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Information elaboration and team performance: Examining the psychological origins and environmental contingencies

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ABSTRACT

Information elaboration enables functionally diverse teams to transform their breadth of knowledge resources into actionable solutions to complex problems. The current study advances information elaboration theory and research in two ways. First, we identify how team ability and social motivation composition characteristics provide the psychological origins of complex information processing efforts. Second, we identify environmental turbulence as an important boundary condition, clarifying when information elaboration benefits team performance and when it does not. These ideas were tested in a sample of 4-person self-managed teams ($N = 68$) which were functionally diverse and performed a cooperative strategic decision-making task. Results indicate that cognitive ability equips teams with the "can do" ability for complex elaboration efforts through emergent team mental models, whereas low preferences for self-reliance provide the "will do" motivation for in-depth information exchange through collective leadership. In turn, teams benefited from information elaboration in turbulent but not stable environments.

Introduction

From management consulting projects to R&D laboratories to hospital trauma centers, organizations of all types are increasingly deploying teams whose members have diverse functional backgrounds. The allure of these cross-functional teams is their capacity to engage in complex problem solving; members bring with them a breadth of knowledge and expertise creating a pool of non-redundant informational resources for the team to draw upon (Bantel & Jackson, 1989; Jehn, Northcraft, & Neale, 1999; Milliken & Martins, 1996; Williams & O'Reilly, 1998). Yet, not all functionally diverse teams are able to leverage their informational resources (van Dijk, van Engen, & van Knippenberg, 2012; Webber & Donahue, 2001). Through openly exchanging task-relevant information and ideas, seeking clarification on the perspectives offered by others, and discussing and integrating this information—that is, by engaging in information elaboration processes—diverse teams are able to fully utilize their available knowledge resources (van Knippenberg, De Dreu, & Homan, 2004) and outperform homogenous teams (Homan, Van Knippenberg, Van Kleef, & De Dreu, 2007; van Ginkel & van Knippenberg, 2008). However, functionally diverse teams are the least likely to share unique information or engage in complex information processing even though it is precisely those teams that are most likely to benefit from in-depth information exchange (Mesmer-Magnus & DeChurch, 2009; Stasser & Titus, 1985, 1987).

An often overlooked consideration in staffing functionally diverse teams, is ensuring that teams are composed of members who possess the "can do" abilities and the "will do" motivation to engage in complex information processing efforts (van Knippenberg et al., 2004). The ability and motivation among team members provide a pool of general human capital resources that enable teams to leverage their more specific knowledge resources (Ployhart & Moliterno, 2011). To date, however, empirical studies of the compositional drivers of information elaboration have been sparse. In particular, the importance of team member cognitive ability in promoting information elaboration processes has not been tested. This is a critical oversight as the "can do" abilities of team members (Ployhart & Moliterno, 2011) provide a basis for recognizing the informational demands that are relevant to the task at hand and for determining how to use the team's knowledge resources to accomplish its goals. Prior studies provide some evidence that members' process accountability (Scholten, Van Knippenberg,

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Nijstad, & De Dreu, 2007) and need for cognition (Kearney, Gebert, & Voelpel, 2009) serve as motivational drivers of information elaboration. However, these studies have focused exclusively on members' motivation to engage in deep-level information processing (i.e., members' epistemic motivation; De Dreu & Carnevale, 2003; Kruglanski & Webster, 1996). The extent to which members' preferences for collective work arrangements (i.e., members' social motivation; De Dreu, Nijstad, & Van Knippenberg, 2008) serve as a motivational driver of information elaboration remains unclear. This is an important oversight as the "will do" preferences and tendencies among team members (Ployhart & Moliterno, 2011) equip teams with the prosocial motivation to engage in cooperative information exchange and integration efforts (De Dreu et al., 2008).

Additionally, not all teams are equally likely to benefit from extensive information processing. In developing their original theory, van Knippenberg and colleagues (2004) proposed task complexity as a boundary condition, with information elaboration processes being an important driver of success for teams working on complex as opposed to routine tasks. However, they failed to consider how the demands inherent in the team's operating context impact the need for information elaboration among team members. This is an important area for exploration as events occurring outside of the team, but within the team's operating context can create shifting goals or priorities, introduce new opportunities or threats, and alter how tasks and decisions affect desired outcomes. Further, the degree of task ambiguity and uncertainty inherent in the team's performance setting have been shown to heighten the importance of knowledge integration for effective team decision-making (De Dreu & Beersma, 2010) and creativity (Sung & Choi, 2012). However, the extent to which the importance of information elaboration for the success of functionally diverse teams differs across environmental contexts remains unclear.

