Innovation and Creativity in Organizations: A State-of-the-Science Review, Prospective Commentary, and Guiding Framework

Neil Anderson
Brunel University

Kristina Potočnik
University of Edinburgh

Jing Zhou
Rice University

Creativity and innovation in any organization are vital to its successful performance. The authors review the rapidly growing body of research in this area with particular attention to the period 2002 to 2013, inclusive. Conceiving of both creativity and innovation as being integral parts of essentially the same process, we propose a new, integrative definition. We note that research into creativity has typically examined the stage of idea generation, whereas innovation studies have commonly also included the latter phase of idea implementation. The authors discuss several seminal theories of creativity and innovation and then apply a comprehensive levels-of-analysis framework to review extant research into individual, team, organizational, and multilevel innovation. Key measurement characteristics of the reviewed studies are then noted. In conclusion, we propose a guiding framework for future research comprising 11 major themes and 60 specific questions for future studies.

Keywords: *innovation; innovation management; creativity*

1297

Innovation and creativity in the workplace have become increasingly important determinants of organizational performance, success, and longer-term survival. As organizations seek to harness the ideas and suggestions of their employees, it is axiomatic that the process of idea generation and implementation has become a source of distinct competitive advantage (Anderson, De Dreu, & Nijstad, 2004; West, 2002a; Zhou & Shalley, 2003). Yet, creativity and innovation are complex, multilevel, and emergent phenomena that pan out over time and that require skillful leadership in order to maximize the benefits of new and improved ways of working. Considerable research has built up over the last 30 to 40 years at four specific approaches to levels of analysis—the individual, the work team, organizational, and multilevel approaches—across several disciplines within the management sciences. The aim of the present review is to comprehensively integrate these findings, but especially those published over the last decade, and to present key directions for future research. There has been an exponential growth in the number of articles published on creativity and innovation generally and on workplace creativity and innovation specifically over recent years. Figure S1 shows the growth trend, whereas Table S1 summarizes the growth in international studies in top-tier management journals over the last decade and Table S2 classifies these studies in terms of country of origin (see online supplement).

The remainder of this study is organized as follows. In the next section, we review popular definitions and typologies of creativity and innovation in the workplace. We propose an integrative definition to cover these diverse perspectives. Next, we review theoretical perspectives to workplace creativity and innovation, noting six prominent theories in the literature. Following that, we review the extant research, organizing this by our levels-of-analysis framework—studies at the individual, team and work group, organizational, and multiple levels of analysis are considered in turn. Afterwards, we present an overview of the methodological characteristics of these studies, paying specific attention to the measurement of creativity and innovation. In the next section, we put forward a constructive critique of the existing research and gaps in our understanding of these phenomena. Emerging from these issues, we propose 11 overarching directions for future research and then draw final conclusions from our integrative review.

Toward Definitional Clarity: Creativity and Innovation

We propose the following integrative definition:

Creativity and innovation at work are the process, outcomes, and products of attempts to develop and introduce new and improved ways of doing things. The creativity stage of this process refers to idea generation, and innovation refers to the subsequent stage of implementing ideas toward better procedures, practices, or products. Creativity and innovation can occur at the level of the individual, work team, organization, or at more than one of these levels combined but will invariably result in identifiable benefits at one or more of these levels of analysis.

Whereas creativity has been conceived of as the generation of novel and useful ideas, innovation has generally been argued to be both the production of creative ideas as the first stage and their implementation as the second stage (Amabile, 1996; Oldham & Cummings, 1996; Shalley & Zhou, 2008; West & Farr, 1990). Although various definitions have been proposed, there remains a lack of general agreement between researchers over what constitutes precisely either

creativity or innovation, with different studies using rather different operationalizations of each concept (West & Farr). More recent literature in the field suggests that the boundaries between both concepts are not that clear. On one hand, some scholars have advocated a stronger conceptual differentiation between creativity and innovation (e.g., Oldham & Cummings; Rank, Pace, & Frese, 2004). Yet, on the other hand, other authors have argued that creativity occurs not only in the early stages of innovation processes but, rather, they suggest a cyclical, recursive process of idea generation and implementation (e.g., Paulus, 2002). There is indeed some empirical support for this suggestion, with several studies showing that the innovation process as it unfolds over time is messy, reiterative, and often involves two steps forward for one step backwards plus several side steps (King, 1992; Van de Ven, Angle, & Poole, 1989). It has further been argued that creativity is concerned with absolute, "true" novelty, whereas innovation also involves ideas that are relatively novel—ideas that have been adopted and adapted from other organizations but that are new to the unit of adoption (Anderson et al., 2004). We would note that ideas can be reliably assessed on a continuum in terms of novelty and radicalness and, similarly, that innovation may also include absolutely novel and radical ideas as well as ideas that are less novel and more incremental (Zaltman, Duncan, & Holbek, 1973). Furthermore, creativity has been argued to involve primarily intraindividual cognitive processes, whereas innovation mainly represents interindividual social processes in the workplace (Rank et al.).

In essence, because creativity centers on idea generation and innovation emphasizes idea implementation, creativity is often seen as the first step of innovation (Amabile, 1996; Mumford & Gustafson, 1988; West, 2002a, 2002b). As far as innovation is concerned, new ideas and practices implemented in an organization may be generated by employees in the focal organization (Janssen, 2000). However, idea generation by employees in the focal organization is not a prerequisite for innovation—the new ideas and practices may also be generated by employees outside of the focal organization (Zhou & Shalley, 2010). As long as an employee intentionally introduces and applies a new idea, method, or practice, he or she is said to engage in innovation (Anderson et al., 2004; West & Farr, 1990). Hence, whereas creativity and innovation are related constructs, they are by no means identical. A final point is that when examining innovation or idea implementation at the individual level of analysis, researchers have also used the terms role innovation (West & Farr) and innovative behavior (Yuan & Woodman, 2010). We therefore put forward the integrative definition given at the start of this section to address these various issues and to move the field forwards to some degree toward definitional clarity.

Theoretical Perspectives

Six influential theoretical perspectives and models can be discerned across the creativity and innovation literatures (see Table S3 in the online supplement).

Componential Theory of Organizational Creativity and Innovation

The most important premise of this theory is that work environments have an impact on creativity by affecting components that contribute to creativity, which represent a basic source for organizational innovation (Amabile, 1997). There are three major components contributing to individual or small team creativity: expertise, creative-thinking skill, and intrinsic motivation. In contrast, the main components of the wider work environment that influence

employee creativity are organizational motivation to innovate, resources (including finances, time availability, and personnel resources), and managerial practices, such as enabling challenging work and supervisory encouragement (Amabile; Amabile & Conti, 1999). This model has received some empirical support in terms of the role of its motivation component as a psychological mechanism underlying influences from the work environment on employees' creativity, though the other components have not received as much research attention as the motivation component (Shalley, Zhou, & Oldham 2004; Zhou & Shalley, 2010).

Interactionist Perspective of Organizational Creativity

The interactionist perspective of organizational creativity (Woodman, Sawyer, & Griffin, 1993) stresses that creativity is a complex interaction between the individual and his or her work situation at different levels of organization. At the individual level, individual creativity is the result of antecedent conditions (e.g., biographical variables), cognitive style and ability (e.g., divergent thinking), personality (e.g., self-esteem), relevant knowledge, motivation, social influences (e.g., rewards), and contextual influences (e.g., physical environment). At the team level, creativity is a consequence of individual creative behavior, the interaction between the group members (e.g., group composition), group characteristics (e.g., norms, size), team processes, and contextual influences (e.g., organizational culture, reward systems). At the organizational level, innovation is a function of both individual and group creativity (Woodman et al.). This has been one of the most frequently used conceptual frameworks in emphasizing the interactions between the contextual and individual factors that might enhance or inhibit creativity at work (Shalley, Gilson, & Blum, 2009; Yuan & Woodman, 2010; Zhou & Shalley, 2010).

Model of Individual Creative Action

Ford (1996) argued that employees have to consider between two competing options—to be creative or to undertake merely routine, habitual actions. According to this framework, there are three groups of factors that might influence this decision: sensemaking processes, motivation, and knowledge and skills. Individual creative action is thus argued to be a result of the joint influence of these factors; in the case of any of them being lacking, an individual would not engage in creative action. The motivation to initiate a creative or habitual action is further determined by goals, receptivity beliefs (e.g., expectations that creativity is valued—creative actions are rewarded), capability beliefs (e.g., expectations that one is capable of being creative or confident in creative ability), and emotions (e.g., interest and anger as facilitators of creativity, whereas anxiety constrains creativity). Although this model has not attracted as much research attention as the componential or interactionist frameworks have, perhaps partly because the model is complex and hence it may be challenging to empirically test it as a whole, portions of it have received some empirical support over more recent years (e.g., Janssen, 2005; Unsworth & Clegg, 2010).

Theorizing on Cultural Differences and Creativity

The question of whether there are differences in creativity in different cultures has significant implications for management practice, international business, and economic development

(Morris & Leung, 2010; Zhou & Su, 2010). However, theorizing and research in this regard have lagged behind practical needs. This significant research-practice gap has led to repeated calls for greater research attention on cultural differences and creativity (Anderson et al., 2004; Shalley et al., 2004; Zhou & Shalley, 2003), especially on similarities and differences in creativity between the East and the West (Morris & Leung).

Regarding individuals' creativity, theorizing has focused on cultural differences in individual creativity, such as how task and social contexts moderate the relation between individuals' cultural values (e.g., individualism/collectivism, power distance, and uncertainty avoidance) and creativity (Erez & Nouri, 2010); how culture moderates influences of leaders, supervisors, coworkers, and social networks on creativity (Zhou & Su, 2010); how culture influences the assessment of creativity (Hempel & Sue-Chan, 2010); and how culture affects the entire process of creativity (Chiu & Kwan, 2010).

Regarding team creativity, Zhou's (2006) model of paternalistic organizational control derives from international research into cultural differences between work teams in Western and Eastern countries. This point of departure is interesting as it conceptualizes how different forms of paternalistic control at the organizational level of analysis may impinge upon creativity produced by teams embedded in the organizations. In this model, paternalistic organizational control is theorized as the level of control exerted by top management over personnel and task-related decisions within work teams. Zhou suggests that the impact of such control on team intrinsic motivation and, consequently, on team creativity differs in terms of national culture. She suggests that paternalistic organizational control fosters team intrinsic motivation and creativity for teams in the East, whereas for teams in the West, such organizational control acts as an inhibitor of group intrinsic motivation and thus creativity. This is one of the first models published in the mainstream organizational science literature that takes a multilevel approach to directly address the role of national culture as it may influence how organizational control at the organizational level of analysis affects team creativity at the team level of analysis. Even so, empirical examination of it has been rare, perhaps partly because its multilevel theorizing requires that researchers collect data from a large number of teams embedded in a good number of organizations in Eastern and Western countries. On the other hand, conceptual works positing positive impact of teams' cultural diversity on team creativity have received more research attention and empirical support (Stahl, Maznevski, Voigt, & Jonsen, 2009). Consistent with the "value-in-diversity" thesis in the diversity literature, this line of work essentially argues that cultural diversity promotes divergence in teams, and divergence leads to creativity (Stahl et al.).

While the above works largely focus on creativity, the next two focus on innovation.

Four-Factor Theory of Team Climate for Innovation

West (1990) posits four team climate factors facilitative of innovation: vision, participative safety, task orientation, and support for innovation. Innovation is enhanced if (a) vision is understandable, valued, and accepted by the team members; (b) team members perceive they can propose new ideas and solutions without being judged or criticized; (c) there is a stimulating debate and discussion of different possible solutions within the team which at the same time will more likely be carefully examined; and finally (d) team members perceive

support for innovation (Anderson & West, 1998; West). This theory has been widely applied in the team innovation research and has received support from both primary and more recently from meta-analytic studies (Hülsheger, Anderson, & Salgado, 2009).

Ambidexterity Theory

Bledow, Frese, Anderson, Erez, and Farr (2009a, 2009b) recently advocated ambidexterity theory to explain the process of managing conflicting demands at multiple organizational levels to successfully innovate. Ambidexterity refers to "the ability of a complex and adaptive system to manage and meet conflicting demands by engaging in fundamentally different activities" (Bledow et al., 2009a: 320). Generally ambidexterity represents successful management of both exploration (e.g., creating new products) and exploitation (e.g., production and implementation of products). In terms of integration of activities, Bledow et al. (2009a) distinguish between active management on one hand and self-regulatory processes on the other and suggest that both are required for the integration of activities performed by subsystems or at different points in time (Bledow et al., 2009b). Some support has already been published for the major precepts of ambidexterity theory (Rosing, Frese, & Bausch, 2011), and this perspective therefore holds potential for future studies, most notably into leadership effects in innovation processes.

Summary

The reviewed theoretical backgrounds are major frameworks in the field of creativity and innovation in the workplace. Some have received more empirical support than others, but they all emphasize the role of different determinants of either idea generation or the implementation of ideas. Perhaps the major omission of these frameworks is that each one of them mainly centers either on the first step (i.e., idea generation) or on the second step of the innovation process (i.e., idea implementation). Furthermore, although different levels of analysis are considered in each framework, some put more emphasis on the team level (e.g., the input-process-output model), while others are more concerned with the individual level (e.g., model of individual creative action). Future efforts toward theorizing should hence aim to develop more integrative frameworks which could encourage more bold multilevel designs to explore factors implicated in both creativity and innovation across multiple levels of analyses. We propose more specific suggestions to develop innovative theoretical perspectives in the penultimate section of this article. Having noted these perspectives, we next turn to consider specific advances in the body of research over the period covered in this narrative review.

Research Review

Levels-of-Analysis Framework

We organize studies by four levels of analysis: individual, team, organizational, and multilevel. A major summary of the extant research organized by each level, then subcategorized by key variables reported in past studies to have an effect upon creativity or innovation in the workplace, is presented in Table S4 in the online supplement.

