrettably, our ethical codes of practice prohibited us from asking for respondents' ethnicity.

However, exploratory analyses of data that respondents provided about their current work locations suggest that 'organizing regular meetings; travel, if required' (item 20) was considered to be more important in virtual settings than in face-to-face settings by the 11 African ($M_{\text{diff}} = 0.82$) and 33 Asian ($M_{\text{diff}} = 0.33$) respondents, while the 15 Australian ($M_{\text{diff}} = 0.13$), 48 South American ($M_{\text{diff}} = 0.13$), 214 European ($M_{\text{diff}} = 0.12$) and 69 North American respondents ($M_{\text{diff}} = -0.14$) indicated that regular meetings with the leader were about equally important in virtual settings and face-to-face settings ($F(5,384) = 1.96$, $p < .08$). Since a mere geographical explanation for these suggestive findings cannot be ruled out, future research should address potential intercultural differences. Nevertheless, our results suggest that team members (in Asia and Africa maybe even more than elsewhere) may regret further limitations on face-to-face communication with their leader. Finding a proper balance between virtual and face-to-face communication poses a challenge for leaders of global teams. In line with Shell's global 'Diversity and Inclusiveness' programme, our respondents indicated that their leaders should show 'sensitivity to cultural diversity among team members'. The present data suggest that this is even more desired in virtual settings than in face-to-face team settings.[4]

Implications for theory and further research

With respect to the relative importance of task-oriented and relationship-oriented leadership, leadership substitutes theory (Kerr & Jermier, 1978) suggests that a high level of technical expertise and task *in*dependence may neutralize team members' need for task-oriented leadership but not for relationship-oriented leadership. Our respondents clearly attached the same importance to task-oriented leadership as they did to relationship-oriented leadership, however. They considered task-oriented leadership (e.g. clear definition of goals, tasks and roles) to be very important, even more so as the degree of virtualness in their daily work increases. It should be noted, however, that the present study involves a single case study with a sample of technical engineers who work somewhat independently of their fellow members in their team on projects of relatively short duration. Studying different functional groups might yield different results with respect to the relative importance of task-oriented and relationship-oriented leadership. In comparison with technical engineers, people working in sales and marketing functions might well assign even more importance to relationship-oriented leadership, particularly in virtual work on projects of longer duration. Furthermore, it may be interesting to compare the present findings with those from members of teams with higher task-interdependency. As the present research did not address the trade-off between the need for task-oriented and relationship-oriented leadership behaviours, future research may shed light on the question of how increasing levels of virtualness (or increasing levels of task interdependency) may affect the trade-off between task clarity and relationship development.

The present data show that 'have a very organized way of interacting with team members' (item 17), 'organize regular face-to-face meetings' (item 20), 'stimulate information sharing among team members' (item 9) and, 'make people feel part of the team' (item 29) are perceived to be more important in virtual communication settings than in face-to-face communication settings as the level of virtualness in

respondents' daily work increases from a low to a medium level. At high levels of virtualness, however, respondents perceived less difference in the importance of these leadership behaviours in comparing the face-to-face and virtual settings. They may have become so used to virtual work, and they may depend for such a large part of their daily work effectiveness and efficiency on virtual communication, that for these people the perceived importance of these leadership behaviours is less dependent on the communication setting (face-to-face vs. virtual). To study this hypothesis in more depth one might consider a replication of the present survey at Shell GSI in, say, three years' time, to assess any changes in the perceived relative importance of various leadership behaviours as a function of ongoing globalization.

Will virtual communication eventually become second-nature to team members and their leaders? Or is leadership communication just a constant challenge and virtual work environments make it harder, not easier? Taking a closer look at behaviours that are most typical for successful leadership, team members consider it very important that their leaders promote clear goal setting (item 11), a common understanding (item 13), information exchange with other teams (item 10) and clear role definitions (item 14), even more so at higher levels of virtualness. The same holds true for making people feel part of the team (item 29), information sharing (item 9), regular face-to-face meetings (item 20) and empowerment (items 21 and 23). Training programmes need to address the implicit difficulties and skills associated with these leadership requirements. Such programmes should be founded on sound empirical evidence that virtual leadership skills really matter. For instance, the assertion that leaders of the future need to be excellent at written expression to fulfil all of these roles is clearly in need of confirming research evidence that leaders' writing skills are strongly related to their effectiveness, particularly in virtual work settings.

