



## The temporal priority of team learning behaviors vs. shared mental models in service management teams

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### ABSTRACT

This study investigated the temporal priority of shared mental models (SMMs) on team learning behaviors using a longitudinal study design. Twenty-seven field-based teams (173 participants) performing a restaurant management task participated in the study. Panel data on SMMs and learning behaviors were collected in two waves across the 16-week lifespan of the teams. Results from cross-lagged models showed that team learning behaviors had a positive effect on the formation of shared mental models, whereas shared mental models did not predict team learning behaviors. Additionally, SMMs and team learning behavior had a significant positive effect on team performance. The results of the current study contributed to the team literature by showing that team processes (team learning behavior) may impact the development of SMMs, which consequently impacts team performance. The current work also demonstrates that teamwork is essential for success of hospitality organizations and suggests ways to improve team effectiveness. Implications of these results for research and practice are discussed.

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### 1. Introduction

The performance of customer-contact employees or service employees has long been recognized as a significant determinant of customer perceptions of service quality provided by service organizations (Bitner, 1990; Hartline and Jones, 1996; Gould-Williams, 1999). Customers rely on employee competence, responsiveness, and interpersonal skills while assessing service quality. Good employee performance has been linked with increased customer perceptions of service quality, whereas poor employee performance has been linked with increased customer complaints and brand switching (Zeithaml et al., 1996). However, recently, service organizations which include hospitality organizations are focusing on organizational work teams to increase the effectiveness of service delivery, enhance service quality, and organizational competitiveness (Hu et al., 2009). Recent studies have assessed team/group effectiveness by measuring customer-perceived service quality and customer loyalty (De Jong et al., 2008; Salanova et al., 2005). Researchers have highlighted several benefits of front-line service management teams including more efficient use of knowledge and experience of those employees who are closest to the customer, and increased learning, adaptability, and

productivity (De Jong et al., 2008; Batt, 1999; Cohen et al., 1997). Because of the increased adoption of teams in service operations there is a need to investigate factors that influence team effectiveness (De Jong et al., 2008).

Service researchers have suggested that to enhance teamwork there is a need to encourage better communication and interactions among members (team processes) (Moultrie et al., 2007). Scholars have also linked knowledge sharing in teams with team performance in the hospitality industry (Magnini, 2008; Hu et al., 2009). Given the importance of team processes in the success of hospitality teams, the current work examined team learning behavior as a team process variable that involves communication, interactions, and knowledge sharing in teams. Furthermore, hospitality researchers have also noted the value of shared understanding of rules, norms, expectations, roles, values, perceptions, and interaction patterns to facilitate team performance (Hu et al., 2009). Therefore, shared mental models (SMMs), which include shared understanding among members about taskwork (e.g., rules, expectations, performance requirements, and work goals), and teamwork (i.e., how the team should work together, which involves having a shared understanding about roles/responsibilities, values, skills of teammates, and interaction patterns), and which has been considered to be a significant predictor of team performance (DeChurch and Mesmer-Magnus, 2010b), is examined in the current context of hospitality teams.

Based on the critical role of these variables to hospitality team effectiveness, the purpose of this study is to test a bi-directional (two-way) relationship between SMMs and team learning

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behaviors using a longitudinal study design. Through doing so, we hope to contribute to the literature in multiple ways. First, we will examine the effects of SMMs over time. Time plays a critical role in the formation of team cognition (e.g., SMMs). Whereas individuals have individual cognitive structures and internal cognitive processes to organize those structures, teams have team cognitive structures and use external processes to organize those structures (Cooke et al., 2004). Given the complexity of the cognitive structures in a team, team cognition takes time to develop through the interplay between team knowledge and team processes (Cooke et al., 2004). However, little empirical research has been conducted in this area. Indeed, in a meta-analysis on the effects of team cognition on team effectiveness, DeChurch and Mesmer-Magnus (2010a) concluded that more research is needed that examines the reciprocal relationship between team processes/behaviors and the resultant team cognitive structures over time. Similarly, Pearsell et al. (2010) have suggested that increased interaction across time among team members are likely to create richer and more overlapping connections in teams' cognitive structures. The authors recommended that researchers examine the bi-directional relationship between team actions and the formation of emergent states (Pearsell et al., 2010).

Second, the current study will better position team learning behaviors in the team nomological network by empirically testing its relationship with SMMs. Team learning behavior is a continuing process of reflection and action, which involves asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of actions (Edmondson et al., 2007; Edmondson, 1999). It refers to the group interaction activities through which individuals in teams acquire, share, and combine knowledge (Argote et al., 1999), to adapt and improve (Gibson and Vermeulen, 2003). Despite the connection of the construct with learning and knowledge development (cf. Edmondson, 1999), it has yet to be linked to cognitive outcomes (e.g., SMMs). This will be addressed in the current study through examining its relationship with one of the most developed types of collective cognition, i.e., SMMs (Mathieu et al., 2008).