Individual Level of Analysis

Studies at the individual level can be summarized under four headings: *individual factors, task contexts*, and *social contexts*, with further subcategorizations under each heading.

Individual Factors

This section includes studies examining effects of individual differences, such as traits, values, thinking styles, self-concepts and identity, knowledge and abilities, and psychological states on creativity.

Traits. Though only a small number of studies have investigated Big Five personality dimensions and creativity, results from these studies are interesting, suggesting that these Big Five dimensions interact with contextual factors to enhance or restrict creativity. For example, Raja and Johns (2010) examined how each of the Big Five dimensions (i.e., conscientiousness, openness to experience, agreeableness, extraversion, and neuroticism) interacted with job scope to affect creativity. Job scope was a composite score of five core job characteristics: skill variety, task identity, task significance, autonomy, and feedback (Hackman & Oldham, 1980). Results showed a complex pattern of relations: When job scope was high, (a) neuroticism and extraversion each had a negative relation with creativity and (b) interactions between conscientiousness or agreeableness and job scope were not significant, but openness to experience positively related to creativity when job scope was low rather than high. Other studies have focused on one or two personality dimensions and sought to identify contextual variables that were particularly relevant to them (e.g., Baer, 2010; Baer & Oldham, 2006; George & Zhou, 2001; Madjar, 2008).

Taken together, these results suggest that the relation between personality and creativity is complex, which is shaped by contextual variables. They also suggest the necessity to focus on one personality dimension at a time in order to identify contextual variables that are particularly relevant for the relation between a particular personality dimension and creativity. Madjar, Oldham, and Pratt (2002) investigated how creative personality traits were related to creativity. These studies are noteworthy because they showed under what contextual conditions employees with fewer creative personality traits exhibited greater creativity, thereby providing initial evidence that managers can in fact nurture and promote creativity in employees who are not naturally predisposed to be creative. Gong, Cheung, Wang, and Huang (2012) examined how proactive personality was related to creativity. Few studies have been conducted to focus on an understanding of effects of general or specific personality dimensions on innovative behavior or implementation of creative ideas.

Goal orientations. Individuals may also have different goal orientations (i.e., self-development beliefs which serve as motivational mechanism that influences how employees interpret and act in achievement situations; Elliot & Church, 1997). A learning goal orientation emphasizes personal development of competence, whereas a performance orientation focuses on showing competence to external observers. Hirst, Van Knippenberg, and Zhou (2009) found that learning orientation had a positive main effect on creativity. This main effect result was replicated by Gong, Huang, and Farh (2009). Mastery orientation bears conceptual similarity to learning orientation. It refers to the belief that one's capabilities and

competences are changeable and, hence, investing greater effort will enhance one's competence and task mastery (e.g., Dweck, 1999). Janssen and Van Yperen (2004) found a positive relation between mastery orientation and innovative behavior. However, their innovative behavior measure included both idea generation and implementation. Hence, it is not clear whether mastery orientation positively related to idea generation (which would be consistent with Hirst, Van Knippenberg, and Zhou and with Gong et al.), or to idea implementation, or to both. Relatedly, Shalley et al. (2009) found a positive main effect of growth need strength (i.e., individual differences in their desire to seek personal growth while working on their jobs; Hackman & Oldham, 1980) on creativity.

Values. Values are guiding principles of individuals' lives; they provide directions for action, and they serve as standards for judging and justifying action. Hence, employees' values may be relevant for idea generation and implementation. Shin and Zhou (2003) found that employees high on conservation value reacted more strongly and positively to the influence of transformational leadership by exhibiting greater creativity. Zhou, Shin, Brass, Choi, and Zhang (2009) integrated a social network perspective that emphasizes how structural properties of an employee's social network (e.g., number of weak ties) influence the employee's creativity and an individual agency perspective that emphasizes how an employee's characteristics (e.g., values) shape employee creativity. They found that employees' *conformity value* moderated the curvilinear relation between number of weak ties and creativity in such a way that employees were more creative at intermediate levels of number of weak ties and when they held low conformity values. Congruence of values on individual responses to innovation was addressed in Choi and Price (2005). They examined relative effects of value fit and ability fit on commitment to implementation (i.e., implementing a new work process at the focal company) and implementation behavior. Results were rather mixed, failing to paint a clear picture of how different measures of these two types of fit differentially affect commitment to implementation and implementation behavior. Because values are guiding principles in employees' lives and affect their goals and actions, it is valuable to systematically examine the role of values in employees' idea generation and implementation.

Thinking styles. Individuals who have high *need for cognition* enjoy thinking and cognitive activities. C. Wu, Parker, and De Jong (in press) found that when autonomy was low, need for cognition had a stronger, positive relation with innovative behavior, and when time pressure was low, need for cognition had a stronger, positive relation with innovative behavior. It may be necessary to take a fine-tuned look at whether need for cognition is particularly relevant for idea generation or idea implementation. Clegg, Unsworth, Epitropaki, and Parker (2002) reported that intuitive thinking style was positively, but systematic thinking style was not, related to idea suggestion. Both thinking styles were negatively related to idea implementation. These differential patterns of correlation are consistent with our view that creativity (idea generation) and innovative behavior (idea implementation) need to be clearly defined and operationalized, and they may have different antecedents. Recently, Miron-Spektor, Erez, and Naveh (2011) showed having members with creative and conformist cognitive styles benefited—but having members with attention-to-detail cognitive styles stifled—teams' radical innovation, suggesting some cognitive styles may facilitate idea generation, whereas others may inhibit it and still others may facilitate idea implementation.

Self-concepts and identity. Rank, Nelson, Allen, and Xu (2009) found that for employees with low organization-based self-esteem, the more their supervisors exhibited transformational leadership, the greater the employees' innovative behavior. It is not clear whether the interactive effects between self-esteem and transformational leadership affect idea generation, idea implementation, or both. A few studies examined creativity-specific self-concepts or identities, such as creative self-efficacy (Tierney & Farmer, 2002), creative role identity (Farmer, Tierney, & Kung-McIntyre, 2003), and creative personal identity (Jaussi, Randel, & Dionne, 2007). For example, Tierney and Farmer (2002) define creative self-efficacy as employees' self-view concerning the extent to which they are capable of being creative. Tierney and Farmer (2011) examined creative self-efficacy development and creativity over time. Results showed that when creative self-efficacy increased, so did creativity, and increases in employees' creative role identity and perceived creative expectation from supervisors related positively to increases in creative self-efficacy. Finally, individuals may have multiple identities. For example, Asian Americans may have dual identities—being Asian and being American. Recent research showed that high levels of identity integration (e.g., Asian Americans who feel comfortable negotiating between their dual identities and experience compatibility between them) benefited creativity (Cheng, Sanchez-Burks, & Lee, 2008; Mok & Morris, 2010).

Knowledge and abilities. Knowledge is a key component for creativity (Amabile, 1996). But empirical studies on how knowledge affects employee creativity and innovation in the workplace have been rare. One exception was Howell and Boies (2004), who found that strategic and relational knowledge was positively related to idea promotion. Choi, Anderson, and Veillette (2009) examined interactions between employees' creative abilities and contextual variables. Results suggest that creative ability had an insulating effect in such a way that when creative ability was low, there was a negative relation between unsupportive climate and creativity; on the other hand, when creative ability was high, creativity remained at about the same level regardless of the level of unsupportive climate. Baer (2012) showed that creativity and implementation had the strongest, negative relation when employees' networking ability and perceived implementation instrumentality were low.

Psychological states. More progress has been made in understanding how psychological factors affect creativity than idea implementation. Several studies focused on effects of affect, mood states, or job dissatisfaction on creativity (Amabile, Barsade, Mueller, & Staw, 2005; Binnewies & Wörnlein, 2011; Fong, 2006; George & Zhou, 2002, 2007; Zhou & George, 2001). Results are mixed: Amabile et al. reported that *positive affect* led to creativity, whereas George and Zhou (2002) found that under the condition of high rewards and recognition for creativity and clarity of feelings, *negative affect* actually had a positive relation with creativity. Fong found that neither positive nor negative emotion had any main effects on creativity; instead, *emotional ambivalence* (the simultaneous experiences of positive and negative emotions) facilitated creativity. Consistent with their "dual-tuning" theorizing that positive mood enhances cognitive flexibility and negative mood sustains effort, George and Zhou (2007) showed that employees exhibited the greatest creativity when both *positive and negative mood* were high and when supervisors built a supportive context by providing developmental feedback, being trustworthy, or providing interactional justice. Using creative

work involvement as the dependent variable, Carmeli and colleagues found that *feelings of energy* and *vitality* were related to creative work involvement (Atwater & Carmeli, 2009; Kark & Carmeli, 2009). More work is needed to clarify whether positive affect, negative affect, or both are particularly conducive to creativity and innovation. Future work may find results reported by Baas, De Dreu, and Nijstad (2008) informative because they suggest the need to differentiate activating versus deactivating mood states within the broad categorization of positive versus negative moods.

Motivation. Intrinsic motivation has been theorized to be a key ingredient for creativity (Amabile, 1996). With a few exceptions, such as Shin and Zhou (2003) and X. Zhang and Bartol (2010a), research devoted to testing it as a psychological mechanism that explains effects of task and social contexts, and their interactions with individual differences, on creativity is still sparse. Additionally, research showed the positive relation between intrinsic motivation and creativity was stronger when prosocial motivation was higher (Grant & Berry, 2011).

Researchers have also begun to investigate motivational antecedents of innovative behavior. Yuan and Woodman (2010) found that *expected positive performance outcomes* positively, and *expected image risks* negatively, related to innovative behavior. However, unexpectedly, expected image gains were also negatively related to creativity.

Other factors. A few studies looked at effects of *strain* and *trust* on creativity and innovative behavior. Van Dyne, Jehn, and Cummings (2002) found a negative relation between strain and creativity. Clegg et al. (2002) found when employees trusted they would share benefits of creativity, they made more suggestions, but this type of trust had little effect on idea implementation. On the other hand, when employees trusted that their organization would listen to them, they did better on idea implementation. Ng, Feldman, and Lam (2010) reported that *psychological contract breach* lowered innovative behaviors.

Task Contexts

Research has shown that the task and social contexts in which employees are embedded have a substantial influence on their creativity and innovative behavior either directly or via interacting with individual difference variables.

Job complexity. When a job (a) provides opportunities for the jobholder to learn and use a variety of skills, (b) is identifiable, (c) has significant implications for others, and (d) provides autonomy and feedback, the job is said to have high levels of complexity (Hackman & Oldham, 1980). Job complexity (operationalized as the mean of the five core job characteristics—skill variety, task significance, task identity, autonomy, and feedback) is a key aspect of the task contexts relevant for creativity (e.g., Farmer et al., 2003; Oldham & Cummings, 1996; Shalley et al., 2009; Tierney & Farmer, 2004).

Another feature of jobs is *routinization* (Perrow, 1970), but this should not be seen as the opposite of job complexity (Ohly, Sonnentag, & Pluntke, 2006). After repeated execution of a behavior, it may become routinized, and further executing it may not require much intentionality and awareness, which could happen even to employees holding complex jobs. Ohly et al. found main effects of routinization on both creativity and idea implementation. Even

so, one might argue that employees performing routine work may lose interest in coming up with creative ideas. Few studies have examined this possibility.

Goals and job requirements. Creativity goals are conducive to creativity (Shalley, 1991, 1995). Relatedly, job requirements have received increasing research attention, and a few initial studies found them to relate positively to creativity (Shalley, 2008; Unsworth & Clegg, 2010; Unsworth, Wall, & Carter, 2005). Studies examining the impact of time pressure on creativity and innovation yielded mixed results: Ohly and Fritz (2010) found that daily time pressure was positively related to daily creativity, whereas Baer and Oldham (2006) found an inverted U-shaped relation between creative time pressure and creativity, when support for creativity and openness to experience were high.

Another task context factor is rewards. Zhou and Shalley (2003) stated that whether rewards facilitate or hinder creativity was one of the most important and yet unsolved puzzles in creativity research. Ten years later, the puzzle is still unsolved, but researchers have made progress in revealing a complex relation (Baer, Oldham, & Cummings, 2003; Eisenberger & Aselage, 2009; George & Zhou, 2002). For example, Baer et al. found that reward was positively related to creativity when employees had an adaptive cognitive style and worked on jobs with low levels of complexity. We echo Zhou and Shalley's call for more research on effects of rewards on creativity and innovative behavior.

Social Contexts

Different aspects of social context have been explored in creativity and innovative behavior at the individual level.

Leadership and supervision. Leadership and supervision are essential influences on creativity (see Tierney, 2008, for a comprehensive review). Studies have yielded mixed results: While some researchers found that *transformational leadership* positively related to creativity (Bono & Judge, 2003, Study 2; Gong et al., 2009; Shin & Zhou, 2003), others found that transformational leadership positively, whereas *transactional leadership* negatively, related to innovative behavior only when followers' psychological empowerment was high (Pieterse, Van Knippenberg, Schippers, & Stam, 2010). One other study found a positive moderating, but not main, effect of a facet of transformational leadership—inspirational motivation on the relation between employees' team identification and creativity (Hirst, Van Dick, & Van Knippenberg, 2009).

Other studies looked at impact of specific supervisory behaviors, such as *supervisory support* (Madjar et al., 2002), *supervisory expectations for creativity* (Carmeli & Schaubroeck, 2007; Tierney & Farmer, 2004), *supervisory empowerment behaviors* (X. Zhang & Bartol, 2010a), *supervisory developmental feedback* and *non–close monitoring* (Zhou, 2003), supervisory *benevolence* (A. Wang & Cheng, 2010), and *abusive supervision* (Liu, Liao, & Loi, 2012), on creativity. Some research has also examined supervisory support (Janssen, 2005) and *influenced-based leadership* on innovative behavior (Krause, 2004). Similar to the inclusive results involving transformational leadership and creativity, results from studies focusing on specific supervisory behaviors are also far from conclusive, either because only one or two studies on a specific supervisory behavior—creativity/innovation relation—have been conducted or

because empirical results across studies were not consistent. Hence, more research on leadership and supervision needs to be done (as we argue subsequently in this review).