Finally, our respondents indicated that information sharing and the accessibility of team members become more important as the degree of virtualness in their daily work increases. Information management in global teams requires sensitivity and skills to find a proper balance between the risk of an uneven distribution of information and the risk of information overload. How many team members should be included in a leader's e-mail distribution list? How many of them should participate in decision-making? The common practice of copying e-addresses in the distribution list can create many opportunities as well as problems (Sproull & Kiesler, 1991). Our data suggest that team members themselves consider it almost equally important in virtual settings as in face-to-face settings that their leader lets all of them '*participate in decision-making*' (item 21) but even more important that their leader '*delegates responsibility for implementation of decisions to the team members*' (item 23), the more so when working at a high level of virtualness. Future research should address the relationship between ongoing virtualization and empowerment. The leader's role in stimulating his or her team members to use secured communication modes as tools for empowerment poses not only social challenges but also technological challenges (cf. DeSanctis & Poole's [1994] taxonomy of variables that captures the complexity of communication in advanced CMC settings; see also Kimble et al., 2000). The availability of new CMC technology to exchange information among members engaged in dispersed activities clearly requires complementary changes in leadership to organize the social and technical work environment.

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Notes

1. As for vertical comparisons between the mean importance ratings of various behaviours within the virtual context and within the face-to-face context, any difference between two *Ms* that exceeds 0.07 is statistically significant ($p < 0.05$).
2. The degree of virtualness does not correlate with team size. Moreover team size did not moderate any of the difference scores.
3. Alternative analyses of the importance ratings of these 14 behaviours confirmed the moderating role of the degree of virtualness. Regression analysis of each of the importance ratings in the virtual context, treating the corresponding importance rating in the face-to-face context as covariate, yielded a significant interaction between the covariate and the degree of virtualness as a continuous (rather than trichotomized) variable.
4. We also explored leaders' ($n = 25$) assumptions about the (relative) importance ratings by team members. The results suggest that leaders' assumptions about team members' importance ratings of the 30 behaviours very much resembled the importance ratings expressed by the team members themselves.

Acknowledgements

References

Abernathy, D. J. (1998) 'A Conversation With Rosabeth Kanter About Leadership', *Training and Development* 52(7): 44–6.

Adair, J. (1988) *The Action Centred Leader*. London: The Industrial Society.

Adair, J. (2007) *Develop Your Leadership Skills*. London: Kogan Page.

Ahuja, M. K., & Galvin, J. E. (2003) 'Socialization in Virtual Groups', *Journal of Management* 29(2): 161–85.

Avolio, B. J., & Kahai, S. R. (2003) 'Adding the "E" to E-Leadership: How it May Impact Your Leadership', *Organizational Dynamics* 31(4): 325–38.

Avolio, B. J., Kahai, S. R., & Dodge, G. E. (2001) 'E-Leadership: Implications For Theory, Research, and Practices', *The Leadership Quarterly* 11(4): 615–68.

Avolio, B. J., Kahai, S., Dumdum, R., & Sivasubramaniam, N. (2001) 'Virtual Teams: Implications for E-Leadership and Team Development', in M. London (ed.) *How People Evaluate Others in Organizations*, pp. 337–58. Mahwah, NJ: Erlbaum.

Bass, B. M. (1990) *Bass and Stodgill's Handbook of Leadership: Theory, Research and Managerial Applications*, 3rd edn. New York: Free Press.

Baumgartner, R., & Künzler, R. (2002) *Management of Remote Workforce From a Swiss Perspective*. Unpublished MBA Dissertation, Glasgow, UK: University of Strathclyde.

Bell, B. S., & Kozlowski, S. W. (2002) 'A Typology of Virtual Teams: Implications for Effective Leadership', *Group and Organization Management* 27(1): 14–50.

Benjamini, Y., & Hochberg, Y. (1995) 'Controlling the False Discovery Rate: A Practical and Powerful Approach to Multiple Testing', *Journal of the Royal Statistical Society; Series B (Methodological)* 57(1): 289–300.

