

TOWARD A THEORY OF RAPID CREATIVITY IN TEAMS

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Abstract

Team creativity presents an interesting dilemma. On one hand, organizational teams are increasingly being asked to produce creative outcomes rapidly and within tight timelines. On the other hand, teams need sufficient time to explore different perspectives, play with ideas, and overcome the process losses that occur from working in interdependent groups. In this chapter, we address this dilemma by developing a model for understanding how teams can maximize the speed of the team creative process. We propose that teams' potential for rapid creativity is a function of aligning the team structure and standardization of the creative process with the team development cycle. When these three elements are aligned, teams are more likely to generate creative outcomes in a rapid manner.

Contemporary organizations confront a multitude of competitive pressures, ranging from increased globalization of markets, consolidation, technological change, and uncertain economic environments. In order to survive and prosper in spite of these pressures, organizations must be able to generate innovative products, practices, and services that enhance their competitive position in the marketplace (Kanter, 1988; Nonaka, 1991). In fact, organizational researchers have shown that a firm's innovative capacity is positively related to important outcomes such as profitability, product quality, and market value (Cho & Pucik, 2005; Nystrom, 1990).

Considering that employee creativity provides the foundation for organizational creativity and innovation (Amabile, 1988; Van de Ven, 1986), it is essential that employees are creative in their work and that we, as organizational scholars, discover ways to enhance this creativity.

Concurrent with the increasing importance of creativity in organizations has been a shift from work organized around individual jobs to team-based work structures (Kozlowski & Bell, 2003; Ilgen, 1999). Considering that team-based work structures offer access to a diverse set of skills and perspectives, scholars have and continue to propose that organizing employees into teams is one potential way to enhance the creative capacity of the workforce (Amabile, 1996; Drazin, Glynn, & Kazanjian, 1999; Gilson & Shalley, 2004; Pearsall, Ellis, & Evans, 2008). Teams offer members the opportunity to interact with people from different backgrounds and who have different perspectives and approaches to their work. This diversity of viewpoints is thought to enable new pathways of thought and action and ultimately stimulate creative processes such as linking ideas from multiple sources and seeking novel ways of performing a task (De Dreu & West, 2001). Thus, one possible conclusion from this research is that organizations should seek to enhance creativity by furthering their use of team-based work structures.

On the other hand, there are several reasons why we might question the basic assumptions used to imply that team-based work structures enhance creativity. The most obvious is the “value in diversity” hypothesis, which research frequently draws into question. For example, researchers have found that diversity can actually impede creativity by inducing within-team conflict and negatively influencing the exchange of ideas (Ancona & Caldwell, 1992; Pelled, Eisenhardt, & Xin, 1999; van Knippenberg, De Dreu, & Homan, 2004). Beyond this, however, is a dilemma involving issues related to time and efficiency. In order to survive, contemporary organizations must produce and select innovative ideas rapidly and within extremely tight timetables (Christensen, 1997). Yet, research suggests that sufficient time to think creatively, explore different perspectives, and play with ideas is important for promoting creativity, and without sufficient time, creativity suffers (Amabile & Gryskiewicz, 1987; Andrews & Smith, 1996; Elsbach & Hargadon, 2006). In support of this assertion, Gilson and Shalley (2004: 467) suggest that “creativity on the job is still difficult due to time pressures to get the job done. It becomes easy to fall back on old routines.” Unfortunately, the natural inefficiencies and process losses associated with team-based work structures and multiple people trying to combine their best efforts simultaneously should only exacerbate this problem. In brainstorming groups, where creativity is the explicit goal, these inefficiencies can be so severe that research has concluded creative processing may occur more quickly and effectively when carried out by individuals instead of teams (Mullen, Johnson, & Salas, 1991). This leaves us with the fundamental question of how can teams organize the creative process in order to rapidly generate creative ideas.

In this paper, we address this question by developing a model of rapid creativity in teams. Consistent with prior research, we conceptualize creativity as the production of ideas that are

novel and useful to the organization (Amabile, 1996; Zhou & Shalley, 2003). Ideas are considered novel if they are unique relative to other ideas currently available in the organization, and usefulness is a function of how valuable the idea is to the organization. We conceptualize speed in terms of the amount of time consumed by the team creative process. Thus, rapid creativity is defined as the degree to which creative outcomes are achieved with minimal time requirements.

There are a number of examples of rapid creativity to be drawn from organizational life, but perhaps the most famous is the “Manhattan Project,” an effort organized by the United States, United Kingdom, and Canada with the goal of developing an atomic bomb before Nazi Germany, and therefore end World War II. This contentious top-secret project, initiated after it was revealed Germany was developing a nuclear weapon, brought together the foremost scientists of the day, from a wide array of nationalities and expertise, and required what is still considered one of the most complex and ambitious coordination efforts in history – all under incredible time pressure (Kelly & Rhodes, 2007). Although the results of the project are highly controversial, it is heralded for achieving its goals in an astoundingly short period of time. Although few teams will ever be tasked with a project of such magnitude, work teams face many situations in which they must develop creative solutions to problems in very short periods of time. Indeed, in the modern workplace, where the speed of innovation is central to competitive advantage, many work teams do not have a choice but to create very rapidly.

Although the literature has been thoughtful about the impact of team dynamics, culture, and composition on team creativity, very little research has explored how these elements evolve over time. In fact, since most research on team creativity has examined teams at a single point in time, it seems likely that our current understanding of team creativity is bounded in time. This is

important because team functioning differs across stages of team development, and we argue that a team's capacity for rapid production of novel and useful ideas is connected to the team's development. Specifically, as illustrated in Figure 1, we propose that teams' potential for rapid creativity is enhanced by aligning three elements of team functioning: (a) team creative process, (b) team developmental phase, and (c) team structure and process standardization. In particular, we theorize that the appropriate team structure and standardization applied to the team creative process should be a function of the team's developmental stage. When these three elements are aligned, teams are more likely to rapidly generate creative ideas. To develop our model of rapid creativity in teams, we build upon and integrate theory on the creative process, team development, and team structure and process standardization to arrive at a process-oriented perspective of how teams can rapidly generate creative solutions.

Insert Figure 1 about here

KEY CONCEPTS AND TERMINOLOGY

We begin by delineating the key concepts and terms that we use in developing our theory of rapid creativity in teams. First, we specify how we are conceptualizing the team creative process. Because existing literature has generally focused on individual-level creativity processes (Shalley, Zhou, & Oldham, 2004), it is important that we first make explicit our assumptions about the team creative process. Second, since a key tenet of our theory is that how teams organize for rapid creativity will vary across the team development cycle, we then present a model of team development that provides the foundation for our theory building. Third, we identify and describe key elements of team structure and process standardization that help inform

our theorizing about how teams should organize for rapid creativity. After discussing each of these individual components, we then present an integrative model that explains how these elements come together to form a theory of rapid creativity in teams.

Team Creative Process

Creativity as a process is concerned with the path toward producing creative outcomes, irrespective of whether the actual outcomes are deemed creative or not (Gilson & Shalley, 2004). Although recent literature has examined creative processes across individual, group, and organizational levels of analysis (e.g., Drazin et al., 1999), most theory and research on the creative process has been conceptualized at the individual level. For example, Torrance (1988) suggested that creativity is a process of individuals sensing problems, making guesses, formulating hypotheses, communicating ideas to others, and contradicting conformity. Similarly, Amabile (1988; 1996) modeled creativity as an individual-level cognitive process consisting of multiple stages. We use Amabile's model of creativity as a starting point for our own theorizing because of its explicit discussion of the link between individual and team-level creative processes.