Customer influences. Madjar and Ortiz-Walters (2008) found that customer input and customer affect-based trust had direct and positive impact on service-related creativity.

Other social influences: Feedback, evaluation, and justice. Although feedback has been shown to have significant and yet complex influences on creativity, few studies have directly examined the mechanisms through which such influences occur. One exception is Yuan and Zhou (2008), who found that expected external evaluation hindered generating a large number of ideas; however, individuals who did not expect external evaluation at the variation stage at which they are told to generate as many ideas as possible, but did have such expectation at the selective retention stage at which they are told to select and refine ideas so that the ideas are truly new and useful, generated the most creative ideas. In addition, employees do not have to be passive recipients of feedback; instead, they can actively engage in feedback seeking in order to regulate their behavior. Integrating the feedback seeking and creativity literatures, De Stobbeleir, Ashford, and Buyens (2011) found that feedback inquiry had a direct, positive relation with creativity.

Distributive, procedural, interpersonal, and informational justices are important contextual variables in predicting employee attitudes and behavior. In recent years, efforts to understand the impact of various types of justice on creativity have been made, but direct and positive relations between any of these four types of justice and creativity have proven to be elusive (Khazanchi & Masterson, 2011). Finally, research on effects of supervisor, coworker, and customer influences on employees' creativity may benefit from integration with other social and task variables documented in the creativity literature, such as feedback, evaluation, and justice. For example, research may compare and contrast effects of feedback provided by supervisors versus coworkers on different stages of the creativity-innovation process.

Social networks. How employees' positions in their social networks affect their creativity and innovative behavior has attracted increasing research attention (Baer, 2010; Obstfeld, 2005; Perry-Smith, 2006; Perry-Smith & Shalley, 2003; Zhou et al., 2009). One noteworthy feature of this small but growing body of work is its focus on the joint effects of structural properties of one's network and the individual's characteristics, such as personality and values. As such, these studies contributed to both creativity and social networks literatures in that they emphasize the joint effects of network properties and individual agency in shaping employees' behavior at work.

Other Research

A few interesting studies could not be classified into our framework at the individual level. Alge, Ballinger, Tangirala, and Oakley (2006) examined effects of *information privacy*—the extent to which employees perceive that they have control over how their personal information is collected, stored, and used by their organization—on creativity. They found that information privacy was positively related to creativity via psychological empowerment. Madjar, Greenberg, and Chen (2011) found that *willingness to take risks, career commitment*, and *resources for creativity* were associated with radical creativity; *presence of creative coworkers*

and *organizational identification* were associated with incremental creativity; and *conformity* (the tendency to conform to norms and not willingly be different from others) and organizational identification were related to routine, noncreative performance. X. Zhang and Bartol (2010b) demonstrated an inverted U-shaped relation between creative process engagement and overall job performance (a moderate level of creative engagement facilitated overall job performance). Finally, Janssen (2003) showed that when employee *job involvement* was high, innovative behavior was positively related to conflict with coworkers and negatively related to satisfaction with coworkers, highlighting the potential costs of innovative behavior.

Summary

The above narrative review suggests, first, that both dependent variables—creativity (idea generation) and innovation (idea implementation)—warrant more in-depth future research. Second, it may not be productive to focus upon attempting to uncover main effects of traits on creativity. Instead, in-depth future research needs to investigate how context activates or suppresses the manifestation of traits in relation to creativity and innovation. Third, affective, cognitive, and motivational psychological states related to creativity and innovation need greater research attention. Fourth, researchers have only identified a limited set of individual differences and contextual factors for creativity. Future research is needed to identify the full range of individual differences and contextual factors for both creativity and innovation. Finally, research on cultural patterns of creativity is sparse.

Team Level of Analysis

Notable advances have also been made at the team level of analysis over recent years (see also Table S4 in the online supplement). Highlighting these developments, two theoretically driven meta-analytical integrations have been published at this level (Hülsheger et al., 2009; Rosing et al., 2011). They also hint at the maturation of the team-level research over the last decade or so. Although there remain far larger literatures at the individual and organizational levels of analysis, research into work group or work team creativity and innovation is particularly valuable as organizations have moved inexorably to more team-based structures and will often be reliant upon teams to develop and implement innovative solutions even where the ideas may have originally been proposed by an individual (e.g., R&D teams; see also, Somech, 2006). Cutting through the aptly described "jungle of inconsistent findings" (West & Farr, 1989: 17), these meta-analytical findings have moved research at this level onwards and have countered earlier suppositions over the relative importance of different variables in work group innovativeness and can be grouped under *team structure and composition, team climate and processes*, and *leadership style.*

Team Structure and Composition

Hülsheger et al. (2009) found that structural and composition issues had less of an impact than had previously been presupposed. They meta-analyzed over 30 years of team-level primary studies and included over 100 independent samples covering a diverse range of team variables. Facets of team climate (see below) exhibited higher mean corrected correlations (rhos) with innovativeness than did facets of either team structure or composition. Whereas

team climate facets correlated at up to .49 (mean overall corrected rho) with innovativeness, team structure and composition correlated far less strongly. Facets of structure (job-relevant diversity, member background diversity, task and goal interdependence, team size and longevity) correlated at between –.13 (member diversity) and .27 (goal interdependence), and in several cases, these rhos were nonsignificant and nongeneralizable. Of course, it could be that some of these structural and compositional variables influence team climate and that climate in turn went on to affect innovativeness.

Other recent findings report effects for both *task* and *goal interdependence* (either directly or as moderators) upon team innovativeness, but at moderate levels of influence (e.g., Gilson & Shalley, 2004; Wong, Tjosvold, & Liu, 2009). Results likewise confirm that team *heterogeneity/diversity* is a problematic variable with regard to innovativeness—with either unclear findings, findings in either direction, or findings suggesting effects at different phases in team innovation (Shin & Zhou, 2007; Somech, 2006; Van der Vegt & Janssen, 2003). These findings reaffirm earlier research suggesting that greater diversity does not necessarily lead to greater team innovativeness but may instead lead to reductions in team cohesiveness and in turn lower implementation capabilities (Anderson & King, 1991).

Team Climate and Processes

Stronger and less nuanced effects have been reported regarding team climate and processes for innovation. Using West's (1990) four-factor theory, Hülsheger et al. (2009) reported corrected mean correlations with team innovation of .49, .15, .47, and .41 for *team vision, participative safety, support for innovation, and task orientation*, respectively. Further, they found rhos of .31 for team cohesion, .36 for internal communication processes, and .47 for external communication. The authors conclude that these findings not only give credence to earlier propositions regarding the importance of social processes and relationships to team-level innovation (e.g., Perry-Smith & Shalley, 2003) but also highlight the importance of team climate and group processes to effective innovativeness within work groups and teams (see also Choi, Sung, Lee, & Cho, 2011; Pirola-Merlo & Mann, 2004; Z. Zhang, Hempel, Han, & Tjosvold, 2007). Conflict within a team, however, was found to have lower levels of impact upon innovativeness. *Task conflict* correlated at only .07 and *relationship conflict* correlated marginally negatively at only –.09 with innovation, suggesting that team conflict may be either unrelated or related in a curvilinear manner to team innovativeness (Jehn, Rispens, & Thatcher, 2010).

Research that conceives of team climate and processes as antecedents far outweighs research that addresses processes in real time either in organizational or experimental settings. Indeed, notably few studies have examined within-team innovation processes as they unfold over time. Since it is likely that different climatic variables influence innovation processes at different stages in the innovation process (Schippers, West, & Dawson, in press; Somech & Drach-Zahavy, 2013; Van de Ven, 1986; West & Richter, 2008), our expectation was for there to have been more studies into this important but largely unaddressed question.

Team Leadership

Many authors have understandably asserted that leadership style has directly attributable and likely strong effects upon team innovativeness (e.g., Bledow et al., 2009a; George,

2007). Yet, fewer studies into these effects at the team level of analysis have been conducted than one might have expected. Despite this, the recent meta-analysis by Rosing et al. (2011) sheds valuable light upon this important question. As hypothesized, *transformational leadership* was found to correlate substantially more strongly for the opening-up phase, whereas *transactional leadership* was generally found to be more effective for the later phase of idea implementation. Other primary studies and theoretical articles support this contention (Axtell, Holman, Unsworth, Wall, Waterson, & Harrington, 2000; Mumford, Scott, Gaddis, & Strange, 2002). Whether these leadership behaviors are variously termed *transformational* versus *transactional* (P. Wang & Rode, 2010) or *participative* versus *directive* (Amabile, Schatzel, Moneta, & Kramer, 2004; Somech, 2006), findings in this area unambiguously suggest, perhaps not surprisingly, that at the stage of idea generation, transformational, participative leadership behaviors stimulate team innovation. Later on, as per ambidexterity theory, it is clear that more directive, transactional leadership behaviors are more effective as they move innovations toward implementation (Rosing et al.).

Summary

Team-level research has progressed significantly in the last decade. Published meta-analytic integrations now permit researchers to establish the importance of different group variables and processes to innovativeness, allowing future research to move away from these well-trodden questions and explore other important issues inherent in team innovation. Here, we envisage the most pressing issues to be those pertaining to team climate and leadership as facilitators of work group creativity and innovation. Having examined research at the team level, we now turn to consider studies at the wider, organizational level of analysis.

Organizational Level of Analysis

Also at the organizational level of analysis, Table S4 serves as the organizing framework for our review comments (see online supplement). These are structured under the headings *management-related factors, knowledge utilization and networks, structure and strategy, size, resources, culture and climate, external environment, innovation diffusion*, and lastly, *corporate entrepreneurship as innovation*.

Management-Related Factors

Much of the research that has examined management-related factors in facilitating innovation has addressed the role of different *human resource practices*. Results suggest that organizations that provide training and employee involvement practices, use performance-based pay systems, enable flexible working hours, emphasize job variety and autonomy, and are characterized by human resource flexibility witness higher levels of innovation (e.g., Martínez-Sánchez, Vela-Jiménez, Pérez-Pérez, & De-Luis-Carnicer, 2009, 2011; Shipton, West, Parkes, Dawson, & Patterson, 2006). However, while having temporary employees was found to facilitate innovation in some studies (Vogus & Welbourne, 2003), others reported just the opposite results (Martínez-Sánchez et al., 2011). Other studies have addressed the role of *management support* in organizational innovation in terms of CEO's *transactional and transformational leadership* (Jung, Chow, & Wu, 2003; Jung, Wu, &

Chow, 2008), *management support* (Choi & Chang, 2009), and *top managers' favorable attitude towards innovation* (Damanpour & Schneider, 2006). Finally, previous research has also linked *top managers' demographic characteristics*, such as management or CEO tenure (S. Wu, Levitas, & Priem, 2005), managerial ownership (Latham & Braun, 2009), and racial and gender heterogeneity in management (Richard, Barnett, Dwyer, & Chadwick, 2004) to organizational innovation. Interestingly, whereas Damanpour and Schneider found a positive link between management tenure and innovation adoption, S. Wu et al. reported an inverted U-shaped relationship between CEO tenure and organizational inventiveness.

Knowledge Utilization and Networks

Applied studies into how organizations use knowledge and knowledge networks explore the role of actors' social embeddedness in the creation, transfer, and adoption of knowledge (Figueiredo, 2011; Phelps, Heidl, & Wadhwa, 2012). Studies have addressed the role of different aspects of knowledge utilization and organizational learning in organizational innovation, such as *absorptive capacity* (Lichtenthaler, 2009), *intellectual capital* (e.g., Rothaermel & Hess, 2007), *knowledge stock* (Kyriakopoulos & De Ruyter, 2004), *knowledge search* (e.g., Katila, 2002), and *social networks* (e.g., Phelps, 2010). The facilitative role of *knowledge spillover or transfer* in organizational innovativeness was meta-analytically confirmed (Van Wijk, Jansen, & Lyles, 2008). Kijkuit and Van den Ende (2010) found that strong ties between different units enhanced the adoption of ideas. In sum, previous research has addressed different aspects of social context; however, the role of wider institutional context in knowledge creation and adoption still remains unclear (Phelps et al.).

Structure and Strategy

Previous research has shown that *decentralized* (Cohendet & Simon, 2007; Jung et al., 2008), *more complex* structures (Damanpour & Schneider, 2006) and structures with *harmonization* or commitment to low power differentiation (Shipton et al., 2006) and *low formalization* (Jung et al.) facilitate innovation. Other studies examined the role of *microinstitutional forces* (Vermeulen, Van den Bosch, & Volberda, 2007), such as *normative* (i.e., values and norms of the institution), *regulative* (i.e., established rules and procedures), and *cultural-cognitive forces* (i.e., shared systems of meaning between organizational members); *structural integration* (i.e., a choice to absorb or integrate the target firm into the acquirer losing its distinctive identity; Puranam, Singh, & Zollo, 2006); and *organization and innovation strategies* (e.g., He & Wong, 2004) in organizational innovation. Interesting findings come from Karim (2009) who found a U-shaped curvilinear relationship between *reorganization* (i.e., the creation, deletion, or recombination of business units within an organization) and innovation, implying that organizations need to experiment several events before positive outcomes, such as increased innovation, are observed.