Bowers, D. G., & Seashore, S. E. (1966) 'Predicting Organizational Effectiveness With a Four-Factor Theory of Leadership', *Administrative Science Quarterly* 11(2): 238–63.

Burns, J. M. (1978) *Leadership*. New York: Harper & Row.

Burtha, M., & Connaughton, S. L. (2004) 'Learning the Secrets of Long-Distance Leadership: Eight Principles to Cultivate Effective Virtual Teams', *KM Review, Melcrum Publishing Ltd* 7(1): 24–7.

Cartwright, D., & Zander, A., eds (1968) *Group Dynamics: Research and Theory*, 3rd edn. New York: Harper & Row.

Cascio, W. F. (2000) 'Managing a Virtual Workplace', *Academy of Management Executive* 14(3): 81–90.

Cascio, W. F., & Shurygailo, S. (2003) 'E-Leadership and Virtual Teams', *Organizational Dynamics* 31(4): 362–76.

Coutu, D. L. (1998) 'Trust in Virtual Teams', *Harvard Business Review* 76(3): 20–1.

Davis, D. D. (2004) 'The Tao of Leadership in Virtual Teams', *Organizational Dynamics* 33(1): 47–62.

DeSanctis, G., & Monge, P. R. (1999) 'Introduction to the Special Issue: Communication Processes for Virtual Organizations', *Organization Science: A Journal of the Institute of Management Sciences* 10(6): 693–704.

DeSanctis, G., & Poole, M. S. (1994) 'Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory', *Organization Science* 5(2): 121–47.

DeVries, R. E. (1997) *Need For Leadership: A Solution to Empirical Problems in Situational Theories of Leadership*. Unpublished doctoral dissertation. Enschede: FEBO druk.

DeVries, 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(2): 121–37.

Duarte, D. L., & Tennant-Snyder, N. (1999) *Mastering Virtual Teams: Strategies, Tools, and Techniques that Succeed*, 2nd edn. San Francisco, CA: Jossey-Bass

Dubé, L., & Paré, G. (2004) 'The Multifaceted Nature of Virtual Teams', in D. J. Pauleen (ed.) *Virtual Teams: Projects, Protocols and Processes*, pp. 1–39. Hershey, PA: Idea Group Publishing.

Feng, J., Lazar, J., & Preece, J. (2004) 'Empathy and Online Interpersonal Trust: A Fragile Relationship', *Behaviour and Information Technology* 23(2): 97–106.

Gill, R. (2006) *Theory and Practice of Leadership*. London: SAGE .

Griffith, T. L., & Meader, D. K. (2004) 'Prelude to Virtual Groups: Leadership and Technology in Semi-Virtual Groups', in D. J. Pauleen (ed.) *Virtual Teams: Projects, Protocols and Processes*, pp. 231–54. Hershey, PA: Idea Group Publishing.

Hofstede, G. (1991) *Culture and Organizations: Intercultural Cooperation and its Importance for Survival; Software of the Mind*. London: McGraw-Hill.

Horner-Long, P., & Schoenberg, R. (2002) 'Does E-Business Require Different Leadership Characteristics? An Empirical Investigation', *European Management Journal* 20(6): 611–19.

Irving, D. (2000) *Leading Beyond the Millennium: A Study of Leadership and Virtual Teams*. Unpublished MBA dissertation. Glasgow, UK: University of Strathclyde.

Ishaya, T., & Macaulay, L. (1999) 'The Role of Trust in Virtual Teams', *Electronic Journal of Organizational Virtualness* 1(1): 140–57. Available at http://www.virtual-organization.net/

Jarvenpaa, S. L., & Leidner, D. E. (1999) 'Communication and Trust in Global Virtual Teams', *Organization Science* 10(6): 791–816.

Jarvenpaa, S. L., & Tanriverdi, H. (2003) 'Leading Virtual Knowledge Networks', *Organizational Dynamics* 31(4): 403–12.

Judge, T. A., Piccolo, R. F., & Ilies, R. (2004) 'The Forgotten Ones? The Validity of Consideration and Initiating Structure in Leadership Research', *Journal of Applied Psychology* 89(1): 36–51.

Kasper-Fuehrer, E. C., & Ashkanasy, N. M. (2001) 'Communicating Trustworthiness and

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Building Trust in Inter-Organizational Virtual Organizations', *Journal of Management* 27(3): 235–54.

