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# Leader cognition under threat: "Just the Facts"

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ABSTRACT

It has been argued that leader cognition is a particularly important influence on team performance under conditions of crisis or threat. The goal of the present effort was to assess the merits of processing performance information, as opposed to processing social information, for leader performance in terms of creativity of solutions and the quality of solutions with respect to domain specific performance variables. Undergraduates were asked to assume the role of a leader in a marketing firm and provide solutions to three marketing problems. It was found that providing training in strategies for working with performance information (e.g., causes, resources, restrictions, and contingencies) resulted in higher levels of performance than providing training in strategies for working with social information (e.g., actors, affect, goals, and social systems). Moreover, training in strategies for working with performance information proved especially beneficial when more elements of the problem situation were under leader control. The implications of these findings for understanding leader cognition and leader performance are discussed.



Few scholars would dispute the point that leader performance is a complex, unusually complex, phenomenon (Bass, 1990; Yukl, 2009). Nonetheless, in recent years, we have begun to see a new understanding emerge of many of the variables contributing to leader performance. For example, the key behaviors evidenced by leaders, consideration, initiating structure, participation, and change management, have been identified (Yukl, 2009) along with the conditions that moderate the impact of these behaviors on performance (Vroom & Jago, 2007). We are now gaining an understanding of how leaders formulate and articulate viable visions (Shipman, Byrne, & Mumford, 2010). We have begun to identify the mechanisms by which leaders interact with followers, motivate their followers, and share leadership responsibilities (Avolio & Gardner, 2005; Henderson, Liden, Glibkowski, & Chaudhry, 2009; Friedrich, Vessey, Schuelke, Ruark, & Mumford, 2009). Additionally, we have begun to gain an understanding of when leadership really counts with respect to team and organizational performance (Day, Gronn, & Salas, 2006).

Despite these advances in our understanding of leadership, and leader performance, many questions remain unanswered (Mumford, Friedrich, Caughron, & Byrne, 2007). One critical question which has not been clearly answered pertains to how people think about social or organizational problems that call for leadership (Lord & Hall, 2005). Answers to this question are important for two reasons. First, the evidence gathered in studies by Connelly et al. (2000), Hedlund et al. (2003), Lord, de Vader, and Alliger (1986), Marta, Leritz, and Mumford (2005), and Mumford, Campion, and Morgeson (2007) indicates that cognitive capacities such as intelligence, planning, and problem definition are powerful influences on leader performance. Second, understanding the nature of leader cognition might provide a basis for the development of new interventions likely to improve leader performance under conditions where cognition is critical to performance (Marcy & Mumford, 2010).

One situation where cognition is held to be critical to leader performance is when a team or organization is presented with a crisis (Drazin, Glynn, & Kazanjian, 1999; Weick, 1995) — a complex, novel, ill-defined problem associated with high stakes, high risk, outcomes (Hunt, Boal, & Dodge, 1999). Recently, Mumford, Friedrich et al. (2007) proposed a model of how leaders think about crisis situations based on existing research into leader cognition and decision making. Our intent in the present effort was twofold. First, we hoped to show that training in certain key capacities embedded in the model would lead to differential effects in

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how people in leadership roles think about crises. Second, we hoped to examine attributes of the situation that would moderate the impact of this training. Identifying key capacities affecting leader performance in crisis situations and the specific situations in which these capacities come into play is a critical step in developing training that may be applied in real world settings. To this end a study was conducted in which participants were presented with training on the key capacities embedded in the model, and were then presented with a set of low-fidelity leadership problem-solving scenarios containing different potential moderators of the effects of these capacities on leader performance. Overall, the intended contributions of our work are 1) to increase understanding of the way leaders think during crises, 2) to identify strategies that may increase leader performance during crises, and 3) to identify situational factors that may influence the effect of these strategies on leader performance. In the sections that follow we first describe the research into leader cognition during crises and potential interventions to improve leader cognition, we then discuss the methods used in this study of leader cognition, and concluding with a discussion of the results of this study and the potential implications of this study for our understanding of leader cognition during crises.