Size

Camisón-Zornoza, Lapiedra-Alcamí, Segarra-Ciprés, and Boronat-Navarro (2004), in their meta-analysis, report a small although significant mean correlation between size and innovation ($\rho = .15$). Damanpour (2010) reported that around 60% of primary studies found

a positive relationship between size and both product and process innovation. Camisón-Zornoza et al. observed the strongest correlations between size measured in terms of *logarithmic number of employees* and *total sales*, respectively, and innovation. The overall positive effect of size on innovations is not surprising—larger organizations are likely to have more assets of different classes (finances, personnel, expertise, etc.) to devote to innovation.

Resources

Studies have examined the role of *availability of resources* (Choi & Chang, 2009), *resource exchange* (e.g., Hargadon & Bechky, 2006), *resource diversity and quality* (Srivastava & Gnyawali, 2011), and *slack resources* (Greve, 2003) in organizational innovation. Contradictory findings were found regarding slack resources. Although this type of resource has been suggested and was found to enhance organizational innovation in some studies (e.g., Greve), Latham and Braun (2009) found that in declining organizations, managers with higher levels of ownership and more available slack spent significantly less on R&D investment. Moreover, Choi and Chang did not find a significant effect of *availability of resources* on innovation implementation process.

Culture and Climate

In common with studies at the team level, previous research has consistently found that a *climate supportive of innovation* is conducive of organizational-level innovation (Jung et al., 2008; Patterson et al., 2005). Unlike most of the existing studies on organizational innovation, Baer and Frese (2003) explored innovation as an antecedent of performance at the organizational level. They have found that the relationship between process innovativeness and firm performance was enhanced by high levels of *climate for personal initiative* and *psychological safety*.

Despite earlier calls for greater research attention (e.g., Janssen, Van de Vliert, & West, 2004), few studies have addressed the role of *national culture* in organizational innovation. Elenkov and Manev (2005) found that dimensions of national culture moderated the relationships between top management leadership and organizational innovation. Wong, Tjosvold, and Su (2007) reported that *social face* (i.e., the individuals' attempts to show a desirable image to others and get an approval about their image—a cultural aspect particularly valued in collectivistic nations) enhanced innovation through both task reflexivity and resource exchange. Surprisingly, Jung et al. (2003) found *empowerment* to inhibit organizational innovation in their study conducted in Taiwan. They concluded that high power distance that characterizes Taiwanese culture could explain why employees in this type of culture prefer more control by their top managers instead of having more autonomy about how to do their work.

External Environment

Research on organizational innovation has also examined different aspects of the wider environment in which organizations are embedded, such as *urbanization, community wealth, population growth*, and *unemployment rate* (Damanpour & Schneider, 2006*); competition*

(Damanpour, 2010); *geographic distribution of R&D activity* (Lahiri, 2010); and *environmental uncertainty* (S. Wu et al., 2005). For instance, research has found that environmental *uncertainty* enhances organizational innovation (Jung et al., 2008; Martínez-Sánchez et al., 2011; S. Wu et al.). Industry sector or market *competition* has been found to have both a direct positive effect (Damanpour) and a moderating effect on organizational innovation (e.g., Jung et al.).

Innovation Diffusion

Research has mainly examined factors that enhance or inhibit diffusion processes. For instance, Ferlie, Fitzgerald, Wood, and Hawkins (2005) found that social boundaries in terms of strong professional roles and identities of health care professionals together with traditional work practices on one hand and cognitive boundaries in terms of different knowledge bases and research cultures on the other inhibited the diffusion of innovations in the health care setting. Although some studies examined the role of innovation adoption on organizational performance (e.g., Roberts & Amit, 2003), more research is needed to examine the effects of innovation diffusion on firms' outcomes.

Corporate Entrepreneurship as Organizational Innovation

Entrepreneurship refers to a cyclical process of value creation that starts off with human creativity, financial resources, and technological capital, which enhance new product development processes and new institutional forms leading to new ventures and successful innovations (Phan, Zhou, & Abrahamson, 2010). Innovation has been claimed to be an essential part in the new venture success (Baron & Tang, 2011). Research in the field of entrepreneurship has addressed, for instance, how entrepreneurs' characteristics predict organizational innovation (Baron & Tang; Zhou, 2008). One recent study showed that positive affect perceived by the entrepreneurs predicted their creativity, which in turn led to higher organizational innovation (Baron & Tang). There is also a fast growing, emerging literature examining the demand-side approach to entrepreneurship and technology innovation. This approach refers to research that "looks downstream from the focal firm, toward product markets and consumers, to explain and predict those managerial decisions that increase value creation within a value system" (Priem, Li, & Carr, 2012: 346). The value creation according to this approach is determined by consumers' willingness to pay. For instance, the demand-side research is looking at how customers are involved in innovation processes either as taking part in open sourcing or as product producers. The demand-side technological innovations are defined by Priem et al. as "those innovations driven by the goals of either satisfying current consumer needs in an entirely new way or identifying and satisfying new needs" (350). Another interesting theme in the demand-side research is user entrepreneurship, which tries to explain how user or customer demands might lead to innovations which are eventually commercialized by the customers themselves (Priem et al.).

Within the entrepreneurship literature, the concept of corporate entrepreneurship has emerged, which has been defined as a sum of organizational innovation, renewal, and venturing efforts and characterized with innovativeness, risk taking, and proactiveness (Sebora & Theerapatvong, 2010). Specifically, corporate entrepreneurship facilitates the introduction of changes and innovation in established organizations and, hence, some scholars have suggested

a considerable overlap between organizational innovation and corporate entrepreneurship (Lassen, Gertsen, & Riis, 2006). Previous research has addressed the role of *human resource practices* (e.g., Kaya, 2006; Z. Zhang & Jia, 2010), *decision comprehensiveness* (Heavey, Simsek, Roche, & Kelly, 2009), *transformational leadership* (Ling, Simsek, Lubatkin, & Veiga, 2008), and *environmental perceptions* and *discretionary slack* (Simsek, Veiga, & Lubatkin, 2007), among others, in corporate entrepreneurship. Overlaps with our earlier review sections on these precise topics as they affect innovation are obvious. Readers interested in corporate entrepreneurship are encouraged to see Narayanan, Yang, and Zahra (2009) for a comprehensive review.

Summary

Our review shows a large number of studies that have been published in the last decade which clarify the role of diverse organizational and external environmental factors in organizational innovation. What we seem to be missing here, however, is a development of a more thorough and comprehensive conceptual explanation for the role of these factors in organizational innovation and a deeper understanding of how individual creative attempts translate into organizational innovation. We elaborate more on these issues in the directions for future research.

Multilevel Research

Only a handful of studies have examined creativity and innovation processes from the multilevel perspective. Liu, Chen, and Yao (2011) investigated three-level data exploring the impact of *autonomy support* at the higher unit and team level and individual autonomy orientation on individual job creativity. Their findings showed that harmonious passion fully mediated the effects of team autonomy support and team member autonomy orientation on individual creativity and partially mediated the effect of unit autonomy support on individual creativity. Daniels, Tregaskis, and Seaton (2007) looked at the relationships between individual *job control* and different health-related outcomes moderated by country-level R&D activity as proxy for innovation and controlling for sector-level variability, thus involving three levels of analysis—country, sector, and individual. They found that national R&D activity moderated the relationships between individual levels of control and job dissatisfaction, perceived risk of occupational stress, and absence, respectively, such that these relationships were stronger where R&D activity was higher.

Team Structure and Individual Innovation

Van der Vegt and Janssen (2003) did not find any effects for *task and goal interdependence* on innovative behavior in homogenous teams, whereas in heterogeneous teams, task interdependence positively predicted innovative behavior in those individuals who perceived high levels of goal interdependence. Hirst, Van Knippenberg, Chen, and Sacramento (2011) found that *learning orientation* was positively related to individual creativity if there was low *centralization and formalization* within the team. Finally, Thatcher and Greer (2008) examined the role of *identity comprehension* as a team-level variable (i.e., the extent to which the relative importance of one's identities is recognized by important others) in individual creativity and found a positive relationship between these two variables.

Team Climate and Individual Innovation

Pirola-Merlo and Mann (2004) found mixed support for *team climate* on individual creativity with only organizational encouragement of innovation and support for innovation as significant predictors. Hirst, Van Knippenberg, and Zhou (2009) found a curvilinear relationship between *learning orientation* and creativity, which was moderated by *team learning* behavior: At high levels of team learning behavior, the positive relationship between learning orientation and creativity was stronger at moderate levels of learning orientation than at lower and higher levels. Most recently, Chen, Farh, Campbell-Bush, Wu, and Wu (2013) report important findings regarding cross-level effects between individual *proactive motivation, team innovation climate*, and *team motivation* in a sample of 95 R&D teams. The authors found that team innovation climate mediated between transformational leadership and team innovation but also that individual motivational states mediated between proactive personality and individual-level innovation.

Leadership and Team/Individual Innovation

A few other multilevel studies have explored the role of *transformational leadership* and *leader-member exchange* (LMX) on individual creativity. Shin, Kim, Lee, and Bian (2012) found that *cognitive team diversity* was significantly (and positively) related to individual creativity only when self-efficacy was high, and cognitive team diversity was positively related to team member creativity only at high levels of team transformational leadership. P. Wang and Rode (2010) found that *transformational leadership* was most strongly related to individual creativity when high identification with the leader and high innovative climate were present. In contrast, Liao, Liu, and Loi (2010) examined the indirect effect of *LMX quality* on individual creativity via self-efficacy and proposed that this effect is moderated by LMX differentiation. Their results showed that LMX differentiation attenuated LMX quality's indirect effect on individual creativity. Gajendran and Joshi (2012) reported that LMX quality strengthened member influence on team decisions which in turn had a positive effect on team innovation.

Summary

We regard multilevel approaches as having particular promise to uncover and elucidate processes where innovation attempts cross different levels of analysis at some point in their progression, a common feature in many innovation attempts (see our earlier integrative definition). Moreover, such approaches are necessary to examine the role of both personal and situational factors in different performance outcomes (Wallace & Chen, 2006), including creativity and innovation. We return to the issue of the need for greater research using cross-level and multilevel designs in the penultimate section of this article. Next, we turn to the measurement of creativity and innovation at different levels of analysis.

Measurement Issues in Creativity and Innovation Research

Table S5 (see online supplement) summarizes measurement methods at different levels of analysis. Studies have most frequently measured creativity and innovation at the individual

and team levels in terms of survey-based questionnaires, while at the organizational level, a considerable amount of studies used secondary objective data sources, such as Compustat, Eurostat, or organizations' own archives. Creativity has most frequently been assessed by Zhou and George's (2001) instrument (12% of studies), followed by the measures of Oldham and Cummings (1996; 8% of studies) and Tierney, Farmer, and Graen (1999; 6% of studies). With regard to innovation, the instruments by Janssen (2001; 5% of studies), Burpitt and Bigoness (1997; 4% of studies), and Scott and Bruce (1994; 3% of studies) appear to have been used most frequently, although in the vast majority of studies the authors constructed their own research context–specific measures of innovation. A proportion of studies still rely upon self-ratings of dependent and/or independent variables in innovation research. At the individual level, this was around 24% of studies; at the team level, some 7%; and for multi-level studies, this was approximately 14%. Over the last decade there has been a concomitant increase in the use of independent or observer ratings, such as supervisory ratings (Yuan & Woodman, 2010; X. Zhang & Bartol, 2010a, 2010b), peer ratings (e.g., Alge et al., 2006), and expert ratings (e.g., Choi & Chang, 2009). Archival objective data, such as number of patents or number of new products launched, was mainly used to assess innovation at the organizational level (Latham & Braun, 2009; Puranam et al., 2006), where some 36% of all studies in this period utilized this approach.

It is encouraging to note such advances in the methodological sophistication of study design characteristics and especially to see an apparently notable decline in the use of self-report measures for both independent and dependent variables. However, studies at the individual level lag behind this trend with many published studies reviewed still relying upon self-generated self-report measures, despite evidence that such designs have inherent shortcomings that lead to common method bias, percept-percept inflation, and construct validity concerns (Hülsheger et al., 2009; Ng & Feldman, 2012; Potočnik & Anderson, 2012). Having noted these methodological characteristics, we move on in the following section to propose key research questions and priority issues for future research in organizational innovation generally.

Directions for Future Research

Table S6 proposes a total of 60 specific research questions that future studies should address, again using our four-levels-of-analysis framework (see online supplement). Extending beyond these points, we identify 11 focal themes that warrant greater attention by researchers.

Integrate the Idea Generation and Idea Implementation Subfields

Akin to two siblings who fell out at a family gathering in their distant past, the subfields of idea generation and idea implementation remain doggedly disconnected from one another. Our unambiguous call is for these two disparate subfields to become far more integrated in future. Dominant perspectives, patterns of citation of specific literatures, and inferences to future research and practice have unfortunately developed without sufficient synergy and integration. This is especially regrettable given that the phenomena of creativity and innovation have such clear overlaps, similarities, and the potential for synergy to advance our

comprehensive understanding of these phenomena in organizations. Despite this, some recent signs of a reunion and reconciliation between these two subdisciplinary siblings have appeared, and these developments, we believe, are highly beneficial and hold out substantial promise for future research in both subdomains to become more mutually informed and integrated and have more of an impact upon organizations and policy makers (Bledow et al., 2009b). The more that these two subdomains can be integrated by future research efforts, the better.