Kayworth, T. R., & Leidner, D. E. (2002) 'Leadership Effectiveness in Global Virtual Teams', *Journal of Management Information Systems* 18(3): 7–40.

Kerr, S., & Jermier, J. M. (1978) 'Substitutes for Leadership: Their Meaning and Measurement', *Organizational Behavior and Human Performance* 22: 375–403.

Kimble, C., Li, F., & Barlow, A. (2000) *Effective Virtual Teams Through Communities of Practice*. Unpublished MBA dissertation. Glasgow, UK: University of Strathclyde.

Leadership Trust (1999) *Leadership by Remote: How do Managers Lead Geographically Dispersed Teams*. Ross-on-Wye: The Leadership Trust.

Likert, R. (1967) *The Human Organization*. New York: McGraw-Hill.

Lipnack, J., & Stamps, J. (2000) *Virtual Teams: People Working Across Boundaries with Technology*. New York: Wiley.

Loughran, J. (2000) *Working Together Virtually: The Care and Feeding of Global Virtual Teams*. Available at loughran@thoughtlink.com

Mann, F. C. (1965) 'Toward An Understanding of the Leadership Role in Formal Organizations', in R. Dubin, G. C. Homand, F. C. Mann & D. C. Miller (eds) *Leadership and Productivity,* pp. 68–103. San Francisco, CA: Chandler.

Mazneski, M. L., & Chudoba, K. M. (2000) 'Bridging Space Over Time: Global Virtual Team Dynamics and Effectiveness', *Organizational Science* 11(5): 473–93.

McCauley, C. D., Moxley, R. S., & Van Velsor, E. (1998) *The Center for Creative Leadership: Handbook of Leadership Development*. San-Francisco, CA: Jossey-Bass.

McDonough III, E. F., Kahn, K. B., & Barczak, G. (2001) 'An Investigation of the Use of Global, Virtual, and Colocated New Product Development Teams', *Journal of Product Innovation Management* 18(2): 110–21.

Misumi, J. (1995) 'The Development in Japan of the Performance-Maintenance (PM) Theory of Leadership', *Journal of Social Issues* 51(1): 213–28.

Mowshowitz, A. (1997) 'Introduction to Special Issue on Virtual Organization'*, Communications of the ACM* 40(9): 30–7.

Panteli, N. (2003) *Discourse Analysis in IS Research: Constructing Presence in Virtual Organizing*. Paper at the European Conference on Information Systems (ECIS 2003), Naples 19–21 June. Models and Methodology for IS Research.

Pauleen, D. J. (2003) 'Leadership in a Global Virtual Team: An Action Learning Approach', *Leadership and Organization Development Journal* 24(3): 153–62.

Pulley, M. L., McCarthy, J., & Taylor, S. (2000) 'E-Leadership in the Networked Economy', *Leadership in Action* 20(3): 1–7.

Shields, R. (2003) *The Virtual*. London: Routledge.

Smith, A., & Sinclair, A. (2003) *What Makes an Excellent Virtual Manager?* Horsham: Roffey Park.

Sproull, L., & Kiesler, S. (1991) *Connections: New Ways of Working in the Networked Organization*. London: The MIT Press.

VanBorselen, J. W. (1976) *Human Bias in Research and Development Policy-making*. Unpublished Doctoral Dissertation, Groningen University.

van der Vlist, R., Steensma, H., Kampermann, A., & Gerrichhauzen, J., eds (1995) *Handboek Leiderschap in Arbeidsorganisaties* [*Handbook Leadership in Organizations*]. Utrecht: Lemma B. V.

Yukl, G. (2002) *Leadership in Organizations*, 5th edn. Upper Saddle River, NJ: Prentice Hall.

Zaccaro, S. J., & Bader, P. (2003) 'E-Leadership and The Challenges of Leading E-Teams: Minimizing the Bad and Maximizing the Good', *Organizational Dynamics* 31(4): 377–87.

Zaleznik, A. (2004) 'Managers and Leaders: Are They Different?', *Harvard Business Review* January: 74–81.

Zigurs, I. (2003) 'Leadership in Virtual Teams: Oxymoron or Opportunity?', *Organizational Dynamics* 31(4): 325–38.

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