Amabile (1988; 1996) assumes individual and team-level creative processes to be of similar composition since both involve cognitive processes of idea generation and idea testing. We make a similar assumption. For example, individuals might develop ideas on their own, present these ideas to the team, refine these ideas via group discussion, continue thinking about and refining the ideas on their own, and then return to the team to further modify the ideas. In this sense, team-level creativity processes involve individual-level acts of creativity as well as team-level interaction and coordination. Moreover, in team contexts, it is often difficult to differentiate the input and contributions of individuals from those of the team (Sutton &

Hargadon, 1996). This interplay between individual-level acts and team-level processes has led researchers to conclude that teams go through a creative process that is similar to that of individuals. According to Amabile (1996), this process consists of five stages: (a) problem and task identification, (b) preparation, (c) response generation, (d) response validation and communication, and (e) idea selection. According to this process, teams identify a problem requiring creative ideas and then begin to prepare by developing new knowledge or reactivating stored knowledge that is relevant to the particular problem set. Teams then engage in a search process whereby they generate as many novel and potentially useful ideas as possible. Once a set of possible ideas has been established, the team then shares those ideas within the team and begins to evaluate the ideas against factual knowledge or other criteria that enable a judgment of novelty and usefulness. Upon evaluating the ideas, a creative idea is selected or the process is initiated again.

Engagement in this creative process has been suggested as a critical activity for team success (Drazin et al., 1999), and a small body of empirical research supports this assertion (e.g., Leenders, van Engelen, & Kratzer, 2003; Taggar, 2002). However, we propose that there are certain nuances in the team creative process that are not currently addressed in the existing research. For example, research suggests that teams should adapt their processes in ways that account for the natural evolution of team development (Kozlowski, Gully, Nason, & Smith, 1999; Marks, Mathieu, & Zaccaro, 2001), and it seems reasonable to assume that how teams approach the creative process might vary depending on the team's developmental stage. Moreover, it is unclear from the existing literature how different strategies, structures and approaches to the creative process impact the team's capacity to produce creative outcomes, and the extent to which teams do so rapidly. In sum, the extant literature provides a rich descriptive

account of the creative process, but we have a limited understanding of how teams should organize the creative process, what factors influence these choices, and how these choices influence how fast teams generate creative outcomes.

Team Development Cycles

Much of the research on team creativity has occurred in laboratory settings where team members often have no prior history with each other, no established patterns of interaction, no knowledge of each other's unique skills or expertise, and a weak incentive to create a mutual understanding among team members (Kurtzberg & Amabile, 2000). Although this research design is sufficient for many questions related to team creativity, the context of this research does limit our understanding of team creativity in important ways. In particular, current research does not address how team creative processes evolve over time, or how these creative processes operate at different stages of the team's life cycle (Shalley et al., 2004).

The extant literature consists of many different conceptual models of team development. Kozlowski and colleagues (1999) conducted a review of the team development literature, and based on this review, developed a model of team development that provides a conceptual integration across the existing theories and perspectives in the literature. In this model, Kozlowski et al. suggest there are four general phases of team development: (a) team formation, (b) task compilation, (c) role compilation, and (d) team compilation. To date, no research has explicitly examined how the team creative processes operates across these four phases, but there are several insights about team creativity and development that we can surmise from existing research.

In the *team formation* phase of team development, team members are primarily focused on seeking information and learning about other team members. Developing this social

knowledge and resolving any interpersonal issues must occur before individuals will devote sufficient attention to work tasks – such as creating novel and useful ideas (Feldman, 1981; Katz, 1980). This is also the stage of team development where teams establish their shared climate perceptions and common goals. Considering that shared goals and climate perceptions are important predictors of creative processing (Shalley & Gilson, 2004), this first phase of team development should have considerable influence in shaping the team creative process. In particular, to establish a context supportive of creativity, it is likely important that team members be allowed to socialize, disclose interpersonal knowledge, and build strong interpersonal relationships during the formation phase.

In the second phase of team development, which is referred to as *task compilation*, team members shift their attention toward their own task proficiency and competence. Although individuals coordinate with the activities of others, team members are primarily self-focused on their individual task performance during this phase. It is critical during this phase that the team norms, climate and goals established in the prior stage be reinforced, but the natural focus of team members is on establishing competence with respect to their own individual task elements. In terms of the creative process, given the importance of building individual task competence at this stage, teams should likely be organized in such a way that takes advantage of the focus on individual task elements while also reinforcing team norms and a supportive climate for rapid creativity.

The third phase of team development is called *role compilation*. In this stage, team members develop an understanding and appreciation for the mutual coordination requirements between themselves and others in the team. At this point in the team's development, team members differentiate and formalize their role in the team and learn how their role relies on and

informs other roles in the team. This is the point in the team process where team members learn to pace, sequence, and time their respective behaviors. The role knowledge developed here is generally dyadic in nature; in other words, team members develop a rich appreciation for the dyadic interdependencies with other individuals in the team but do not establish a well developed understanding of how the team as a whole works. In terms of facilitating a rapid team creative process, teams in this phase would likely benefit from a structure and process that emphasize role differentiation but do so in such a way that makes clear how the roles are linked.

In the final phase of team development, called *team compilation*, team members begin to view the team as a system of role networks linked by complex task interdependencies. By this point in the team's development, team members have not only developed social norms and processes, but task-related processes are also well established and embedded in the team's culture. It is at this point when team members are able to work together without significant process loss and do not require a great deal of direction or oversight with respect to specific team processes. As a result, teams in this final stage of development will likely be most capable of rapid creativity when allowed to determine and adapt their own processes and approaches to organizing the creative process. Organizing the team creative process in this way will likely take advantage of the creative benefits of autonomy and flexibility while also realizing some of the efficiencies associated with team self-management (Manz & Sims, 1987).

Team Structure: Centralization and Departmentation

Although team development cycles will shape how teams should organize for rapid creativity, we posit it is through team structures and process standardization that teams adapt to different development cycles such that they are able to achieve rapid creativity. To conceptualize team structure, we draw from Burns and Stalker's (1961) theory of mechanistic and organic

organizational forms, which conceptualizes team structure along two dimensions: centralization and departmentation (Wagner, 2000). *Team centralization* reflects whether authority and decision rights are concentrated or held by a single member of the team (e.g., the team leader), or whether authority and decision rights are dispersed such that team members have significant autonomy in making decisions (Pugh, Hickson, Hinings, & Turner, 1968). *Team departmentation*, on the other hand, reflects the degree to which team members' formal roles are specialized functionally (i.e., a functional team structure), or whether team members' roles are as undifferentiated generalists where expertise is shared among team members (i.e., a divisional team structure). These two forms of departmentation speak to how a team's task role and responsibilities are organized, with the key difference being that in a functional team structure, team members are responsible for specific, individualized tasks; in a divisional team structure, team members are responsible for a variety of tasks, therefore requiring greater interdependencies among team members in order to complete tasks (Hollenbeck et al., 2002). These structural forms are independent of team members' individual skills or areas of expertise, although they may often be aligned. The centralization and departmentation dimensions of team structure form the basis for structural contingency theory, which suggests these structural dimensions differ in their fit with various task environments and, as a result, differentially impact performance outcomes (Drazin & van de Ven, 1985; Hollenbeck et al., 2002).