Need for Theorizing and Theory-Driven Studies

Second, compared with the exciting development of multiple distinctive new theories (e.g., Amabile, 1983; West, 1990; Woodman et al., 1993) at the start of workplace creativity and innovation research, we are struck by the relative lack of theoretical advances across the creativity and innovation literatures in the past decade. This holds true at the individual, team, and organizational levels of analysis but is perhaps less so for the more emergent studies having appeared using multilevel approaches. Although a whole morass of valuable empirical studies has appeared over the last decade, relatively few distinctively theoretical advances have been published within this sheer volume of studies. To invert the title of one article—"*stagnant fountains and sparkling ponds*" (as opposed to "*stagnant ponds and sparkling fountains*"; West, 2002a)—characterizes, perhaps marginally unkindly, our impression of this situation. In overview, there have been relatively few theoretical proposition articles, model development articles, or conceptual development pieces over the recent period in our view. Ironically, with the exception of some of the theoretical contributions we discussed earlier in this review (Bledow et al., 2009a; Zhou, 2006; and some notable conceptual articles published in the *Academy of Management Review*, such as Dhanarag & Parkhe, 2006; Litchfield, 2008; Mainemelis, 2010; Perry-Smith & Shalley, 2003; Sheremata, 2004; Skilton & Dooley, 2010), there remains a real need for more, and more radical, theory-building contributions. Some of the most influential theories in the field have been around 20 to 30 years or even longer now (e.g., Amabile, 1983, 1988; West, 1990), and yet more recent theoretical contributions, or for that matter, counterpoint articles critical of existing theories and models, remain notable only by their absence. For a subfield whose raison d'être is to advance understanding of how new and innovative ideas flourish into implemented and valuable innovations, this is both paradoxical and perplexing.

It is not immediately clear to us why this has been the case. Where might future theoretical contributions be most valuable? And in which ways might theoretically driven studies add most notably to our understanding? Here, the most valuable avenues we consider will be to proffer (a) models and theoretical propositions to explain cross-level and multilevel innovation, such as a multilevel model of creativity by Drazin, Glynn, and Kazanjian (1999) to explain the effects of variables at different levels of analysis simultaneously on creativity and innovation; (b) proposition studies that set up empirically testable hypotheses based upon interactions between multiple variables (not merely single "predictor" variables and creativity or innovation as the outcome); (c) theoretical integrations based upon findings from meta-analytical integrations of primary studies; and (d) more radical conceptualizations of creativity and innovation processes and outcomes (e.g., innovation as counterproductive behavior, "dark side" perspectives, innovation as intellectual property right violation).

We consider several of these themes in later calls below, but these overriding directions for theory building we would highlight as having considerable latent potential to advance understanding in this area.

Organization Culture and Facet-Specific Climates for Creativity and Innovation

Linkages between organization culture and climate have remained rather unexplored in creativity and innovation research. Rousseau (1988) called for greater attention to be given to so-called *facet-specific climates*, referring to climate for innovation as a dynamic construct linked to organizational culture more generally. Several more recent reviews of the organization culture literature support this assertion (Jones, Jimmieson, & Griffiths, 2005; Sarros, Cooper, & Santora, 2008; Sørensen, 2002), yet more needs to be done to explain how culture and climate act as facilitators or inhibitors of innovation within organizations. Organizational-level research clearly suggests that underlying cultures supportive of innovation act as facilitators of change in specific sectors and organizational settings (e.g., Jaskyte & Dressler, 2005; Khazanchi, Lewis, & Boyer, 2007), but what is less clear is how these underlying cultures are manifest as facet-specific climates for innovation.

Innovation Process Research

There has been a quite notable paucity of research exploring the processes inherent in creativity and innovation compared with the plethora of studies evaluating the multitude of so-called antecedent factors to innovation. Indeed, the field appears to have moved away from process research in general despite earlier publications of valuable process models derived from longitudinal, observational studies in real time within differing organizational settings (e.g., King, 1992; Van de Ven et al., 1989). The precise reasons for this are moot, but our impression is that our understanding of innovation processes at different levels of analysis has not moved forward significantly in recent years. This is especially the case for cross-level and multilevel innovation attempts where our understanding of these phenomena could be greatly elucidated by more process research. Here, research could also valuably adopt a "*momentum perspective*" to examine the effects of changes in key variables over time and how these impinge upon subsequent innovativeness (see, for instance, Chen, Ployhart, Cooper-Thomas, Anderson, & Bliese, 2011). We thus call for reinvigorated attention to process studies using appropriate observational, diary study, real-time case study, and ethnographic research approaches within organizational settings. These in situ approaches, we believe, are potentially valuable to uncover these processes as they unfold in organizations, rather than an overreliance upon large-scale questionnaire designs that appear to be predominant in the field presently (see also Montag, Maertz, & Baer, 2012).

Redress Creativity and Innovation Maximization Fallacy

As long ago as 1981, Kimberly coined the term *proinnovation bias* to describe the presumption that innovation is a desirable characteristic and that positive outcomes will invariably arise from all forms of innovation. While we agree that both creativity and innovation

have inherently positive connotations (What management team, worker, or organization would not prefer to describe themselves as such?), we go further to suggest that these literatures in general now suffer from *innovation maximization fallacy*. We propose this concept to describe the implicit, untested, and critically suspect set of presumptions that has grown out of proinnovation bias' remaining unchallenged. Innovation maximization fallacy is that "*all creativity and innovation is good; and the more, the better*." This fallacy unfortunately remains implicit and rarely even acknowledged across the creativity and innovation literatures. Instead, it is a naïve and untested assumption underlying many studies, pragmatic texts, and even some scholarly volumes. The implicit (il)logical assumption appears to be that (a) if a factor or variable correlates with innovativeness, then (b) a higher level, or increase on that variable, will lead to higher levels of sustainable innovation. Yet, creativity and innovation are often experienced as disruptive events, do not always benefit all parties affected, and may be initiated in response to distress-related stimuli, and excessive innovation may be counterproductive to other aspects of individual, team, or organizational performance (Anderson & King, 1993).

Of course, the logical extension of innovation maximization at any level of analysis would be perverse and dysfunctional: individuals, teams, and organizations continuously changing and reinventing ever-new ways of working but failing to routinize any innovation or to perform routine tasks and responsibilities at the core of organizational success. Just for the sake of visualization, imagine such an organization based upon maximizing all of the factors correlating with innovation we have reviewed at all levels of analysis (if that were possible). Would this be viable and sustainable, let alone lead to successful performance? We would suggest not. Rather, this would inevitably lead to highly dysfunctional job roles, team working structures, or even entire organizations incapable of handling routine task performance demands and that may be fundamentally unstable and uncompetitive (see also Bledow et al., 2009a). Past research has failed to critically examine the underlying assumptions implicit in innovation maximization fallacy. That one variable or another has been found to correlate with creativity or innovation does not imply that increases in this variable will necessarily increase innovativeness or that such increases are always desirable. Instead, the crucial issues here are the context for creativity, the contingencies surrounding innovation, and how innovation processes coexist with routinized processes within any organization, subunit, or individual work role (see also Priem et al., 2012). The latter point, in our view, holds out greatest promise to further research in this area; study designs need to examine relationships in real time between the performance of routine tasks and creativity and innovation processes at different levels of analysis.

A recent study provides initial empirical evidence that examining consequences of creativity and innovation holds much promise to move the field forward. Specifically, Gong, Zhou, and Chang (2013) investigated how riskiness orientation (i.e., the tendency to make large and risky resource commitments concerning entry into new businesses or markets), realized absorptive capacity (i.e., capabilities to transform and apply new knowledge), and firm size influence the employee creativity–firm performance relation. They found that employee creativity was negatively related to firm performance when riskiness orientation was high, positive when realized absorptive capacity was high, and more positive in small than large firms.

Taken together, future research is called for to redress the proinnovation bias but also to debunk the myth that all innovation is good and more creativity and innovation is better for

organizational performance (see also Anderson & Costa, 2010). For instance, studies are called for that explore situations where innovations were implemented but subsequently were abandoned because they were deemed unsuccessful, where innovation attempts have negative but unintended consequences, where individual-level work role innovations may even be seen as counterproductive behavior, where too much innovation may be detracting from more general overall job and team performance, or where the outcomes from alternative interventions to stimulate innovation are compared empirically. All are examples of where studies in this vein countering innovation maximization fallacy would be valuable.

Senior Management Team and Intervention Studies

There has been a marked absence of research into senior management team (SMT) innovation or of studies adopting truly intervention-based designs to examine the causal effects of planned changes upon innovativeness over the period of our review and, in fact, historically. Both issues strike us as potentially highly valuable for present and future research as both possess notable prospects for robustly affecting organizational practices and the management of innovation processes in workplace settings (Anderson, Herriot, & Hodgkinson, 2001). However, only a handful of studies have examined innovation at the level of the SMT (e.g., Alexiev, Jansen, Van den Bosch, & Volberda, 2010; Smith & Tushman, 2005; West & Anderson, 1992, 1996) amongst the mass of studies examining creativity and innovation at lower levels in the organizational hierarchy. Both the generation of ideas purely at the level of the SMT and the receipt and treatment of ideas by SMTs proposed upwards to them have received scant attention in the innovation literatures to date despite the crucial position held by senior managers to facilitate or stifle innovation. One literature that we believe could valuably inform such research is the newly emergent area of cognitive processes and strategic decision making in SMTs (Hodgkinson, 2001).

As regards intervention studies, our comprehensive review failed to locate a single adequately conducted and reported study that employed a genuine intervention design at any of the levels of analysis considered (although some experiential case studies are written up in the wider organizational development literature). Here, we call for fully functional, pre- and postmeasurement designs, preferably with the use of experimental and control group designs in real life organizational interventions with the express aim of improving individual-, team-, or organizational-level innovativeness. We foresee such intervention studies at the individual and team levels as being the most feasible to conduct, not least to give direct empirical evidence on the efficacy of a range of creativity training techniques that have mushroomed in the consultancy arena (see also Epstein, Schmidt, & Warfel, 2008).

Leadership Style in the Creativity-Innovation Cycle

Our review noted some studies at different levels of analysis that unambiguously confirm the importance of leadership style. However, research in this area was more limited than one might have supposed, especially given the pervasive importance of leadership to innovation outcomes (Bledow et al., 2009a, 2009b; Chen et al., 2013). Whether at the level of individual supervision, the work group, or higher level strategic leadership within an organization, effective leadership for innovation is paramount. We thus view this topic area as particularly

important but so far rather neglected in empirical studies. Far more could be done to elucidate the effects of leadership style and behavior upon creativity and innovation in the workplace and, in particular, effective leadership styles at different stages in the innovation cycle. How do leaders handle the competing demands of routine task management and simultaneously trying to manage innovation processes? Is it really possible for leaders to fundamentally modify their behavior dependent upon stage in the innovation cycle? How can a CEO or board of directors most effectively influence organization strategy and culture to facilitate innovativeness? Again, Table S6 (see online supplement) sets out more questions in this regard. These, and other vital issues regarding the effects of leadership upon innovation, remain largely open for future research to explore and explain.

"Dark Side" Approaches and Studies

An intriguing but to date underresearched issue concerns what has been termed the "dark side" of innovation predictors, processes, and outcomes (Anderson & Gasteiger, 2008a, 2008b; Janssen et al., 2004). Past studies reveal variously that innovation attempts can be provoked by negative work role evaluations and moods (Binnewies & Wörnlein, 2011; Bledow, Rosing, & Frese, 2013), that experienced conflict may provoke innovation, that innovation is perceived in progress and in situ as conflictual, and that its outcomes may be both positive and negative in terms of team cohesion and objective clarity (e.g., Chen, Liu, & Tjosvold, 2005). Binnewies and Wörnlein, for instance, use a diary study method to examine the effects of negative affect, job stressors, and perceived job control on the innovativeness of a sample of interior designers. They found that job control moderated the relation between negative affect and daily creativity. This more qualitative approach, we believe, holds promise to open up both the dark sides to innovation attempts and the process as it unfolds over time. As Anderson and Gasteiger summarize, "Truly, there is a dysfunctional aspect to innovation, less visible or managerially appealing, but an aspect nevertheless that has surfaced repeatedly across empirical studies" (2008b: 422). Such dark side research also counters any uncritically assumed positive antecedents and processes of innovation, but this perspective further has the advantage of contributing to our understanding of workplace innovation phenomena "warts and all." Future research, we suggest, should therefore attempt to model both the positive and negative sides to innovation, and integrative models should encapsulate these in ways that allow them to be considered in relation to innovation antecedents, processes, and outcomes.

Role of Customers in Employee Creativity and Innovation

Much existing theorizing and research on social contexts for employee creativity and innovation has been confined within organizational boundaries. For example, researchers have studied how supervisors and coworkers facilitate or inhibit employee creativity, and we have reviewed many of such studies. However, with a few exceptions, little attention has been paid to how actors outside of the organization—customers, clients, professional bodies, cross-boundary networks, and so forth—influence employee creativity and innovation (see Operti & Carnabuci, 2014). This view is consistent with the demand side of the innovation that has been explored in relation to technological innovation (Priem et al., 2012). Yet, our review found a dearth of studies that have examined the causes, processes, or effects of

cross-boundary innovation from the outside in. Future studies could examine these outside-in influences regarding how and why employees engage in creativity and innovation, but we see particular promise in relation to customer-driven innovation attempts.

Role of the Internet and Social Media in Creativity and Innovation

Technological advancements, especially the near-ubiquitous penetration of the Internet, may have the potential to fundamentally alter how creativity and innovation are fostered and managed by organizations. Indeed, many organizations are already using these technologies to foster idea generation and dissemination, but our impression is that management science research has, if anything, lagged behind practice. Given the increasing tendency of geographically dispersed teams, the importance of the Internet in creativity and innovation management should be examined in much more detail. Compared to traditional face-to-face teams, such virtual teams are faced with specific challenges, such as time zone dispersion and high member heterogeneity, which most likely pose specific requirements on their innovative attempts (Gajendran & Joshi, 2012). Furthermore, we know little about how other social media (e.g., Facebook, mobile texting) affect creativity and innovation. Work is also needed to examine the concomitant advantages and disadvantages of open-source innovation, that is, innovation that is coproduced by its users.

Future Research Design Imperatives

In addition to these main avenues of focus for future studies, there are two pressing imperatives regarding research design—the need to meta-analytically integrate the increasing volume of primary studies and the need to expand the numbers of cross-level and multilevel study designs.

