Virtual team leadership: The effects of leadership style and communication medium on team interaction styles and outcomes

Laura A. Hambley [a,*], Thomas A. O'Neill [b], Theresa J.B. Kline [c]

[a] *University of Calgary, 182 Royal Birkdale Cres, NW, Calgary, Alta., Canada T3G 5R8*
[b] *University of Western Ontario, Canada*
[c] *University of Calgary, Canada*

Abstract

This study investigated the effects of transformational and transactional leadership styles and communication media on team interaction styles and outcomes. Teams communicated through one of the following three ways: (a) face-to-face, (b) desktop videoconference, or (c) text-based chat. Results indicated that transformational and transactional leadership styles did not affect team interaction styles or outcomes; that the mean constructive interaction score was higher in FTF than videoconference and chat teams, but not significantly higher in videoconference than chat teams; and that teams working in richer communication media did not achieve higher task performance than those communicating through less rich media. Finally, mean team cohesion scores were higher in FTF and videoconference than chat teams, but not significantly higher in FTF than videoconference teams. These results provide further evidence that communication media do have important effects on team interaction styles and cohesion.
© 2006 Elsevier Inc. All rights reserved.

Keywords: Virtual leadership; Virtual teamwork; Virtual teams; Teams; Leadership; e-Leadership; Dispersed teams; Virtual work; Communication media; Videoconferencing

Rapid technological advancements have led to a new paradigm of work—it can now be conducted anytime, anywhere, in real space or through technology (Cascio & Shurygailo, 2003). The virtual environment and its various communication technologies have created a new context for leadership and teamwork (Avolio, Kahai, Dumdum, & Sivasubramaniam, 2001a). Leadership within this new context has been referred to as "e-leadership" or "virtual leadership," defined as "a social influence process mediated by advanced information technologies to produce changes in attitudes, feelings, thinking, behaviour, and/or performance of individuals, groups, and/or organizations" (Avolio, Kahai, & Dodge, 2001b, p. 617). For the purposes of

this paper, the term virtual leadership will refer to formal leadership by one individual, as opposed to being shared amongst team members.

In addition to leadership, teamwork has been affected by the virtual environment. Virtual teams are becoming a more common type of work unit and are expected to play an increasingly key role in organizations (Hertel, Konradt, & Orlikowski, 2004; Lipnack & Stamps, 2000). For purposes of this paper, virtual teams are defined as interdependent groups of individuals that work across time, space, and organizational boundaries with communication links that are heavily dependent upon advanced information technologies (Driskell, Radtke, & Salas, 2003; Thompson & Coovert, 2003).

Virtual team leadership is considered highly important to virtual team performance (Hambley, O'Neill, &

---

* Corresponding author. Fax: +1 403 282 8249.
  E-mail address: laura.hambley@shaw.ca (L.A. Hambley).

Kline, in press; Hertel, Geister, & Konradt, 2005); a claim that has been substantiated in a recent field study on virtual teams (Webster & Wong, 2003). The authors reported that employees perceived leadership as a critical factor of geographically distributed team success. Despite the widespread increase in virtual teamwork, researchers do not clearly understand the implications of advanced information technology for leadership practices (Zaccaro & Bader, 2002). Furthermore, there exists little evidence in support of or against using more advanced technologies to improve leadership performance (Avolio et al., 2001b). More research is therefore needed to better understand leadership of virtual teams.

Although some research on virtual leadership styles is emerging, there is still a need for research assessing how certain leadership styles interact with communication technologies to affect team processes and outcomes. While there are many different approaches to the study of leadership, transformational and transactional leadership styles will be investigated in the present study. This theoretical basis was chosen for several reasons: first, it has received extensive research support since its inception (Bass, 1985; Bass & Avolio, 1993). Second, the transformational/transactional paradigm can translate clearly into practical recommendations and suggestions for leadership training (Barling, Weber, & Kelloway, 1996; Kelloway & Barling, 2000). Third, these two leadership styles have been shown to impact virtual teams in meaningfully different ways (e.g., Sosik, Avolio, Kahai, & Jung, 1998). Finally, psychometrically sound measures exist that accurately assess these leadership styles (e.g., Multifactor Leadership Questionnaire; Bass & Avolio, 1990).

Several studies have assessed leadership in computer-mediated team contexts (e.g., Hoyt & Blascovich, 2003; Kahai, Sosik, & Avolio, 2003), but few studies have manipulated leadership or used more than one communication medium to determine how technology facilitates or negates the effects of leadership in virtual contexts. Kerr and Jermier (1978) noted that situational variables (e.g., technology) may impact the effectiveness of leader behaviours, but *how* technologies moderate the effects of leadership styles on virtual teamwork has not been specifically addressed. Nonetheless, team leaders are being asked to lead geographically dispersed teams, and research is needed to determine the best ways to do so.

To better understand the effects of leadership styles and communication technology on team processes and outcomes, we conducted a laboratory study to carefully control for and manipulate leadership style and communication medium. Specifically, we compared the effects of transformational and transactional leadership within teams communicating face-to-face (FTF), through videoconference, or text-based chat (chat). Our study contributes to the extant literature by examining the effects of leadership styles on outcomes across virtual and FTF teams. Furthermore, the inclusion of desktop videoconference provided a means to compare leadership in a medium that has not been considered in previous leadership research. Finally, this study enables a comparison of the effects of communicating through videoconference to FTF and chat on team interaction styles and outcomes.

Leadership

Research has demonstrated that leaders can make a critical difference to team performance and effectiveness (e.g., Morgeson, 2005; Zaccaro & Klimoski, 2002). Indeed, Salas, Sims, and Burke's (2005) recent review and model of teamwork included team leadership as one of the "Big Five" contributors to team effectiveness. Elsewhere, it has been argued that leaders play important roles in modeling effective teamwork, and in setting ground rules for team members to engage in successful team processes (Cascio & Shurygailo, 2003). In short, leadership appears to be an integral part of effective teamwork.

There are several theoretical approaches to the study of leadership, but one well-known and contemporary framework is transformational/transactional leadership. Referred to as the new leadership paradigm (Bryman, 1992), charismatic leadership (House, 1996), transformational leadership (Bass, 1985), or the full range leadership theory (Sivasubramaniam, Murray, Avolio, & Jung, 2002), the distinction between transformational and transactional leadership has received a great deal of research attention (Dvir, Eden, Avolio, & Shamir, 2002). Specific to the purposes of the present study, transformational and transactional leadership styles have been the focus of many existing studies on teams communicating through technologies (Sivasubramaniam et al., 2002).

Transactional leaders view the leader-follower relationship as a process of exchange (Bass & Avolio, 1993). They tend to gain follower compliance by either offering rewards or threatening punishment. Two main leadership factors are characteristic of this leadership style: (1) contingent reward, and (2) management by exception. In contrast, transformational leadership focuses on motivating and inspiring followers to perform beyond expectations and comprises four main factors: (1) idealized influence (or "charisma"), (2) inspirational motivation, (3) intellectual stimulation, and (4) individualized consideration (Bass & Avolio, 1993). Transformational leaders are skilled at increasing and broadening follower interests, gaining commitment to the goals and mission of the group/organization, and motivating people to go beyond their self-interests for the good of the group (Den Hartog & Koopman, 2001).