Prior research has established that features of the team context, in particular team composition and task design, are important antecedents to team creativity (e.g., Gilson & Shalley, 2004). However, team structure as a feature of the team and its potential influence on creativity has not been considered. Nonetheless, there are insights from existing research on team structure that suggest these structural concerns might be important for developing a theory of

rapid creativity in teams. For example, the degree of centralization in the team should be an important dimension of structure for team creative processes, given that autonomy is often associated with higher levels of creativity (Amabile et al., 1996; Zhou, 2003). Thus, it might be the case that decentralizing control over certain aspects of the team creative process will promote greater creativity, and there is some evidence to suggest that decentralized structures enhance the speed and efficiency of team processes (Faucheux & Mackenzie, 1966; Shaw, 1981; Turner, 1992). On the other hand, the extent to which the team creative process can be decentralized without launching the team into a state of chaos likely depends on the team's developmental phase.

With respect to team departmentation, structures that promote functional specialization are often associated with higher levels of speed and efficiency than are divisional, undifferentiated structures. On the other hand, divisional structures are typically seen as more adaptive when faced with novel and disruptive situations – such as those requiring creativity and problem solving (Hollenbeck et al., 2002). Thus, based on prior research, it seems that both dimensions of team structure, centralization and departmentation, will shape the extent to which teams can generate creative solutions in a rapid manner. Nonetheless, it is clear from existing research that there is no single best team structure for all task environments, and we expect that the most appropriate team structure will vary across the creative process and team life cycle.

Process Standardization

The standardization of work practices is often employed to improve unit performance by reducing the variance in how work is performed; or in other words, standardizing the approach to work across people, places, and time (March, 1991). In recent years, organizations have begun to standardize work practices and processes in teams so that individual team members have a

common approach for how work is to be performed in the team (Vogus & Welbourne, 2003). This standardized approach to teamwork aims to enhance team performance by minimizing ambiguity, managing complexity, avoiding costly mistakes, and ensuring that accurate work strategies are followed by all team members.

Traditionally, creativity and standardization have been assumed to be antithetical. Creativity scholars often frame and discuss creativity as a process of change and adaptation in response to environmental uncertainty. In fact, theories of creativity champion the idea of creating as many novel and unique ideas as possible for how to get work accomplished, and experimenting with new and different strategies is the norm rather than the exception in the creative process. On the other hand, standardization is derived from Taylor's (1911) views on scientific management and suggests that routinization is the key to coping with environmental uncertainty and complexity. From this perspective, performance is enhanced when the variation in work practices is reduced and consistently applied and adhered to across people, time, and place.

Despite the seemingly contradictory nature of creativity and standardization, there is some research that suggests the two are not mutually exclusive and can actually complement each other (Feldman & Pentland, 2003; Gilson et al., 2005; Shank, Niblock, & Sandalls, 1973). For example, Gilson and colleagues (2005: 523) found that a combination of creativity and standardization led to higher team performance than either creativity or standardization on its own, leading the authors to suggest that "high levels of creativity combined with low levels of standardization may result in chaos and not be all that beneficial." We concur that creativity and standardization can be complementary, but we also posit that there is a more nuanced connection between the two concepts. In particular, for achieving rapid creativity in teams, we expect that

the optimal degree and form of process standardization varies across the team creative process. We also expect the importance of standardization will vary across the team development cycle. We propose that there is an appropriate fit between standardization and the team development cycle, and that this notion of fit unveils a more complex interplay between standardization and the team creative process that helps explain the disparate research findings on this topic in the literature.

AN INTEGRATED MODEL OF RAPID CREATIVITY IN TEAMS

The notion of rapid creativity presents teams with an interesting dilemma. Whereas time is a finite and highly constrained resource given the pace of change and innovation in contemporary organizations, the team creative process requires sufficient time to play with ideas and explore different perspectives (Shalley, Zhou, & Oldham, 2004). This dilemma provides the motivation for our theorizing—if teams need time to be creative but time is highly constrained, then how should teams organize such that they are able to pursue and develop creative outcomes in a timely manner?

We posit that one possible answer to this question is grounded in an understanding of how teams can best structure and organize the team creative process according to the team development cycle. Specifically, we theorize that the appropriate team structures and degree of process standardization in the team creative process ought to be determined by the team development cycle, and that alignment among these elements provides the necessary conditions for teams to rapidly produce creative outcomes. In this sense, team structure and process standardization serve as “dials” that teams can manipulate in ways that help facilitate a rapid team creative process. To develop the theoretical rationale for these arguments, we organize our discussion by the four phases of team development. For each phase of team development

identified by Kozlowski and colleagues (1999), we posit that there are optimal team structure and process standardization strategies that will facilitate rapid creativity. Our core propositions are summarized in Figure 2.

Insert Figure 2 about here

There are several assumptions implicit in our model, many of which illuminate important boundary conditions for our theorizing and that are important to clarify before presenting our framework. First is the assumption that the time required to move through the team creative process is independent of the time it takes to progress through the team development cycle. In other words, teams may engage in and complete creative projects (or even several) without necessarily progressing to the next phase of team development. Conversely, teams may move through team development phases without completing a full cycle of the team creative process. We also assume that teams can be creative at any phase of the team development cycle, but that they do so in different ways and therefore should organize the team structure and process according to the unique challenges and opportunities present in each distinct phase of development. Therefore, we orient our model toward how the team creative process should be structured and standardized in order to optimize the speed of the creative process at each phase of team development.

A related assumption is that teams are able to change their structures and approaches to standardizing the creative process to fit the developmental phase they are in. This approach emphasizes teams' abilities to react and adapt to the demands of the task and/or environment. Research on team structure supports this assumption, suggesting that not only are team structures

such as departmentation and centralization malleable in teams, but that adapting these structures to fit the task environment actually enhances team performance (e.g., Hollenbeck et al., 2002; Ellis, Hollenbeck, Ilgen, & Humphrey, 2003; Moon et al., 2004).

Similarly, our model assumes that team structure, standardization, and team development are independent. As noted earlier, we presume that different team structures may be employed by a team at any point during the team's development, and although the team structure may aid (or hinder) the team development process (e.g., by providing opportunities to develop social knowledge or make role interdependencies more apparent), teams may employ different structures at any given stage of development.

Although we develop our theory of rapid team creativity in such a way that follows the team development cycle linearly, from the infancy of new teams to the maturity of established teams, we are not implying that teams always start at the beginning of this life cycle and follow it through the end. Surely, many teams engaging in a creative project will bring preexisting skills, knowledge, and experiences that will shape the team process and advance the team's capacity for rapid creativity. Other teams may unexpectedly need to step backward or begin the process again. Thus, we assume that teams may enter the process we outline at any point in the development cycle. In addition, there may be feedback loops that impact team development or the creative process. For example, if the creative process is structured in such a way that diminishes or suppresses the contributions of certain members, resulting conflict may force the team back into earlier stages of the creative process before it can generate an effective solution, thereby slowing the creative process.

