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Team adaptation in context: An integrated conceptual model and meta-analytic review



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ABSTRACT

In modern work teams, successful performance requires adaptation to changing environments, tasks, situations, and role structures. Although empirical studies of *team adaptive performance* have generated key inferences about team adaptation in specific contexts, there are important conceptual differences across the adaptive stimuli examined in the literature (e.g., novel environments vs. downsizing). We extend theories of team adaptation by suggesting that the effectiveness of team processes and emergent states in driving team adaptive performance will vary based on the nature of the adaptive stimulus. We integrate and extend the team adaptation literature using an IMOI framework to empirically examine a process model of team adaptive performance and examine two distinct contextual moderators: (a) internal versus external changes (i.e., *origin*), and (b) temporary versus sustained changes (i.e., *duration*). We metaanalytically examine the processes, emergent states, and inputs that lead to effective team adaptation in general, and in specific contexts. The results of our meta-analysis generally support our proposed model. We discuss implications and directions for future theory and research.

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1. Introduction

Successful teams must be able to adapt to changing demands (e.g., Burke, Stagl, Salas, Pierce, & Kendall, 2006). Competition, globalization, and technological changes have created a need for more flexible responses (Kozlowski & Bell, 2003; Volberda, 1996). In the past 15 years, management research has thus increasingly focused on team adaptation: the adjustments teams make when faced with emergent contextual changes and the outcomes of such adjustments (e.g., Baard, Rench, & Kozlowski, 2014; Burke et al., 2006). Although the literature on routine team performance has been reviewed (see Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Mathieu, Maynard, Rapp, & Gilson, 2008), we know much less about the characteristics and processes that influence successful team adaptation. Given that one of the primary reasons that teams are used is that they are thought to have adaptive advantages over individuals (Kozlowski, Gully, Nason, & Smith, 1999), an important next step is to move beyond routine team performance towards quantifying our understanding of team adaptation to non-routine circumstances.

A key question within the team adaptation literature revolves around understanding the varying effectiveness of team processes and emergent states across differing contexts. For example, communication has an equivocal effect on team performance in some adaptive contexts (Johnson et al., 2006; Moon et al., 2004; Waller, 1999), whereas in others, the effect is significant and positive (e.g., Grote, Kolbe, Zala-Mezo, Bienefeld-Seall, & Kunzle, 2010; Stachowski, Kaplan, & Waller, 2009; Summers, Humphrey, & Ferris, 2012). Similarly, team learning has a positive impact on performance in some situations (e.g., Woolley, Bear, Chang, & DeCostanza, 2013), but no effect in others (e.g., Vashdi, Bamberger, & Erez, 2013). We propose that inconsistencies of this type can be resolved by taking the *context* of the adaptive situation into account. We theorize that the effectiveness of adaptive responses to changes are bound by the nature of the change itself. In doing so, we address calls from researchers to consider the role of stimuli in theorizing about adaptation. For example, Baard et al. (2014) point out that we lack an understanding of "what it is to which an entity is adapting" and "what mechanisms underlie that particular form of adaptation" (p. 89). Similarly, Ilgen et al. (2005) and Maynard, Kennedy, and Sommer (2015) suggest that a more fine-grained understanding of team adaptation is needed. To this end, we develop and test a framework to organize the adaptive stimuli faced by teams, examining two distinct contextual moderators: (a) internal versus external changes (i.e., origin), and (b)

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temporary versus sustained changes (i.e., duration). We both integrate and differentiate within the team adaptation literature by developing a typology of stimuli which we use to formulate and test predictions for the effectiveness of teams in various contexts.

Our primary goal is to examine how team mechanisms (i.e., processes and emergent states) influence adaptive performance across differing contexts. This is critically important, as there is a great deal of variation between studies in (a) how researchers conceptualize and operationalize adaptation, and (b) the effect sizes reported in individual studies. The extant literature is broad, and encompasses a wide array of adaptive stimuli, including internal disruptions (e.g., communication breakdowns; LePine, 2003, 2005), structural alterations (e.g., team member loss; DeRue, Hollenbeck, Johnson, Ilgen, & Jundt, 2008), and external challenges (e.g., novel environments; Marks, Zaccaro, & Mathieu, 2000). Each of these studies has generated important inferences about team adaptation in specific contexts. However, it is unlikely that a team's responses will be similarly effective across different situations (cf. Johns, 2006), making the generalization of results and inferences difficult across studies. We argue that the reason that studies report inconsistent effects of team processes and cognition (e.g., communication, coordination, learning) on adaptive performance is due to the moderating role of context. Thus, our primary goal contributes to the literature by extending our understanding of when and why a team's response to an adaptive stimulus may be more or less effective.