Meta-Analyses of Primary Studies

Concurring with calls in past reviews, we still note the need for meta-analytical integration of the innovation research at, and between, different levels of analysis (Anderson & King, 1993; Damanpour, 2010; Rosing et al., 2011). Although progress has been made through the publication of several recent meta-analyses, particularly at the team level, there is still much room in our view for further quantitative integrations. This is particularly true at the individual level of analysis where there is still a lack of meta-analytic integrations of this increasingly large and disparate body of studies. Once such quantitative integrations have been undertaken and published, it will free up researchers to pursue other research questions, and cross-level issues, rather than to continue to focus upon historically well-examined relationships and at a single level of analysis.

Cross-Level and Multilevel Approaches and Studies

Table S6 (see online supplement) sets out several pressing themes and questions for cross-level and multilevel studies. As previously mentioned, we believe that such approaches have considerable promise to move forward our understanding of creativity and innovation in organizations that, by their nature, often involve cross-level and multilevel phenomena. Four

relevant interfaces hold out real promise: (a) *the individual-team (I-T) interface*, where individual employee ideas or proposals are taken up by a team and pursued toward implementation; (b) *the team-individual (T-I) interface*, where work group processes and phenomena impinge upon individual team members; (c) *the team-organization (T-O) interface*, where team innovations involve wider aspects of the organization or its senior management; and (d) *the organization-team (O-T) interface*, where organizational-level processes and phenomena impinge upon teams. All four warrant future research attention, and we propose these interfaces also to highlight the bidirectional effects likely to occur between different levels of analysis for different types of innovation phenomena.

Conclusion

Without doubt, the range and variety of advances in creativity and innovation research described in this review have significantly advanced our understanding of how these phenomena play out at the various levels of analysis within organizations. Our objective in undertaking this review was to present a comprehensive but constructively critical review of the burgeoning literatures that now compose our multidisciplinary knowledge base on creativity and innovation in the workplace. The volume of contributions we located and covered, as well as the exponential growth we observed in this literature base, led us to impose our four-levels-of-analysis framework as an organizing heuristic. Our impression as we progressed with this literature review was that the field has continued to make strides forward but, and these are notable shortcomings, that it has remained afflicted by disparate approaches, some lack of theoretical grounding, and a general paucity of integrative and multilevel studies over recent years. Redressing these limitations would generate a quantum leap forward in our understanding of the complex phenomena that comprise workplace creativity and innovation. Researchers active in this diverse field need to embrace these challenges. Without innovation, few organizations can hope to survive and prosper; we believe that precisely the same holds true for research into creativity and innovation research in the future.

References

Alexiev, A. S., Jansen, J. J. P., Van den Bosch, F. A. J., & Volberda, H. W. 2010. Top management team advice seeking and exploratory innovation: The moderating role of TMT heterogeneity. *Journal of Management Studies*, 47: 1343-1364.

Alge, B. J., Ballinger, G. A., Tangirala, S., & Oakley, J. L. 2006. Information privacy in organizations: Empowering creative and extrarole performance. *Journal of Applied Psychology*, 91: 221-232.

Amabile, T. M. 1983. *The social psychology of creativity*. New York: Springer-Verlag.

Amabile, T. M. 1988. A model of creativity and innovation in organizations. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior*, vol. 10: 123-167. Greenwich, CT: JAI Press.

Amabile, T. M. 1996. *Creativity in context*. Boulder, CO: Westview.

Amabile, T. M. 1997. Motivating creativity in organizations: On doing what you love and loving what you do. *California Management Review*, 40: 39-58.

Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. 2005. Affect and creativity at work. *Administrative Science Quarterly*, 50: 367-403.

Amabile, T. M., & Conti, R. 1999. Changes in the work environment for creativity during downsizing. *Academy of Management Journal*, 42: 630-640.

Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. 2004. Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly*, 15: 5-32.

Anderson, N., & Costa, A. C. 2010. Innovation and knowledge management: The constant idyll of change. In N. Anderson & A. C. Costa (Eds.), *Major works in innovation and knowledge management:* xxiii-xli. London: Sage.

Anderson, N., De Dreu, C. K. W., & Nijstad, B. A. 2004. The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of Organizational Behavior*, 25: 147-173.

Anderson, N., & Gasteiger, R. M. 2008a. Innovation and creativity in organisations: Individual and work team research findings and implications for government policy. In B. Nooteboom & E. Stam (Eds.), *Micro-foundations for innovation policy*: 249-271. Amsterdam, the Netherlands: Amsterdam University Press/WRR.

Anderson, N., & Gasteiger, R. M. 2008b. Helping creativity and innovation thrive in organizations: Functional and dysfunctional perspectives. In J. Langan-Fox, C. L. Cooper, & R. J. Klimoski (Eds.), *Research companion to the dysfunctional workplace: Management challenges and symptoms*: 422-440. Cheltenham, England: Edward Elgar.

Anderson, N., Herriot, P., & Hodgkinson, G. 2001. The practitioner-researcher divide in industrial, work and organizational (IWO) psychology: Where are we now and where do we want to go from here? *Journal of Occupational and Organizational Psychology*, 74: 391-411.

Anderson, N., & King, N. 1991. Managing innovation in organizations. *Leadership and Development Journal*, 12: 17-21.

Anderson, N., & King, N. 1993. Innovation in organizations. In C. Cooper & I. Robertson (Eds.), *International review of industrial and organizational psychology*: 86-104. London: Wiley.

Anderson, N., & West, M. A. 1998. Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior*, 19: 235-258.

Atwater, L., & Carmeli, A. 2009. Leader-member exchange, feelings of energy, and involvement in creative work. *The Leadership Quarterly*, 20: 264-275.

Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., Waterson, P. E., & Harrington, E. 2000. Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of Occupational and Organizational Psychology*, 73: 265-285.

Baas, M., De Dreu, C. W. K., & Nijstad, B. A. 2008. A meta-analysis of 25 years of mood-creativity research: Hedonic tone, activation, or regulatory focus? *Psychological Bulletin*, 134: 779-806.

Baer, M. 2010. The strength-of-weak-ties perspective on creativity: A comprehensive examination and extension. *Journal of Applied Psychology*, 95: 592-601.

Baer, M. 2012. Putting creativity to work: The implementation of creative ideas in organizations. *Academy of Management Journal*, 55: 1102-1119.

Baer, M., & Frese, M. 2003. Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior*, 24: 45-68.

Baer, M., & Oldham, G. R. 2006. The curvilinear relation between experienced creative time pressure and creativity: Moderating effects of openness to experience and support for creativity. *Journal of Applied Psychology*, 91: 963-970.

Baer, M., Oldham, G. R., & Cummings, A. 2003. Rewarding creativity: When does it really matter? *The Leadership Quarterly*, 14: 569-586.

Baron, R. A., & Tang, J. 2011. The role of entrepreneurs in firm-level innovation: Joint effects of positive affect, creativity, and environmental dynamism. *Journal of Business Venturing*, 26: 49-60.

Binnewies, C., & Wörnlein, S. C. 2011. What makes a creative day? A diary study on the interplay between affect, job stressors, and job control. *Journal of Organizational Behavior*, 32: 589-607.

Bledow, R., Frese, M., Anderson, N., Erez, M., & Farr, J. 2009a. A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 2: 305-337.

Bledow, R., Frese, M., Anderson, N., Erez, M., & Farr, J. 2009b. Extending and refining the dialectic perspective on innovation: There is nothing as practical as a good theory; nothing as theoretical as a good practice. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 2: 363-373.

Bledow, R., Rosing, K., & Frese, M. 2013. A dynamic perspective on affect and creativity. *Academy of Management Journal*, 56: 432-450.

Bono, J. E., & Judge, T. A. 2003. Self-concordance at work: Toward understanding the motivational effects of transformational leaders. *Academy of Management Journal*, 46: 554-571.

Burpitt, W. J., & Bigoness, W. J. 1997. Leadership and innovation among teams. *Small Group Research*, 28: 414-423.

Camisón-Zornoza, C., Lapiedra-Alcamí, R., Segarra-Ciprés, M., & Boronat-Navarro, M. 2004. A meta-analysis of innovation and organizational size. *Organization Studies*, 25: 331-361.

Carmeli, A., & Schaubroeck, J. 2007. The influence of leaders' and other referents' normative expectations on individual involvement in creative work. *The Leadership Quarterly*, 18: 35-48.

Chen, G., Farh, J.-L., Campbell-Bush, E. M., Wu, Z., & Wu, X. 2013. Teams as innovative systems: Multilevel motivational antecedents of innovation in R&D teams. *Journal of Applied Psychology*, 98: 1018-1027.

Chen, G., Liu, C., & Tjosvold, D. 2005. Conflict management for effective top management teams and innovation in China. *Journal of Management Studies*, 42: 277-300.

Chen, G., Ployhart, R. E., Cooper-Thomas, H. D., Anderson, N., & Bliese, P. D. 2011. The power of momentum: A new model of dynamic relationships between job satisfaction change and turnover intentions. *Academy of Management Journal*, 54: 159-181.

Cheng, C. Y., Sanchez-Burks, J., & Lee, F. 2008. Connecting the dots within: Creative performance and identity integration. *Psychological Science*, 19: 1178-1184.

Chiu, C., & Kwan, L. Y. 2010. Culture and creativity: A process model. *Management and Organization Review*, 6: 447-461.

Choi, J. N., Anderson, T. A., & Veillette, A. 2009. Contextual inhibitors of employee creativity in organizations: The insulating role of creative ability. *Group & Organization Management*, 34: 330-357.

Choi, J. N., & Chang, J. Y. 2009. Innovation implementation in the public sector: An integration of institutional and collective dynamics. *Journal of Applied Psychology*, 94: 245-253.

Choi, J. N., & Price, R. H. 2005. The effects of person-innovation fit on individual responses to innovation. *Journal of Occupational and Organizational Psychology*, 78: 83-96.

Choi, J. N., Sung, S. Y., Lee, K., & Cho, D. 2011. Balancing cognition and emotion: Innovation implementation as a function of cognitive appraisal and emotional reactions toward innovation. *Journal of Organizational Behavior*, 32: 107-124.

Clegg, C., Unsworth, K., Epitropaki, O., & Parker, G. 2002. Implicating trust in the innovation process. *Journal of Occupational and Organizational Psychology*, 75: 409-422.

Cohendet, P., & Simon, L. 2007. Playing across the playground: Paradoxes of knowledge creation in the videogame firm. *Journal of Organizational Behavior*, 28: 587-605.

Damanpour, F. 2010. An integration of research findings of effects of firm size and market competition on product and process innovations. *British Journal of Management*, 21: 996-1010.

Damanpour, F., & Schneider, M. 2006. Phases of the adoption of innovation in organizations: Effects of environment, organization and top managers. *British Journal of Management*, 17: 215-236.

Daniels, K., Tregaskis, O., & Seaton, J. S. 2007. Job control and occupational health: The moderating role of national R&D activity. *Journal of Organizational Behavior*, 28: 1-19.

De Stobbeleir, K. E. M., Ashford, S. J., & Buyens, D. 2011. Self-regulation of creativity at work: The role of feedback-seeking behavior in creative performance. *Academy of Management Journal*, 54: 811-831.

Dhanarag, C., & Parkhe, A. 2006. Orchestrating innovation networks. *Academy of Management Review*, 31: 659-669.

Drazin, R., Glynn, M. A., & Kazanjian, R. K. 1999. Multilevel theorizing about creativity in organizations: A sensemaking perspective. *Academy of Management Review*, 24: 286-307.

Dweck, C. S. 1999. *Self-theories: Their role in motivation, personality, and development*. Ann Arbor, MI: Psychology Press.

Eisenberger, R., & Aselage, J. 2009. Incremental effects of reward on experienced performance pressure: Positive outcomes for intrinsic interest and creativity. *Journal of Organizational Behavior*, 30: 95-117.

Elenkov, D. S., & Manev, I. M. 2005. Top management leadership and influence on innovation: The role of sociocultural context. *Journal of Management*, 31: 381-402.

Elliot, A. J., & Church, M. A. 1997. A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72: 218-232.

Epstein, R., Schmidt, S. M., & Warfel, R. 2008. Measuring and training creativity competencies: Validation of a new test. *Creativity Research Journal*, 20: 7-12.

Erez, M., & Nouri, R. 2010. Creativity: The influence of cultural, social, and work contexts. *Management and Organization Review*, 6: 351-370.

Farmer, S. M., Tierney, P., & Kung-McIntyre, K. 2003. Employee creativity in Taiwan: An application of role identity theory. *Academy of Management Journal*, 46: 618-630.

Ferlie, E., Fitzgerald, L., Wood, M., & Hawkins, C. 2005. The nonspread of innovations: The mediating role of professionals. *Academy of Management Journal*, 48: 117-134.

Figueiredo, P. N. 2011. The role of dual embeddedness in the innovative performance of MNE subsidiaries: Evidence from Brazil. *Journal of Management Studies*, 48: 417-440.

Fong, C. T. 2006. The effects of emotional ambivalence on creativity. *Academy of Management Journal*, 49: 1016-1030.

Ford, C. M. 1996. A theory of individual creative action in multiple social domains. *Academy of Management Review*, 21: 1112-1142.

Gajendran, R. S., & Joshi, A. 2012. Innovation in globally distributed teams: The role of LMX, communication frequency, and member influence on team decisions. *Journal of Applied Psychology*, 97: 1252-1261.

George, J. M. 2007. Creativity in organizations. *The Academy of Management Annals*, 1: 439-477.

George, J. M., & Zhou, J. 2001. When openness to experience and conscientiousness are related to creative behavior: An interactional approach. *Journal of Applied Psychology*, 86: 513-524.

George, J. M., & Zhou, J. 2002. Understanding when bad moods foster creativity and good ones don't: The role of context and clarity of feelings. *Journal of Applied Psychology*, 87: 687-697.