Finally, we build our model of rapid creativity in teams with the assumption that it can be applied to a wide variety of different team types and tasks. Although the majority of the research

on creativity in teams has focused on teams specifically tasked with generating novel solutions to specific problems (e.g., product development teams), many different types of teams may engage in the creative process, regardless of whether creativity is the explicit goal of the team. For example, a quality control team may find itself developing a new approach to its work, even though the team's stated goal is focused on quality and not creativity. We therefore aim to develop a theory of rapid creativity that applies to any team engaging in the creative process. Likewise, our theoretical model is likely applicable to both short- and long-term teams. Whether a team performs together for a single task episode or over multiple task episodes, we expect the same processes and organizing principles to facilitate rapid team creativity.

Phase 1: Team Formation

The focus of teams during the formation phase is primarily on developing social knowledge among team members and establishing shared norms, climate perceptions and goals. During this stage, the nature of the team, its goals, and the fit of individuals within it have not been established, thus creating a high degree of social uncertainty. This social uncertainty has several important implications for team creativity. In particular, team members do not have a well developed understanding of other team members' areas of expertise or creativity-relevant skills and experience. Based on prior research documenting the value of diversity and transactive memory for creativity (Kurtzberg, 2005; DeDreu & West, 2001; Kurtzberg & Amabile, 2001; Sutton & Hargadon, 1996), we expect that this lack of understanding about other team members limits the team's ability to rapidly draw from its sources of expertise and therefore hinders the team's ability to rapidly generate creative outcomes. Moreover, teams in this stage do not yet have a shared climate for creativity or norms for how the creative process should flow, both of

which have been positively linked to the production of creative outcomes (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Gilson & Shalley, 2004).

In response to this social uncertainty within the team, individual team members are likely to focus on trying to make sense of their new work and team environment (Louis, 1980). Until shared norms, climate perceptions, and interpersonal knowledge are developed, team members will have difficulty focusing on their tasks in a productive and rapid manner. Thus, in terms of facilitating rapid creativity, it is essential that the team creative process be structured and organized in a way that facilitates mutual understanding within the team regarding team members' creativity-relevant skills, abilities, and attitudes, as well as the development of shared norms and climate perceptions related to creativity. Newly formed teams, such as those studied in prior laboratory research (e.g., Taggar, 2002), may arrive at creative outcomes without these elements in place, but we expect these teams do so in a manner that is slower and consumes greater use of team resources than would otherwise be required.

To overcome the barriers to rapid creativity during the team formation stage, we posit that teams should be organized in a *functionally specialized* structure where team members interact and work together in ways that maximize the saliency of their respective functional expertise, skills, and knowledge. This form of departmentation should help facilitate a shared understanding among team members regarding their unique contributions to the team creative process, and help reduce social uncertainty in the team by requiring team members be highly interdependent in their work. Moreover, because of the high degree of interdependencies introduced by a functional departmentation, we expect teams will quickly develop shared norms and climate perceptions about the creative process. This is in contrast to a less differentiated, divisional team structure where functional expertise is not as salient and the interdependence

between team members is less. Although these outcomes do not represent creative results per se, they must be established and resolved before the team will be able to rapidly generate creative outcomes.

Given that teams in this formation stage probably have not worked together in the past and norms for the creative process are not in place, we also propose that decisions and authority related to the initial stages of the creative process, namely *problem identification* and *preparation*, should be centralized. Given the lack of experience working together on creative tasks and the high degree of social uncertainty present during this stage of team development, identifying the problem and preparing the team to rapidly draw from its resources and expertise will be quite difficult for the team to do on its own. A shared understanding of the problem and how team members should interact to address the problem will likely be hard to come by in newly formed teams, and thus it will be more efficient for the *early* stages of the creative process to be centralized in newly formed teams. On the other hand, we posit that the *later* stages of the creative process, especially *response generation* and *validation*, should be decentralized. Team members' motivation to be creative increases the more they feel empowered and autonomous during the creative process (Gilson & Shalley, 2004), so decentralizing responsibility for the later stages of the creative process ought to provide team members with the desired autonomy and freedom for creativity. Moreover, by decentralizing the response generation and validation processes, team members are indirectly encouraged to work together, share and debate their unique perspectives, and integrate others' perspectives with their own, all of which should help reduce social uncertainty and facilitate the development of shared norms and climate perceptions in the team, factors which have been shown to lead to creativity in work teams (Hargadon & Bechky, 2006).

Despite the benefits of a functional and centralized team structure for rapid creativity in newly formed teams, neither of these structural choices addresses the fact that team members during this stage do not share a common way of approaching the creative process. We assume in our theorizing that a common approach among team members to the creative process is a necessary condition for rapid creativity, because of the importance of shared mental models in enabling teams to quickly generate effective solutions. When this common approach is not present, as with newly formed teams, we expect teams will need to formulate and adopt standardized practices for the team creative process. Standardizing the team creative process may require an initial use of team resources that detracts from the speed of the creative process, but in the long run, there are several reasons why the time and energy put toward developing a standardized approach for team creativity will pay off with more rapid generation of creative outcomes.

During the formation stage, team members put less focus on the task of generating creative outcomes and instead devote more attention and cognitive resources to developing social knowledge and relationships. Thus, standardizing the creative task-related processes should reduce the cognitive demands of the creative task and reduce the inefficiencies introduced into the process by team members' preoccupation with interpersonal issues. Second, standardizing *all facets* of the team creative process during this stage should help facilitate the development of shared norms and guidelines for rapid creativity. Sutton and Hagadon's (1996: 694) study of the firm IDEO noted that creativity was enhanced by adopting rules such as "(1) defer judgment, (2) build on the ideas of others, (3) one conversation at a time, (4) stay focused on the topic, and (5) encourage wild ideas." We posit that standardizing the team creative process according to similar guidelines will ensure they become institutionalized as normative procedures in the team, and as

a result, enhance the speed with which teams generate creative outcomes going forward. These standardized processes might include specific guidelines for identifying the problem and its key components, a standard approach for identifying key centers of expertise within the team, or specific validation metrics and protocols for evaluating ideas for their novelty and usefulness. Finally, greater standardization of the team creative process should help develop a climate for rapid creativity where team members collectively come to believe and value the idea that an organized and deliberate team creative process not only promotes creativity but also efficiency.

In sum, we posit that a functional team structure, centralization of early phases of the team creative process, decentralization of later phases of the team creative process, and a high degree of standardization throughout the creative process will help teams in the formation phase of development generate creative outcomes more quickly. Moreover, these structural and organizing principles should help develop a set of informal norms and processes that enable a more rapid team creative process as the team evolves and develops over time.

Phase 2: Task Compilation

In the task compilation phase of team development, team members have resolved much of the social uncertainty in the team and, as a result, shift their attention toward their own individual task responsibilities. At this stage of the team life cycle, team members still do not have a deep understanding for how their individual task elements fit together, and the focus on their own tasks has important implications for how teams should organize for rapid creativity. Most importantly, the team structure and the degree of standardization in the team creative process should support the individual-level task focus of team members while at the same time establishing a foundation for more coordinated creative acts.