## 1. Leader cognition

Crises are often used to understand leader cognition because it is under crisis conditions that organizations value leader problem-solving (Hunt et al., 1999; Mumford, 2006). A model of leader cognition developed to specifically address leader cognition under crisis conditions was recently proposed by Mumford, Friedrich et al. (2007). The basis of this model of leader cognition is sensemaking, a process through which people frame experiences as being meaningful in some specific way (Weick, 1995). The importance of sensemaking to leader problem-solving under crisis conditions becomes apparent when it is recognized that novel, complex, ill-defined problems can be construed, or understood, in many different ways. As a result, the structure imposed on the crisis situation is important because it both frames, or defines, the problem at hand and provides a structure in which the leader can formulate a plan for addressing the crisis (Mumford, Schultz, & Osburn, 2002).

The model proposed by Mumford, Friedrich et al. (2007) holds that leader sensemaking begins with scanning of the internal and external environment vis-à-vis monitoring mental models in an effort to identify emerging novel, high risk, high reward problems (Koberg, Uhlenbruck, & Sarason, 1996). These mental models provide a framework for working with information in a particular way. When a crisis event has been identified, information gathering will be initiated to determine the nature and significance of the event (Weick, 1995). Information gathering, in turn, leads to activation of descriptive mental models that may be used to understand, or make sense of, the crisis situation (Weick, 1995). These descriptive mental models are noteworthy because they provide a basis for identifying critical causes and salient goals. These causes, goals, and the descriptive mental models they are based on, in turn activate relevant case-based knowledge that might be used in problem-solving (Kolodner, 1997; Strange & Mumford, 2005). Case-based knowledge is knowledge based on past experiences, where an individual recalls a past experience and applies the lessons, both positive and negative, learned to a related event. For example, if an individual must make a decision regarding changing from one job to another they may remember their past experiences changing jobs. They might then apply this knowledge to the current situation by assuming similar actions to those they took in the past would have similar results in the present. Subsequent analysis of those cases with respect to more objective performance information, information pertaining to likely causes, resources, restrictions, and contingencies, and more subjective social information, information pertaining to actors, affect, goals, and social systems, is analyzed to formulate a prescriptive mental model (Strange & Mumford, 2005).

This prescriptive mental model, a model providing a template plan for actions in the situation at hand (Mumford et al., 2002), provides a basis, or framework, for forecasting the outcomes of various actions that might be taken (Byrne et al., 2010). With reflection on the outcomes arising from these forecasts, both self reflection and reflection on social systems, plausible alternative plans can be identified giving rise to the formation of plans and backup plans (Xiao, Milgram, & Doyle, 1997). Opportunistic execution of these plans (Patalano & Siefert, 1997) in turn gives rise to adaptive responses to the problems arising in crisis situations (Mumford, Friedrich, Caughron, & Antes, 2009).

Although this model of leader cognition is complex, four lines of evidence suggest that it might provide a plausible basis for describing how leader think, and presumably, think about crises. One key implication of this model is that planning will be an important influence on leader problem-solving. In a study examining the influence of planning on performance during crises, Marta et al. (2005) asked teams to formulate plans for turning around a failing car company. When the viability of plans proposed by these teams was evaluated, it was found that the best performance was obtained from teams where leaders emerged who possessed requisite planning skills. However, it was also found that people possessing planning skills did not consistently emerge as leaders of these teams.

In a second study, Shipman et al. (2010) examined the influence of forecasting on leader vision formation. Participants in this study were asked to assume the role of a principal of a new experimental school and were asked to prepare a speech to be read to students, parents, and teachers, describing their vision for this school. Prior to preparing their vision statements, participants were asked to work through a set of exercises, putatively provided by a consulting firm where forecasting was required. It was found, in keeping with Mumford, Friedrich et al. (2007) model, that the amount of forecasting was strongly, positively, related to ($r \approx 0.35$) to the quality of the vision statements produced by people working in this leadership role.

Not only has evidence been found for key processing operations proposed in this model, Strange and Mumford (2005) have also provided evidence pointing to the importance of case-based knowledge, a central component of the model. Again, in this study participants were asked to assume the role of a principal of a new experimental secondary school and were asked to formulate a speech to be given to students, parents, and teachers where they were to describe their vision for this school. Exercises were provided to help participants prepare their speech, where the nature of these exercises allowed participants to consider either good or poor cases and strategies for analyzing these cases with respect to causes, goals, both causes and goals, or neither causes or goals. It was found that case