George, J. M., & Zhou, J. 2007. Dual tuning in a supportive context: Joint contributions of positive mood, negative mood, and supervisory behaviors to employee creativity. *Academy of Management Journal*, 50: 605-622.

Gilson, L. L., & Shalley, C. E. 2004. A little creativity goes a long way: An examination of teams' engagement in creative processes. *Journal of Management*, 30: 453-470.

Gong, Y., Cheung, S., Wang, M., & Huang, J. 2012. Unfolding the proactive process for creativity: Integration of the employee proactivity, information exchange, and psychological safety perspectives. *Journal of Management*, 38: 1611-1633.

Gong, Y., Huang, J., & Farh, J. 2009. Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal*, 52: 765-778.

Gong, Y., Zhou, J., & Chang, S. 2013. Core knowledge employee creativity and firm performance: The moderating role of riskiness orientation, firm size, and realized absorptive capacity. *Personnel Psychology*, 66: 443-482.

Grant, A. M., & Berry, J. W. 2011. The necessity of others is the mother of invention: Intrinsic and prosocial motivations, perspective taking, and creativity. *Academy of Management Journal*, 54: 73-96.

Greve, H. R. 2003. A behavioral theory of R&D expenditures and innovations: Evidence from shipbuilding. *Academy of Management Journal*, 46: 685-702.

Hackman, J. R., & Oldham, G. R. 1980. *Work redesign*. Reading, MA: Addison-Wesley.

Hargadon, A. B., & Bechky, B. A. 2006. When collections of creatives become creative collectives: A field study of problem solving at work. *Organization Science*, 17: 484-500.

He, Z., & Wong, P. 2004. Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization Science*, 15: 481-494.

Heavey, C., Simsek, Z., Roche, F., & Kelly, A. 2009. Decision comprehensiveness and corporate entrepreneurship: The moderating role of managerial uncertainty preferences and environmental dynamism. *Journal of Management Studies*, 46: 1289-1314.

Hempel, P. S., & Sue-Chan, C. 2010. Culture and the assessment of creativity. *Management and Organization Review*, 6: 415-435.

Hirst, G., Van Dick, R., & Van Knippenberg, D. 2009. A social identity perspective on leadership and employee creativity. *Journal of Organizational Behavior*, 30: 963-982.

Hirst, G., Van Knippenberg, D., Chen, C. H., & Sacramento, C. A. 2011. How does bureaucracy impact individual creativity? A cross-level investigation of team contextual influences on goal orientation-creativity relationships. *Academy of Management Journal*, 54: 624-641.

Hirst, G., Van Knippenberg, D., & Zhou, J. 2009. A cross-level perspective on employee creativity: Goal orientation, team learning behavior, and individual creativity. *Academy of Management Journal*, 52: 280-293.

Hodgkinson, G. P. 2001. Cognitive processes in strategic management: Some emerging trends and future directions. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work and organizational psychology*: 416-440. London: Sage.

Howell, J. M., & Boies, K. 2004. Champions of technological innovation: The influence of contextual knowledge, role orientation, idea generation, and idea promotion on champion emergence. *The Leadership Quarterly*, 15: 123-143.

Hülsheger, U. R., Anderson, N., & Salgado, J. F. 2009. Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology*, 94: 1128-1145.

Janssen, O. 2000. Job demands, perceptions of effort-reward fairness, and innovative work behavior. *Journal of Occupational and Organizational Psychology*, 73: 287-302.

Janssen, O. 2001. Fairness perceptions as a moderator in the curvilinear relationships between job demands, and job performance and job satisfaction. *Academy of Management Journal*, 44: 1039-1050.

Janssen, O. 2003. Innovative behaviour and job involvement at the price of conflict and less satisfactory relations with co-workers. *Journal of Occupational and Organizational Psychology*, 76: 347-364.

Janssen, O. 2005. The joint impact of perceived influence and supervisor supportiveness on employee innovative behaviour. *Journal of Occupational and Organizational Psychology*, 78: 573-579.

Janssen, O., Van de Vliert, E., & West, M. A. 2004. The bright and dark sides of individual and group innovation: A special issue introduction. *Journal of Organizational Behavior*, 25: 129-145.

Janssen, O., & Van Yperen, N. W. 2004. Employees' goal orientations, the quality of leader-member exchange, and the outcomes of job performance and job satisfaction. *Academy of Management Journal*, 47: 368-384.

Jaskyte, K., & Dressler, W. W. 2005. Organization culture and innovation in nonprofit human service organizations. *Administration in Social Work*, 29: 23-41.

Jaussi, K. S., Randel, A. E., & Dionne, S. D. 2007. I am, I think I can, and I do: The role of personal identity, self-efficacy, and cross-application of experiences in creativity at work. *Creativity Research Journal*, 19: 247-258.

Jehn, K. A., Rispens, S., & Thatcher, S. M. B. 2010. The effects of conflict asymmetry on work group and individual outcomes. *Academy of Management Journal*, 53: 596-616.

Jones, R. A., Jimmieson, N. L., & Griffiths, A. 2005. The impact of organization culture and reshaping capabilities on change implementation success: The mediating role of readiness for change. *Journal of Management Studies*, 42: 361-386.

Jung, D. I., Chow, C., & Wu, A. 2003. The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly*, 14: 525-544.

Jung, D., Wu, A., & Chow, C. W. 2008. Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation. *The Leadership Quarterly*, 19: 582-594.

Karim, S. 2009. Business unit reorganization and innovation in new product markets. *Management Science*, 55: 1237-1254.

Kark, R., & Carmeli, A. 2009. Alive and creating: The mediating role of vitality and aliveness in the relationship between psychological safety and creative work involvement. *Journal of Organizational Behavior*, 30: 785-804.

Katila, R. 2002. New product search over time: Past ideas in their prime? *Academy of Management Journal*, 45: 995-1010.

Kaya, N. 2006. The impact of human resource management practices and corporate entrepreneurship on firm performance: Evidence from Turkish firms. *The International Journal of Human Resource Management*, 17: 2074-2090.

Khazanchi, S., Lewis, M. W., & Boyer, K. K. 2007. Innovation-supportive culture: The impact of organization values on process innovation. *Journal of Operations Management*, 25: 871-884.

Khazanchi, S., & Masterson, S. S. 2011. Who and what is fair matters: A multi-foci social exchange model of creativity. *Journal of Organizational Behavior*, 32: 86-106.

Kijkuit, B., & Van den Ende, J. 2010. With a little help from our colleagues: A longitudinal study of social networks for innovation. *Organization Studies*, 31: 451-479.

Kimberly, J. R. 1981. Managerial innovation. In P. C. Nystrom & W. H. Starbuck (Eds.), *Handbook of organizational design*: 84-104. Oxford, England: Oxford University Press.

King, N. 1992. Modelling the innovation process: An empirical comparison of approaches. *Journal of Occupational and Organizational Psychology*, 65: 89-100.

Krause, D. E. 2004. Influence-based leadership as a determinant of the inclination to innovate and of innovation-related behaviors: An empirical investigation. *The Leadership Quarterly*, 15: 79-102.

Kyriakopoulos, K., & De Ruyter, K. 2004. Knowledge stocks and information flows in new product development. *Journal of Management Studies*, 41: 1469-1498.

Lahiri, N. 2010. Geographic distribution of R&D activity: How does it affect innovation quality? *Academy of Management Journal*, 53: 1194-1209.

Lassen, A. H., Gertsen, F., & Riis, J. O. 2006. The nexus of corporate entrepreneurship and radical innovation. *Creativity and Innovation Management*, 15: 359-372.

Latham, S. F., & Braun, M. 2009. Managerial risk, innovation, and organizational decline. *Journal of Management*, 35: 258-281.

Liao, H., Liu, D., & Loi, R. 2010. Looking at both sides of the social exchange coin: A social cognitive perspective on the joint effects of relationship quality and differentiation on creativity. *Academy of Management Journal*, 53: 1090-1109.

Lichtenthaler, U. 2009. Absorptive capacity, environmental turbulence, and the complementarity of organizational learning processes. *Academy of Management Journal*, 52: 822-846.

Ling, Y., Simsek, Z., Lubatkin, M. H., & Veiga, J. F. 2008. Transformational leadership's role in promoting corporate entrepreneurship: Examining the CEO-TMT interface. *Academy of Management Journal*, 51: 557-576.

Litchfield, R. C. 2008. Brainstorming reconsidered: A goal based view. *Academy of Management Review*, 33: 649-668.

Liu, D., Chen, X., & Yao, X. 2011. From autonomy to creativity: A multilevel investigation of the mediating role of harmonious passion. *Journal of Applied Psychology*, 96: 294-309.

Liu, D., Liao, H., & Loi, R. 2012. The dark side of leadership: A three-level investigation of the cascading effect of abusive supervision on employee creativity. *Academy of Management Journal*, 55: 1187-1212.

Madjar, N. 2008. Emotional and informational support from different sources and employee creativity. *Journal of Occupational and Organizational Psychology*, 81: 83-100.

Madjar, N., Greenberg, E., & Chen, Z. 2011. Factors for radical creativity, incremental creativity, and routine, non-creative performance. *Journal of Applied Psychology*, 96: 730-743.

Madjar, N., Oldham, G. R., & Pratt, M. G. 2002. There's no place like home? The contributions of work and non-work creativity support to employees' creative performance. *Academy of Management Journal*, 45: 757-767.

Madjar, N., & Ortiz-Walters, R. 2008. Customers as contributors and reliable evaluators of creativity in the service industry. *Journal of Organizational Behavior*, 29: 949-966.

Mainemelis, C. 2010. Stealing fire: Creative deviance in the evolution of new ideas. *Academy of Management Review*, 35: 558-578.

Martínez-Sánchez, A., Vela-Jiménez, M., Pérez-Pérez, M., & De-Luis-Carnicer, P. 2009. Inter-organizational cooperation and environmental change: Moderating effects between flexibility and innovation performance. *British Journal of Management*, 20: 537-561.

Martínez-Sánchez, A., Vela-Jiménez, M., Pérez-Pérez, M., & De-Luis-Carnicer, P. 2011. The dynamics of labour flexibility: Relationships between employment type and innovativeness. *Journal of Management Studies*, 48: 715-736.

Miron-Spektor, E., Erez, M., & Naveh, E. 2011. The effect of conformist and attentive-to-detail members on team innovation: Reconciling the innovation paradox. *Academy of Management Journal*, 54: 740-760.

Mok, A., & Morris, M. W. 2010. Asian-Americans' creative styles in Asian and American situations: Assimilative and contrastive responses as a function of bicultural identity integration. *Management and Organization Review*, 6: 371-390.

Montag, T., Maertz, C. P., & Baer, M. 2012. A critical analysis of the workplace creativity space. *Journal of Management*, 38: 1362-1386.

Morris, M. W., & Leung, L. 2010. Creativity East and West: Perspectives and parallels. *Management and Organization Review*, 6: 313-327.

Mumford, M. D., & Gustafson, S. B. 1988. Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin*, 103: 27-43.

Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. 2002. Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly*, 13: 705-750.

Narayanan, V. K., Yang, Y., & Zahra, S. A. 2009. Corporate venturing and value creation: A review and proposed framework. *Research Policy*, 38: 58-76.

Ng, T. W. H., & Feldman, D. C. 2012. A comparison of self-ratings and non-self-report measures of employee creativity. *Human Relations*, 65: 1021-1047.

Ng, T. W. H., Feldman, D. C., & Lam, S. S. K. 2010. Psychological contract breaches, organizational commitment, and innovation-related behaviors: A latent growth modeling approach. *Journal of Applied Psychology*, 95: 744-751.

Obstfeld, D. 2005. Social networks, the *tertius iungens* orientation, and involvement in innovation. *Administrative Science Quarterly*, 50: 100-130.

Ohly, S., & Fritz, C. 2010. Work characteristics, challenge appraisal, creativity, and proactive behavior: A multilevel study. *Journal of Organizational Behavior*, 31: 543-565.

Ohly, S., Sonnentag, S., & Pluntke, F. 2006. Routinization, work characteristics and their relationships with creative and proactive behaviors. *Journal of Organizational Behavior*, 27: 257-279.

Oldham, G. R., & Cummings, A. 1996. Employee creativity: Personal and contextual factors at work. *Academy of Management Journal*, 39: 607-634.

Operti, E., & Carnabuci, G. 2014. Public knowledge, private gain: The effect of spillover networks on firms' innovative performance. *Journal of Management*, 40: 1042-1074. doi:10.1177/0149206311422448

Patterson, M. G., West, M. A., Shackleton, V. J., Dawson, J. F., Lawthom, R., Maitlis, S., Robinson, D. L., & Wallace, A. M. 2005. Validating the organizational climate measure: Links to managerial practices, productivity and innovation. *Journal of Organizational Behavior*, 26: 379-408.

Paulus, P. B. 2002. Different ponds for different fish: A contrasting perspective on team innovation. *Applied Psychology: An International Review*, 51: 394-399.

Perrow, C. 1970. *Organizational analysis: A sociological view*. Belmont, CA: Brooks/Cole.

Perry-Smith, J. 2006. Social yet creative: The role of social relationships in facilitating individual creativity. *Academy of Management Journal*, 49: 85-101.

Perry-Smith, J., & Shalley, C. E. 2003. The social side of creativity: A static and dynamic social network perspective. *Academy of Management Review*, 28: 89-106.

Phan, P., Zhou, J., & Abrahamson, E. 2010. Creativity, innovation, and entrepreneurship in China. *Management and Organization Review*, 6: 175-194.

Phelps, C. C. 2010. A longitudinal study of the influence of alliance network structure and composition on firm exploratory innovation. *Academy of Management Journal*, 53: 890-913.

Phelps, C., Heidl, R., & Wadhwa, A. 2012. Knowledge, networks, and knowledge networks: A review and research agenda. *Journal of Management*, 38: 1115-1166.