In terms of the departmentation structure, we posit teams in the task compilation phase should maintain a *functionally specialized* structure where individuals can focus on generating creative ideas based on their own unique knowledge and expertise. This functional structure could be enacted by having team members generate ideas individually, or team members could be organized into sub-groups consisting of individuals with similar backgrounds and expertise. These homogenous sub-group structures are considered efficient in the task compilation phase, but not the team formation phase, because of the social knowledge that has now been established among team members. Maintaining this functional structure enables individual team members to focus on generating ideas based on their own domain of expertise. By designing the team structure in such a way that allows team members to focus on their own task elements, the creative process should unfold more rapidly than if team members were forced to consider the broader interdependencies between individual task elements. However, a functional structure also requires that team members come together during the validation and idea selection phases of the team creative process to share and debate their unique perspectives on why certain ideas are more or less creative. This process of integrating unique perspectives should help facilitate a common understanding among team members regarding how their respective domains of expertise and knowledge are interdependent and complement each other in the generation of novel and useful ideas. Thus, not only should a functional team structure during this stage of team development lead to a rapid team creative process, but the structural choice also helps move team members beyond their current individual focus and facilitates a richer understanding of the team.

Similar to teams in the formation stage, we expect teams in the task compilation phase will achieve a more rapid team creative process if they maintain a balance between centralization

and decentralization. Establishing a common problem definition and clearly identifying individuals' functional domains of expertise and knowledge are essential for facilitating rapid creativity in teams. Given that team members are focused on their individual task responsibilities during this stage and still do not have a rich understanding of the interdependencies between individual components of the team, we posit that the *problem identification* and *preparation* stages of the creative process should continue to be centralized. Centralization of these early phases of the team creative process should help the team more quickly develop a common frame for the team creative task and a more accurate understanding of team members' unique perspectives and contributions. However, once a common problem definition has been established and functional domains of expertise identified and structured accordingly, the team creative process should be decentralized so that team members have autonomy over *idea generation* and *validation* processes. Not only is this important for motivating team members to generate more creative ideas, but decentralization should also help facilitate the evolution of team members' understanding of how individual elements of the team fit together. Decentralization will require that team members listen to and integrate others' perspectives in order to arrive at a collective decision regarding which idea(s) are most creative.

Although we expect the optimal departmentation and centralization structures will be similar across the formation and task compilation phases of team development, we expect that the task compilation phase offers an opportunity to reduce the formal standardization associated with certain aspects of the team creative process. We initially proposed that a high degree of standardization throughout the team creative process was appropriate during the formation stage. As a result of this standardization, team members should have begun to develop common norms and guidelines for a rapid team creative process. Thus, in the task compilation phase, our aim is

to reinforce these norms and guidelines while also reducing the amount of formal standardization required to facilitate the team creative process. Our assumption is that if we can reduce the amount of formal standardization required without incurring any increased process losses in the team, the speed of the team creative process will be enhanced. We expect this can be achieved by maintaining standardized protocols and practices for the early and late stages of the team creative process, but reducing the formal standardization present in the intermediate steps of the team creative process. The early and late stages of the team creative process, namely the *problem identification*, *preparation* and *validation* stages, are susceptible to inefficiencies. This is because team members do not have a common frame of the team problem or understanding of how the individual components of the team best fit together to generate creative outcomes. Standardized processes and practices can help overcome these inefficiencies. On the other hand, at this point in the team's life cycle, the *response generation* stage of the team creative process should be able to occur in a rapid manner without formal standardization. The norms and guidelines developed in the formation stage, combined with a functional and decentralized structure, should enable team members to rapidly generate creative ideas.

In sum, we expect the team creative process to be most efficient during the task compilation phase of team development when teams maintain a functional team structure, centralize early phases of the team creative process, decentralize later phases of the team creative process, and relax the degree of standardization during the intermediate steps of the creative process (e.g., response generation).

Phase 3: Role Compilation

The degree to which team members recognize the interdependencies between their role in the team and other team members' roles is the distinguishing factor of the role compilation

phase. In this phase, team members develop a rich understanding of the mutual coordination requirements between themselves and others in the team, and are especially aware of how others' roles in the team are differentiated from their own. This focus on role differentiation among individuals in the team has several important implications for how teams should organize for rapid creativity. First, the team structure and organizing principles should emphasize the dyadic interdependencies among team members' roles as they relate to generating and evaluating creative outcomes. Second, team members' knowledge and understanding of their role in the team and how their role fits with other roles in the team offers an opportunity to enhance efficiency by granting team members with more control and authority over the team creative process. This is in stark contrast to earlier phases of team development, where team members had a more limited sense for how the individual components of the team fit together.

The major evolution in the team creative process during the role compilation phase should come in the form of team structure. We do not expect the increased focus on role differentiation to reduce the need for standardized practices and approaches during the early and late stages of the team creative process, nor should this aspect of the team's development require any additional standardization during the intermediate steps of the creative process. Thus, we propose maintaining a moderate amount of standardization where the *problem definition*, *preparation*, and *validation* phases are accompanied with formal standardized practices, but the *response generation* process is subject to less formal standardization. In terms of team structure, however, we propose there are several changes that should occur for teams entering the role compilation phase of team development.

First, in terms of departmentation, teams should move to a more undifferentiated, divisional structure where team members are organized not as functional specialists but rather as

generalists who are expected to integrate across functional domains to more rapidly generate creative outcomes. This departmentation structure should enhance the speed of the team creative process for two reasons. The first reason is that, in comparison to specialized team structures, divisional structures enhance communication and information-sharing between functional domains and thus should enable more effective coordination across these domains in generating creative outcomes. The second reason is that divisional structures enhance the team's ability to adapt to novel and complex environments. Situations requiring creativity are often described as novel and complex (Oldham & Cummings, 1996), and so in the role compilation phase, a divisional team structure should enable the team to generate creative outcomes with minimal loss of time and resources.

In terms of centralization, we propose that teams should move to a more decentralized structure where the *problem identification* process is centralized but all other phases of the team creative process are decentralized. It is important to centralize the problem identification phase because team members, even in the role compilation phase, do not have a rich understanding of how external events and problems impact the team as a whole. Instead, team members focus on the implications for their role in the team and how their role connects to others' roles in the team. In this phase, team members are still not capable of viewing the team as a whole unit. Thus, it is important that the team develop a common understanding of the problem before engaging in the creative process, and centralization of the problem identification task offers an efficient way of accomplishing this. Once the problem has been identified and the parameters of the creative process defined, we propose that the rest of the team creative process (*preparation, response generation, and validation and selection* of an outcome) should be decentralized. The already established norms and climate for creativity, combined with greater autonomy in the creative

process, should enhance the speed with which teams generate creative outcomes. Team members should be more intrinsically motivated to engage in the creative process, and the established norms and climate for creativity should provide the necessary direction required to more quickly transform these motivational resources into creative outcomes.

In sum, for teams in the role compilation phase, we propose that a divisional structure combined with moderate standardization and minimal centralization will result in the most rapid generation of creative outcomes for the team.