In the current study, we seek to build on van Knippenberg et al.'s (2004) model of information elaboration by addressing two questions. First, we address the question, *How do the compositional characteristics of functionally diverse teams provide the "can do" ability and "will do" motivation to engage in information elaboration processes?* Individuals who possess higher as opposed to lower levels of general cognitive ability are able to learn faster, acquire and assimilate larger amounts of information, and structure knowledge for more efficient use (Hunter, 1986; Jensen, 1998). We propose that general cognitive ability composition provides an important, but incomplete understanding of ability as a driver of information elaboration processes. Team cognition in the form of shared task representations (van Ginkel & van Knippenberg, 2008, 2009, 2012) and diversity mindsets (van Knippenberg, van Ginkel, & Homan, 2013) provide a cognitive guide for information elaboration efforts. In line with this work, we propose and demonstrate the importance of general cognitive ability composition as a key driver of information elaboration through emergent team cognition in the form of similar strategy-focused mental models.

Low self-reliant individuals enjoy working in situations where there is a distribution of tasks and resources, and are both willing to contribute to a collective effort and to rely on others to do their part (Jackson, Colquitt, Wesson, & Zapata-Phelan, 2006; Ramamoorthy & Carroll, 1998). We propose and demonstrate that low levels of self-reliance among members provides the prosocial motivation to engage in complex collective information exchange efforts through the sharing of the team's leadership responsibilities. Our research, therefore, sheds light into the importance of ability, prosocial motivation, and emergent team properties for engendering information elaboration in functionally diverse teams.

Second, we address the question, *Do the demands of the team's operating environment provide a boundary condition on the performance implications of information elaboration in functionally diverse teams*? Turbulent environments are characterized by continuous and unpredictable changes which disrupt routines and create a need to be vigilant of environmental demands (Katz & Kahn, 1978; Lawrence & Lorsch, 1967). We expect that complex information elaboration processes are most beneficial for teams working in non-routine and unpredictable contexts. At the same time, information elaboration consumes time and energy; for teams that face a more stable performance environment, extensive elaboration is likely to be unnecessary because it drains time and cognitive resources. We propose and demonstrate that information elaboration among team members is critical to success for functionally diverse teams operating in turbulent environments while of minimal value in more routine environments. Therefore, our research sheds light on the boundary conditions of the utility of information elaboration for cross-functional team success by highlighting the importance of the team's environmental context, an often overlooked factor in team research (Mathieu, Maynard, Rapp, & Gilson, 2008).

Information elaboration and environmental turbulence

Information elaboration is a complex form of communication that involves "the exchange of information and perspectives, the process of feeding back the results of this individual-level processing into the group, and discussion and integration of its implications" (van Knippenberg et al., 2004, p. 1011). Information elaboration processes extend beyond information sharing to capture the extent to which team members contribute detailed explanations of their ideas, and spend time constructively discussing each other's perspectives, integrating information, and determining how to apply their knowledge resources to the problem at hand (Hoever, van Knippenberg, van Ginkel, & Barkema, 2012). In turn, teams are able to leverage their unique knowledge resources and outperform more homogenous teams (Hoever et al., 2012; Homan et al., 2007, 2008; Rico, Sanchez-Manzanares, Antino, & Lau, 2012; van Ginkel & van Knippenberg, 2008, 2009).

At the same time, the organizational sciences have long recognized that neither organizations nor teams are impervious to external forces (e.g., Burns & Stalker, 1961; Katz & Kahn, 1978; Lawrence & Lorsch, 1967; Mathieu et al., 2008). When environments are stable and predictable, operating procedures can be designed for routine efficiency. However, in turbulent environments change occurs rapidly and unpredictably; organizations must be cognizant of the environmental demands and continuously adjust their strategies, decisions, and routines to be effective (Bergh & Lawless, 1998; Katz & Kahn, 1978). For teams, turbulent environments create coordination challenges and heighten the importance of communication because previously relied-upon strategies and routines may no longer be appropriate (Kozlowski, Gully, Nason, & Smith, 1999; Marks, Zaccaro, & Mathieu, 2000; Thomas-Hunt & Phillips, 2003). In uncertain environments, knowledge integration is essential for teams to come up with creative solutions and perform at optimal levels (Sung & Choi, 2012).

We expect that the benefits of information elaboration differ substantially depending on the demands of the team's operating environment, even when teams are working on similar types of complex and non-routine tasks. Take, for example, a cross-functional R&D team charged with designing a next generation electronic medical device. A team that faces many disruptive events resulting from competitor practices, research and medical advances, and shifting consumer preferences will need to discuss their perspectives in greater detail to ensure that strategies and decisions are appropriate for the demands of the environment. Through information elaboration, these teams are able to draw on members' unique capabilities, exchange perspectives, and develop novel and useful solutions (Hoever et al., 2012; van Ginkel & van Knippenberg, 2009) to address the evolving demands