The extant literature has matured to a point where an empirical review can quantitatively identify the effectiveness of specific team processes, both by context and in general. Thus, our secondary goal is providing an overall quantitative summary of the literature. We build on recent theoretical work that qualitatively reviews the process and predictors of successful team adaptation (Baard et al., 2014; Burke et al., 2006; Maynard et al., 2015). In their reviews, Maynard et al. (2015) develop a process model of adaptation, and Baard et al. (2014) provide a useful taxonomy of individual and team adaptation, reviewing different viewpoints on adaptation and whether it has been conceived as a process, individual difference, or as changes in performance. These theoretical works have provided important insights. However, a quantitative review of the adaptive process is a necessary next step in extending theory and guiding further conceptual development. Although we believe context to be an important source of variance, we also believe that an understanding of the adaptive process in general holds value.

Therefore, our goals are to (a) extend prior theories of team adaptation by examining the roles of differing adaptive stimuli (i.e., context), and (b) to empirically test predictions derived from existing theories of team adaptation. First, we briefly review prior work (e.g., Baard et al., 2014; Burke et al., 2006; Ilgen et al., 2005; Kozlowski et al., 1999; Maynard et al., 2015; Rosen et al., 2011), building a general model upon which we base predictions through-out the manuscript. Next, we develop a typology of adaptive stimuli and hypothesize that these contextual factors moderate the associations between processes and emergent states with team adaptive performance.¹ Along the way, we move towards our secondary goal of providing a quantitative review of the expected general effects among the primary variables of interest—adaptive mechanisms and team adaptive performance. Finally, we consider the associations of input factors with our variables of interest.

1.1. An integrated conceptual model of team adaptive performance

Consistent with both the input-mediator-output-input (IMOI) framework (Ilgen et al., 2005), and recent theoretical models (e.g., Burke et al., 2006; Maynard et al., 2015; Rosen et al., 2011), team adaptation is an unfolding process whereby factors associated with adaptability (i.e., inputs) influence adaptive mechanisms (i.e., team processes and emergent states). These mechanisms in turn affect team adaptive performance (i.e., task-related outcomes following changes), see Fig. 1. In Burke et al.'s (2006) model of team adaptation, adaptability is determined by relatively stable team characteristics, which are inputs that impact the start of the adaptive cycle; similarly, Maynard et al. (2015) view team adaptability as an *input* factor. Adaptability inputs build from individual adaptive abilities but are "capabilities that are critical long-term characteristics of team effectiveness" (Kozlowski et al., 1999, p. 242). At the team-level, inputs are typically conceptualized as team compositional factors such as abilities, dispositional traits, and knowledge and skills (Burke et al., 2006; Maynard et al., 2015; Randall, Resick, & DeChurch, 2011) that are functionally isomorphic to those at the individual-level (cf. Morgeson & Hofmann, 1999). Although typically conceptualized as input variables, certain adaptability "inputs" can improve through team interactions over time (Kozlowski et al., 1999), such as team knowledge or expertise. Inputs help to build a team's stable adaptive capacity-and we include them in our modelbut our primary theoretical focus is on processes and emergent states, which are more malleable and thus may be altered in reaction to adaptive contexts.

Team processes and emergent states (i.e., *adaptive mechanisms*) result from adaptability inputs and team interactions, and build on each other recursively, enabling a team to assess an adaptive situation, learn what is needed to respond to demands, and develop strategies and responses for successful adaptation (Burke et al., 2006; Maynard et al., 2015).² Team processes are "members' interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed towards organizing taskwork to achieve collective goals," (Marks, Mathieu, & Zaccaro, 2001, p. 357). Emergent states are "properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes," (Marks et al., 2001, p. 357).³ Emergent states both result from and precede processes, but are not processes themselves (Ilgen et al., 2005).

We focus on the processes and emergent states most relevant to adaptive performance—those that are enacted and emerge *during or following a change*—rather than the myriad factors that are helpful for routine team performance (e.g., Ilgen et al., 2005; Mathieu et al., 2008). For example, LePine (2003) examined role structure adaptation, a set of behaviors that involve reactive adjustments to the role structure system, such as changing communication patterns within the team. Beersma et al. (2009) examined the degree to which team members wasted resources as an indicator of suboptimal coordination behavior, whereas teams that "'think on their feet' and react swiftly to unexpected events under dynamic conditions" (Waller, 1999, p. 127) are seen as engaging in stronger team processes within an adaptive context.

¹ Although the effectiveness of inputs (e.g., adaptability-related factors such as team composition or leader briefings) may vary based on stimuli, we focus on mechanisms for two reasons. First, processes and states are more malleable and likely to change in response to stimuli compared to inputs, which are more stable. Second, few primary studies examine inputs across contexts, prohibiting stable meta-analytic tests.

² Burke et al. (2006) refer to both *team adaptation* and *adaptive team performance* as behaviors. We differentiate processes from performance here, consistent with the IMOI framework and with Beal, Cohen, Burke, and McLendon (2003), who argue that performance behaviors are distinct from goals achieved (i.e., outcomes).

³ Emergent states may be classified as inputs; however, because they represent the product of team experiences, they are generally viewed as proximal mechanisms (e.g., mental models; Marks et al., 2001).

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