Phase 4: Team Compilation

The final phase of team development is team compilation. By this stage, team members have acquired a rich understanding of and appreciation for the complex role linkages and interdependencies in the team. This is the developmental stage where team members begin to view the team as a system of interdependent roles and networks. Because of this knowledge, teams are able to maintain the coordination and pacing required for adjusting to novel task demands and synchronizing the sequence of activities to avoid bottlenecks and overload situations. In terms of team creativity, this ability to collectively balance workload among team members and monitor internal team processes contributes to a team's ability to dynamically adapt the team creative process in ways that can maximize speed. Moreover, teams in this phase are able to self-manage without much outside intervention. Considering that self-managing teams are often considered more efficient than teams with formal centralization of leadership or oversight (e.g., Manz & Sims, 1987), we propose that team structure and standardization processes should be organized such that teams in this developmental phase are fully autonomous units with few boundaries between team members.

In terms of team structure and departmentation, we expect that maintaining the undifferentiated, divisional team structure established in the role compilation phase will maximize the speed of the team creative process in this phase as well. As stated previously, we expect the team to have already established norms for working together and a climate that supports rapid creativity. These features of the team were established in the earlier phases of the team life cycle. The speed with which teams coordinate the creative process should only increase in the team compilation phase as team members operate with a greater understanding of the nuances for how team member roles are interdependent and interact to generate creative outputs. Moreover, by minimizing the functional boundaries between team members, an undifferentiated, divisional team structure should enable team members to more quickly manage and adapt the team creative process for any particular problem requiring creativity.

Similarly, we propose that decentralizing and not imposing any formal standardization on the team creative process will maximize the speed with which teams in the team compilation phase generate creative outcomes. By this point in the team's life cycle, the team has well-established norms and guidelines for how to facilitate the team creative process. These informal norms and guidelines, when combined with well-developed mental models for team functioning, should maintain the order necessary for a rapid creative process. Because there are no constraints put on the team in terms of formal standardized practices or processes, we expect these teams will generate creative outcomes more rapidly than teams who require standardization in order to minimize the variation in approaches to the team creative process. Moreover, decentralizing decision rights and control of the team creative process should not only increase team member motivation to generate creative outcomes, but also enhance the efficiency of the process for teams in the team compilation phase. This is because teams in the team compilation phase are

able to quickly coordinate and integrate the creative acts of individual team members and respond flexibly to the external environment.

Boundary Conditions to Rapid Creativity in Teams

There has been a great deal of research on understanding the social and contextual factors that serve as boundary conditions to the creativity of individuals, teams, and organizations (see Shalley & Gilson, 2004 for a review). While many of these same factors likely influence our theorizing regarding rapid creativity in teams, there are several potential boundary conditions that seem particularly important given several key assumptions that we make in our theory building. The first assumption worth noting is that we assume teams have the option of centralizing aspects of the team creative process to a central figure in the team who has a broader understanding of the unique contributions and interdependences across individuals and roles in the team. However, it is certainly the case that not all teams will have this luxury. Thus, based on this assumption, we posit that the presence or availability of a formal team leader during the early stages of team development will enhance the speed and overall effectiveness of the team creative process. There is a considerable body of research suggesting that formal team leaders are extremely important for facilitating team processes under novel conditions where team members do not have a well established response to external or internal stimuli (Morgeson, 2005; Morgeson & DeRue, 2006). The team creative process during early stages of team development offers one such situation. For example, communicating and integrating different perspectives is important for team creativity, and team leaders are in a unique position to integrate across team member perspectives and contributions when the team is unable to efficiently do this on its own. Moreover, we expect that team leaders who are effective at establishing team norms, a climate for creativity, and common goals for creativity within the

team will help facilitate the team's development toward more efficient self-management of the team creative process.

Another implicit assumption we make is that team member interaction is largely unconstrained in that team members are free to interact with each other in ways that reduce social uncertainty and develop interpersonal knowledge. This is important because the base assumption underlies the expectation that teams will develop shared norms and climate perceptions over time. However, as organizations become more global and work groups more dispersed in space and time, team functioning is increasingly occurring through virtual technologies (e.g., email, phone, videoconference), sometimes more so than traditional face-to-face interactions (Kirkman, Rosen, Tesluk, & Gibson, 2004). Unfortunately, the evidence on team virtuality suggests that this increase in virtual interaction may actually limit the degree to which team members are able to reduce social uncertainty and develop shared norms and perspectives (Lipnack & Stamps, 2000; Maznevski & Chudoba, 2000). Thus, we expect that teams operating primarily via virtual means will find it more difficult to rapidly generate creative outcomes; we also expect that these teams will find it more difficult to develop the self-management capabilities required for rapid creativity. We posit this is especially true for developmental transitions related to role and team compilation, where team members need to experience the interdependencies and linkages between team members' roles and responsibilities in the team.

Next, although we expect most teams to generally follow the progression of the creative process and team development cycles suggested here, it is quite possible that there may be feedback loops and disjunctures in these processes. For example, with regard to the team creative process, a team may find itself abandoning the path they are on and beginning the creative

process from scratch, particularly after the introduction of new information, team members, or external demands. Other teams may find themselves skipping stages of the creative process due to factors such as team member knowledge or authority structures in the team. With regard to the team development cycle, it is also possible to imagine a variety of scenarios in which teams may not progress linearly. For example, teams that have worked together in the past and/or on similar projects would likely start at a more advanced stage of team development. We expect non-linear patterns and feedback loops of this sort to affect the speed with which teams are capable of generating creative ideas, and thus encourage other scholars to explore these non-linear, feedback loops in future research.

The final assumption we draw attention to is that we do not model the possibility that team membership can actually change over time. There are several reasons why changes to the team composition might influence our model of rapid creativity in teams. First, there is some evidence suggesting that the majority of creative ideas originate within the individual mind and not as a function of the group process (Triandis et al., 1963). From a similar perspective, there is empirical evidence suggesting that individual differences such as cognitive ability and personality traits (e.g., openness to experience, conscientiousness) explain how and to what extent teams generate creative ideas (Taggar, 2002). Thus, the loss of team members who possess attributes vital to the creative capacity of the team should have a negative impact not only on a team's ability to generate creative outcomes, but also on the speed of the creative process. With respect to adding team members, irrespective of their individual capabilities, new team members require socialization for a smooth transition into the team. This socialization process requires attention and cognitive resources that could otherwise be applied to the team creative process. Thus, engaging in socialization for new team members should detract from the

efficiency of the team creative process, thus leading to less rapid creativity. Moreover, introducing new members into the team will likely create a situation where team members do not share mental models of team functioning and ultimately impede the team's development. In our theorizing, we assume that team members develop their shared understanding of the team creative process at the same rate and without disruption. However, we expect changes in team membership will ultimately reduce the speed of the team creative process.

DISCUSSION

The theory we have put forth on rapid creativity in teams contributes to the extant literature on team creativity in several important ways. First, scholars have noted the need for additional research on the process by which teams engage in and generate creative outcomes (Amabile, 1996; Shalley, Zhou, & Oldham, 2004; Gilson & Shalley, 2004). Most of the existing literature examines creativity as an outcome, without making explicit the processes by which the outcome is achieved. The present theory attempts to extend Amabile's (1996) description of the creative process by articulating how the team development cycle, team structure, and standardization of the creative process provide insight for how teams can generate creative outcomes more rapidly. In this sense, our theory offers a more nuanced view of the team creative process by specifying how the creative process may vary under different conditions of team development, structure and standardization.