Third, the current work will examine the proposed relationships with service-management teams. Recent team cognition researchers have called for studies with decision-making, project management, and service management teams to extend the generalizability of SMM theory (e.g., Mohammed et al., 2010). This need exists because most studies on SMMs have been conducted using action teams (e.g., military and aviation control teams) (Mohammed et al., 2010; Chou et al., 2008). This gap will be addressed in the current study as service-management teams will be investigated in a restaurant setting.

## 2. Development of hypotheses

The relationship between SMM and team learning behavior can be explained through the I-P-O theoretical framework (Kraiger and Wenzel, 1997). This framework suggests that team inputs (I) lead to the formation of team processes (P), which result in team outcomes (O) (Hackman, 1987). The SMM literature has been dominated by a unidirectional view of the I-P-O framework, in which existing SMMs have been viewed as an input which has led to the formation of various team processes (e.g., Banks and Milward, 2007; Marks et al., 2000, 2002; Mathieu et al., 2000, 2005; Stout et al., 1999). However, a second theoretical lens can be borrowed from the communications literature in explaining the relationship between SMM and team processes. This literature states that team processes, such as communication, lead to the formation of SMM through building common ground or shared understanding (Clark and Brennan, 1991). Given that both perspectives are equally likely, the current study proposes competing hypotheses to evaluate the temporal

precedence of SMMs on team processes (i.e., team learning behaviors) and vice versa. In other words, the current work investigates if team learning behavior leads to SMMs or SMMs leads to team learning behaviors.

### 2.1. The effect of shared mental models on team learning behaviors

Although the effect of SMM on team learning behaviors has not been explicitly tested, SMM have been linked to multiple team processes (Marks et al., 2000, 2002; Mathieu et al., 2000, 2005). Two of the most commonly examined team processes in the SMM literature are team communication and coordination. In a larger study investigating the effects of leader briefings and team interaction training on the formation of mental models, communication processes, and team performance, Marks et al. (2000) found that higher sharedness in team interaction mental models resulted in more efficient communication processes. In a later study, Marks et al. (2002) also showed that shared team interaction mental models predicted team coordination and backup processes. Mathieu et al. (2000, 2005) have also found support for the link between SMMs and team processes. Mathieu et al. (2000) examined the relationship between shared taskwork and teamwork mental models and a mix of team processes that included strategy formation, coordination, cooperation, and communication. Whereas taskwork mental models include work goals and performance requirements, teamwork mental models include interpersonal interaction requirements, skills of teammates, and shared values (Mohammed et al., 2010; Cannon-Bowers and Salas, 2001). Mathieu et al. (2000) found that both shared taskwork and shared teamwork mental models independently predicted the use of team processes. A similar study by Mathieu et al. (2005) found that the formation of shared taskwork mental models also resulted in the use of more effective team processes.

In these empirical studies (i.e., Mathieu et al., 2000, 2005; Marks et al., 2000, 2002), arguments supporting the effect of SMMs on team process are linked to early theoretical developments that are rooted in the classic I-P-O framework (Klimoski and Mohammed, 1994; Kraiger and Wenzel, 1997). These authors argue that when teams develop the input of SMMs they have a shared/common understanding of what is expected of them and are better able to synchronize their actions (Kraiger and Wenzel, 1997). Having such cognitive synchronization among team members is likely to improve their ability to coordinate their actions (cf. Kraiger and Wenzel, 1997). Early conceptualizations of SMMs by Klimoski and Mohammed (1994) have also argued that having team members be on the same page (i.e., having SMMs) are more likely to lead to an increased use of effective communication processes, strategy and coordinated use of resources, and interpersonal relations or cooperation.

The central processes included in team learning behavior overlap with the critical processes identified as outcomes in the SMM empirical and theoretical literatures (Mathieu et al., 2000, 2005; Marks et al., 2000, 2002; Klimoski and Mohammed, 1994; Kraiger and Wenzel, 1997). Team learning behavior incorporates multiple team process variables, of which the two central processes are communication and coordination (Edmondson et al., 2007; Edmondson, 1999). According to Edmondson (1999), the construct can be broken down into (a) communication processes such as open communication (e.g., discussing differences of opinion openly) and communication frequency (e.g., seeking continuous feedback and information) and (b) coordinated use of resources (i.e., acquire, combine, and share unique knowledge). Based on these theoretical arguments and the fact that SMM of taskwork and teamwork knowledge have both been empirically linked to communication and coordination processes, it is expected that:

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