Related to this is the fact that prior research has identified a multitude of team characteristics and processes that shape a team's capacity to generate creative outcomes. Some of these factors include team composition, shared goals, rewards, organizational support, and psychological safety (Shalley & Gilson, 2004; Kurtzberg & Amabile, 2001). Despite the promising insights generated from this research, issues related to team development and

structure, and how these features of the team shape the team creative process, have gone unexplored. In terms of team development, this is an especially important gap in the literature because the team development cycle is likely to influence the creative acts of individuals as well as the interactions among team members that are important for determining team creativity. The same is true for team structure, given that structural concerns influence the speed with which teams execute tasks and adapt to novel, complex situations.

The present theory also contributes to our understanding of the team creative process by repositioning the role of time in how we model and conceptualize creativity. Most of the existing literature on time and creativity has focused on the extent to which time pressures limit the creativity of individuals and teams. Such research treats the individual or team as a passive actor upon which time places constraints on creativity. In our theory, however, we view time as something teams can and do actively influence. In particular, we explain how teams can structure and organize the team creative process to more efficiently use the time that is available. In light of the realities faced by contemporary organizations, where upon other constraints time is in short supply, we expect that taking this approach is a more viable solution than trying to avoid, reduce or eliminate time pressures altogether.

Toward a Theory of Rapid Creativity in Teams: Directions for Future Research

Our aim in writing this paper was twofold. As evidenced by the preceding sections, we sought to develop a model for how team creative processes, development cycles, structure and standardization processes advance our understanding of how teams can rapidly generate creative outcomes. In addition to this goal, we also sought to provide a conceptual model and framework upon which other scholars could ground their research on team creativity. In particular, there are several avenues of future research that would be particularly insightful and contribute to the

development of a more robust theory of rapid creativity in teams. Thus, we conclude our discussion by outlining several important directions for future research.

In the current theory, we propose that team structure and standardization processes interact with team development cycles to shape how fast teams can engage in the team creative process and ultimately produce creative outcomes. These proposed relationships are generally untested and thus warrant empirical examination in their own right. Beyond these relationships, however, are several interesting nuances that future research should consider. For example, we have made the implicit assumption that the “dials” of team structure and standardization, which teams can adjust in the creative process, operate additively and do not interact. It may be the case, however, that team structure and standardization processes can substitute for each other. For example, implementing the appropriate team structure, based on the team development cycle, might offset the need for the standardization of the team creative process. Likewise, it might be the case that standardizing the team creative process could reduce the inefficiencies associated with misalignment between the team structure and development cycle. In fact, it is possible that the combination of certain team structures and standardization protocols may interact in such a way that offsets the positive benefits of either one. Future research that explores these potential trade-offs and interactions between structure and standardization would be particularly noteworthy.

Another nuance worth exploring originates with an assumption we make about the ease of changing team structures and approaches to standardizing the creative process over time. We generally take for granted the idea that teams can freely change their structure or approach to standardization, but there is also some evidence that teams may be less malleable than this assumption suggests. For example, Moon et al. (2004) showed that teams are more effective

moving from specialized, functional structures to less differentiated, divisional structures than the other way around. We consider this in our theory in that, for rapid creativity, teams are moving from a functional to divisional structure as the team develops over time. However, it is not clear from existing research how easy it is for teams to move between centralization and decentralization, or highly standardized to less standardized processes and practices. For example, it might be that the structures and standardization present in the early phases of team development will have an “imprinting” effect that influences how the team organizes in later phases of development. In addition, it is unclear what impact informal team structures such as culture, norms, rules, and interpersonal status and power would have on the adaptive capacity (i.e., the ability to shift from one team structure to another) of teams at various stages of development. It may be that these types of informal structures and routines can inhibit (or enhance) a team’s capacity for structural malleability, and ultimately impact how fast teams can move through the team creative process. Future research that explores these dynamic transitions would help extend not only our theory of rapid team creativity but would also contribute to a broader understanding of team dynamics.

Next, in the current theory, we do not explicitly model how team compositional factors influence a team’s ability to produce creative outcomes in a timely manner. Nonetheless, we do expect that the collection of individual attributes in the team, and finding the optimal mix of these attributes, will be critical for achieving rapid creativity. For example, individual attributes such as personality (Baer & Oldham, 2006; Barry & Stewart, 1997), affect (Isen et al., 1987; Amabile et al., 2005), and personal values (Goncalo & Staw, 2005) have been shown to impact the generation of creative outputs. Likewise, team-level research has shown that diversity can both help and hinder the creative capacity and output of teams (Pearsall et al., 2008). We propose

that this stream of research needs to extend its conceptualization of creativity as an outcome and consider not only the number of creative ideas or the degree of creativity but also the speed with which teams generate these ideas. We expect that taking speed into account will expose different sets of relationships and a more refined understanding of how team compositional factors influence the creative capacity of teams.

As mentioned earlier, we assume in our theory building that the timing of the creative process is independent of the time it takes to progress through the team development cycle. In this sense, teams may move through the team creative process within a single phase of team development, or teams may progress to later phases of team development before completing the creative process cycle. We developed our model to explicate how teams at different phases of team development should organize the creative process such that creative ideas are generated in a rapid manner. However, it is quite possible that teams may progress to subsequent stages of the development cycle while in the midst of a creative project. The likelihood for progression to the next development phase may depend on the nature of the team project or task; for example, whether the duration of the project is short-term or long-term, or whether the creative task requires a low or high degree of interdependence. In addition, the overall pacing of the team creative process may have an impact on the pacing of the team development cycle, and vice versa. Future research should explore these temporal dynamics.

Similarly, the assumption that our model of rapid creativity in teams is applicable to all types of team tasks also warrants further investigation. It may be that certain types of tasks would invoke or constrain the types of team structures and standardization protocols that teams can employ. Drawing from Steiner's (1972) typology of task interdependence, scholars have begun to explore the role of the task in group creative processes and performance (e.g., Pirola-

Merlo & Mann, 2004). The level and type of interdependence in the team task – whether additive, disjunctive, or conjunctive – may have bearing on which team structures and standardization processes will enable teams to most effectively and efficiently generate creative outcomes. For example, if the task is additive, where the group outcome is a function of the sum of the individual members' products, the team creative process may be best organized through systems that promote accountability and interdependence (e.g., centralized and specialized team structure, high levels of standardization). On the other hand, if the task is disjunctive, where the group outcome is ultimately determined by the performance of the best member, then the team creative process may be best organized to provide the most effective members optimal environments to facilitate individual creativity (e.g., decentralized and generalist structure, low levels of standardization). The task type may also influence whether teams structure the creative process according to earlier or later phases of team development. For example, if members of a newly-formed team have expertise in a particular task, they may be likely to advance more quickly to subsequent stages of the team life cycle. The nature of the team task is likely an important element of team creativity that we do not explicitly model in the present theory and thus should be considered further in future research.

As stated earlier, our theory of rapid creativity in teams focuses on the speed with which teams *generate* creative ideas, rather than on the speed with which teams *implement* these creative ideas. This distinction mirrors a related distinction in the literature between the constructs of team creativity and team innovation, where creativity is considered to be only the first stage of a broader innovation process (West & Farr, 1990). Some scholars have proposed that the factors that encourage creativity or idea generation in teams (e.g., flexible time) may actually inhibit the implementation of creative ideas (West, 2002). Although the question of

innovation implementation is beyond the scope of the present theory, we encourage scholars interested in innovation to extend our ideas by considering the impact of our structural and standardization mechanisms on the ability of teams to implement creative solutions in a timely manner.

Finally, we encourage future researchers interested in team creativity to augment the high quality laboratory research that has and will continue to be done in this area with more field research. This call for more field research is not rooted in a need for evidence of external validity, but rather from a substantive theoretical concern regarding internal validity. In our theory of rapid creativity in teams, we put forth several ideas about how the team creative process might differ or require unique structures and processes depending on the team life cycle phase. The majority of laboratory research samples newly-formed, ad-hoc teams that are most likely in the team formation stage of development. This reliance on ad-hoc teams to provide insight about the team creative process introduces two important limitations. First, although laboratory research demonstrates that newly-formed teams can achieve some level of creativity, a traditional laboratory approach to studying team creativity would preclude a comprehensive test of our theory unless the researchers were able to sample teams across the full team development cycle, or follow teams through the entire developmental cycle. For example, newly-formed teams may reach a particular level of creativity using more time (or other resources) relative to teams in later developmental stages. Moreover, different team structures and forms of process standardization are likely to differentially impact teams' creative performance across these developmental stages. A second and potentially more important limitation of the emphasis on laboratory research with ad-hoc teams is that our current understanding of team creativity may actually be biased toward teams in the formation stage. If the team creative process does in

fact differ across the team development cycle as proposed in the present theory, we likely have a very incomplete understanding of team creativity in organizations. Thus, we encourage future researchers to use a variety of research designs and settings, including but not limited to laboratory research, to test our theory and extend the field's understanding of team creativity.

CONCLUSION

Dualities such as speed versus accuracy (Hollenbeck et al., 2002), quality versus quantity (Guzzo & Dickson, 1996), and learning versus performance execution (Druskat, 2000) abound in literature on team dynamics and performance. We propose that creativity versus efficiency is one such duality in teams that can be navigated by organizing the team creative process to align team structures and standardization processes with the team development cycle. Organizations increasingly rely on teams to address creativity and innovation challenges (Kurtzberg, 2005), and we hope this theory offers the foundation for future research on how teams can more rapidly achieve creative outcomes.

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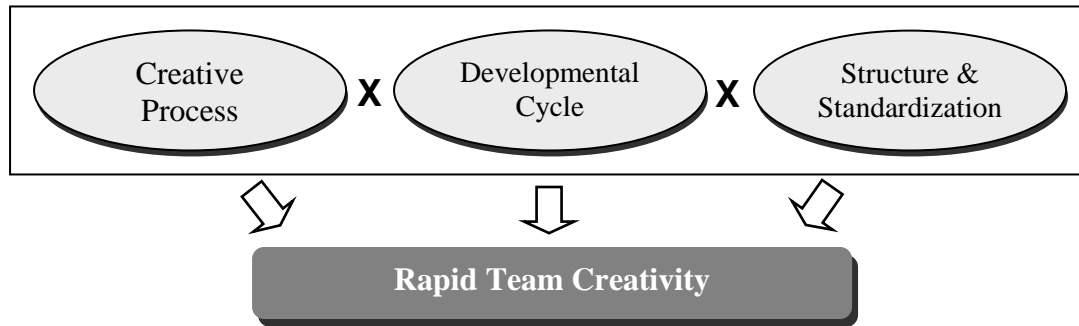
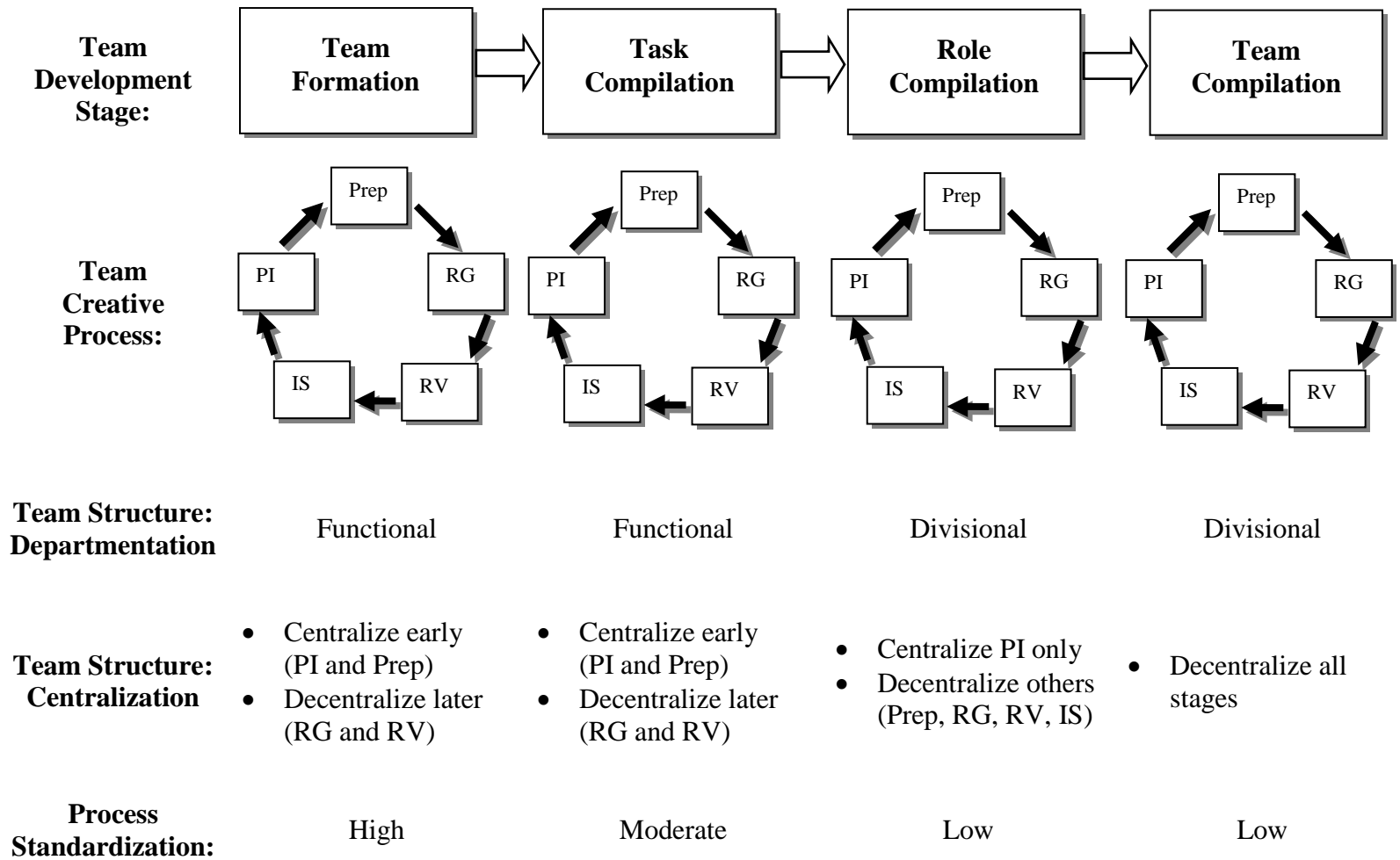
FIGURE 1

FIGURE 2



Note: PI = problem and task identification; Prep = preparation; RG = response generation; RV = response validation and communication; IS = idea selection.