Pieterse, A. N., Van Knippenberg, D., Schippers, M., & Stam, D. 2010. Transformational and transactional leadership and innovative behavior: The moderating role of psychological empowerment. *Journal of Organizational Behavior*, 31: 609-623.

Pirola-Merlo, A., & Mann, L. 2004. The relationship between individual creativity and team creativity: Aggregating across people and time. *Journal of Organizational Behavior*, 25: 235-257.

Potočnik, K., & Anderson, N. 2012. Assessing innovation: A 360-degree appraisal study. *International Journal of Selection and Assessment*, 20: 497-509.

Priem, R. L., Li, S., & Carr, J. C. 2012. Insights and new directions from demand-side approaches to technology innovation, entrepreneurship, and strategic management research. *Journal of Management*, 38: 346-374.

Puranam, P., Singh, H., & Zollo, M. 2006. Organizing for innovation: Managing the coordination-autonomy dilemma in technology acquisitions. *Academy of Management Journal*, 49: 263-280.

Raja, U., & Johns, G. 2010. The joint effects of personality and job scope on in-role performance, citizenship behaviors and creativity. *Human Relations*, 63: 981-1005.

Rank, J., Nelson, N. E., Allen, T. D., & Xu, X. 2009. Leadership predictors of innovation and task performance: Subordinates' self-esteem and self-presentation as moderators. *Journal of Occupational and Organizational Psychology*, 82: 465-489.

Rank, J., Pace, V. L., & Frese, M. 2004. Three avenues for future research on creativity, innovation, and initiative. *Applied Psychology: An International Review*, 53: 518-528.

Richard, O. C., Barnett, T., Dwyer, S., & Chadwick, K. 2004. Cultural diversity in management, firm performance, and the moderating role of entrepreneurial orientation dimensions. *Academy of Management Journal*, 47: 255-266.

Roberts, P. W., & Amit, R. 2003. The dynamics of innovative activity and competitive advantage: The case of Australian retail banking, 1981 to 1995. *Organization Science*, 14: 107-122.

Rosing, K., Frese, M., & Bausch, A. 2011. Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership. *The Leadership Quarterly*, 22: 956-974.

Rothaermel, F. T., & Hess, A. M. 2007. Building dynamic capabilities: Innovation driven by individual-, firm-, and network-level effects. *Organization Science*, 18: 898-921.

Rousseau, D. M. 1988. The construction of climate in organizational research. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology*: 139-159. London: Wiley.

Sarros, J. C., Cooper, B. K., & Santora, J. C. 2008. Building a climate for innovation through transformational leadership and organization culture. *Journal of Leadership and Organizational Studies*, 15: 145-158.

Schippers, M. C., West, M. A., & Dawson, J. F. in press. Team reflexivity and innovation: The moderating role of team context. *Journal of Management*. doi:10.1177/0149206312441210

Scott, S. G., & Bruce, R. A. 1994. Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, 37: 580-607.

Sebora, T. C., & Theerapatvong, T. 2010. Corporate entrepreneurship: A test of external and internal influences on managers' idea generation, risk taking, and proactiveness. *International Entrepreneurship and Management Journal*, 6: 331-350.

Shalley, C. E. 1991. Effects of productivity goals, creativity goals, and personal discretion on individual creativity. *Journal of Applied Psychology*, 76: 179-185.

Shalley, C. E. 1995. Effects of coaction, expected evaluation, and goal setting on creativity and productivity. *Academy of Management Journal*, 38: 483-503.

Shalley, C. E. 2008. Creating roles: What managers can do to establish expectations for creative performance. In J. Zhou & C. E. Shalley (Eds.), *Handbook of organizational creativity*: 147-64. Hillsdale, NJ: Erlbaum.

Shalley, C. E., Gilson, L. L., & Blum, T. C. 2009. Interactive effects of growth need strength, work context, and job complexity on self-reported creative performance. *Academy of Management Journal*, 52: 489-505.

Shalley, C. E., & Zhou, J. 2008. Organizational creativity research: A historical overview. In J. Zhou & C. E. Shalley (Eds.), *Handbook of organizational creativity*: 3-31. Hillsdale, NJ: Erlbaum.

Shalley, C. E., Zhou, J., & Oldham, G. R. 2004. The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management*, 30: 933-958.

Sheremata, W. A. 2004. Competing through innovation in network markets: Strategies for challengers. *Academy of Management Review*, 29: 359-377.

Shin, S. J., Kim, T. Y., Lee, J. Y., & Bian, L. 2012. Cognitive team diversity and individual team member creativity: A cross-level interaction. *Academy of Management Journal*, 55: 197-212.

Shin, S. J., & Zhou, J. 2003. Transformational leadership, conservation, and creativity: Evidence from Korea. *Academy of Management Journal*, 46: 703-714.

Shin, S. J., & Zhou, J. 2007. When is educational specialization heterogeneity related to creativity in research and development teams? Transformational leadership as a moderator. *Journal of Applied Psychology*, 92: 1709-1721.

Shipton, H. J., West, M. A., Parkes, C. L., Dawson, J. F., & Patterson, M. G. 2006. When promoting positive feelings pays: Aggregate job satisfaction, work design features, and innovation in manufacturing organizations. *European Journal of Work and Organizational Psychology*, 15: 404-430.

Simsek, Z., Veiga, J. F., & Lubatkin, M. H. 2007. The impact of managerial environmental perceptions on corporate entrepreneurship: Towards understanding discretionary slack's pivotal role. *Journal of Management Studies*, 44: 1398-1424.

Skilton, P. F., & Dooley, K. J. 2010. The effects of repeat collaboration on creative abrasion. *Academy of Management Review*, 35: 118-134.

Smith, W. K., & Tushman, M. L. 2005. Managing strategic contradictions: A top management model for managing innovation streams. *Organization Science*, 16: 522-536.

Somech, A. 2006. The effects of leadership style and team process on performance and innovation in functionally heterogeneous teams. *Journal of Management*, 32: 132-157.

Somech, A., & Drach-Zahavy, A. 2013. Translating team creativity to innovation implementation: The role of team composition and climate for innovation. *Journal of Management*, 39: 684-708.

Sørensen, J. B. 2002. The strength of corporate culture and the reliability of firm performance. *Administrative Science Quarterly*, 47: 70-91.

Srivastava, M. K., & Gnyawali, D. R. 2011. When do relational resources matter? Leveraging portfolio technological resources for breakthrough innovation. *Academy of Management Journal*, 54: 797-810.

Stahl, G. K., Maznevski, M. L., Voigt, A., & Jonsen, K. 2009. Unraveling the effects of cultural diversity in teams: A meta-analysis of research on multicultural work groups. *Journal of International Business Studies*, 41: 690-709.

Thatcher, S. M. B., & Greer, L. L. 2008. Does it really matter if you recognize who I am? The implications of identity comprehension for individuals in work teams. *Journal of Management*, 34: 5-24.

Tierney, P. 2008. Leadership and creativity. In J. Zhou & C. E. Shalley (Eds.), *Handbook of organizational creativity*: 95-124. Hillsdale, NJ: Erlbaum.

Tierney, P., & Farmer, S. M. 2002. Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, 45: 1137-1148.

Tierney, P., & Farmer, S. M. 2004. The Pygmalion process and employee creativity. *Journal of Management*, 30: 413-432.

Tierney, P., & Farmer, S. M. 2011. Creative self-efficacy development and creative performance over time. *Journal of Applied Psychology*, 96: 277-293.

Tierney, P., Farmer, S. M., & Graen, G. B. 1999. An examination of leadership and employee creativity: The relevance of traits and relationships. *Personnel Psychology*, 52: 591–620.

Unsworth, K. L., & Clegg, C. W. 2010. Why do employees undertake creative action? *Journal of Occupational and Organizational Psychology*, 83: 77-99.

Unsworth, K. L., Wall, T. D., & Carter, A. 2005. Creative requirement: A neglected construct in the study of employee creativity? *Group & Organization Management*, 30: 541-560.

Van der Vegt, G. S., & Janssen, O. 2003. Joint impact of interdependence and group diversity on innovation. *Journal of Management*, 29: 729-751.

Van de Ven, A. 1986. Central problems in the management of innovation. *Management Science*, 32: 590-607.

Van de Ven, A., Angle, H. L., & Poole, M. 1989. *Research on the management of innovation: The Minnesota studies*. New York: Harper & Row.

Van Dyne, L., Jehn, K. A., & Cummings, A. 2002. Differential effects of strain on two forms of work performance: Individual employee sales and creativity. *Journal of Organizational Behavior*, 23: 57-74.

Van Wijk, R., Jansen, J. J. P., & Lyles, M. A. 2008. Inter- and intra-organizational knowledge transfer: A meta-analytic review and assessment of its antecedents and consequences. *Journal of Management Studies*, 45: 830-853.

Vermeulen, P. A. M., Van den Bosch, F. A. J., & Volberda, H. W. 2007. Complex incremental product innovation in established service firms: A micro institutional perspective. *Organization Studies*, 28: 1523-1546.

Vogus, T. J., & Welbourne, T. M. 2003. Structuring for high reliability: HR practices and mindful processes in reliability-seeking organizations. *Journal of Organizational Behavior*, 24: 877-903.

Wallace, C., & Chen, G. 2006. A multilevel integration of personality, climate, self-regulation, and performance. *Personnel Psychology*, 59: 529-557.

Wang, A., & Cheng, B. 2010. When does benevolent leadership lead to creativity? The moderating role of creative role identity and job autonomy. *Journal of Organizational Behavior*, 31: 106-121.

Wang, P., & Rode, J. C. 2010. Transformational leadership and follower creativity: The moderating effects of identification with leader and organizational climate. *Human Relations*, 63: 1105-1128.

West, M. A. 1990. The social psychology of innovation in groups. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies*: 309-333. Chichester, England: Wiley.

West, M. A. 2002a. Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation-implementation in work groups. *Applied Psychology: An International Review*, 51: 355-387.

West, M. A. 2002b. Ideas are ten a penny: It's team implementation not idea generation that counts. *Applied Psychology: An International Review*, 51: 411-424.

West, M. A., & Anderson, N. 1992. Innovation, cultural values and the management of change in British hospitals. *Work and Stress*, 6: 293-310.

West, M. A., & Anderson, N. R. 1996. Innovation in top management teams. *Journal of Applied Psychology*, 81: 680-693.

West, M. A., & Farr, J. L. 1989. Innovation at work: Psychological perspectives. *Social Behaviour*, 4: 15-30.

West, M. A., & Farr, J. L. 1990. Innovation at work. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies*: 3-13. Chichester, England: Wiley.

West, M. A., & Richter, A. 2008. Climates and cultures for innovation at work. In J. Zhou & C. E. Shalley (Eds.), *Handbook of organizational creativity*: 211-236. Hillsdale, NJ: Erlbaum.

Wong, A., Tjosvold, D., & Liu, C. 2009. Innovation by teams in Shanghai, China: Cooperative goals for group confidence and persistence. *British Journal of Management*, 20: 238-251.

Wong, A., Tjosvold, D., & Su, F. 2007. Social face for innovation in strategic alliances in China: The mediating roles of resource exchange and reflexivity. *Journal of Organizational Behavior*, 28: 961-978.

Woodman, R. W., Sawyer, J. E., & Griffin, R. W. 1993. Toward a theory of organizational creativity. *Academy of Management Review*, 18: 293-321.

Wu, C., Parker, S. K., & De Jong, J. P. J. in press. Need for cognition as an antecedent of individual innovation behavior. *Journal of Management*. doi:10.1177/0149206311429862

Wu, S., Levitas, E., & Priem, R. L. 2005. CEO tenure and company invention under differing levels of technological dynamism. *Academy of Management Journal*, 48: 859-873.

Yuan, F., & Woodman, R. W. 2010. Innovative behavior in the workplace: The role of performance and image outcome expectations. *Academy of Management Journal*, 53: 323-342.

Yuan, F., & Zhou, J. 2008. Differential effects of expected external evaluation on different parts of the creative idea production process and on final product creativity. *Creativity Research Journal*, 20: 391-403.

Zaltman, G., Duncan, R., & Holbek, J. 1973. *Innovations and organizations*. New York: Wiley.

Zhang, X., & Bartol, K. M. 2010a. Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal*, 53: 107-128.

Zhang, X., & Bartol, K. M. 2010b. The influence of creative process engagement on employee creative performance and overall job performance: A curvilinear assessment. *Journal of Applied Psychology*, 95: 862-873.

Zhang, Z., Hempel, P. S., Han, Y., & Tjosvold, D. 2007. Transactive memory system links work team characteristics and performance. *Journal of Applied Psychology*, 92: 1722-1730.

Zhang, Z., & Jia, M. 2010. Using social exchange theory to predict the effects of high-performance human resource practices on corporate entrepreneurship: Evidence from China. *Human Resource Management*, 49: 743-765.

Zhou, J. 2003. When the presence of creative coworkers is related to creativity: Role of supervisor close monitoring, developmental feedback, and creative personality. *Journal of Applied Psychology*, 88: 413-422.

Zhou, J. 2006. A model of paternalistic organizational control and group creativity. *Research on Managing Groups and Teams*, 9: 75-95.

Zhou, J. 2008. New look at creativity in the entrepreneurial process. *Strategic Entrepreneurship Journal*, 2: 1-5.

Zhou, J., & George, J. M. 2001. When job dissatisfaction leads to creativity: Encouraging the expression of voice. *Academy of Management Journal*, 44: 682-696.

Zhou, J., & Shalley, C. 2003. Research on employee creativity: A critical review and directions for future research. In J. J. Martocchio & G. R. Ferris (Eds.), *Research in personnel and human resources management*, vol. 22: 165-217. Oxford, England: Elsevier Science.

Zhou, J., & Shalley, C. E. 2010. Deepening our understanding of creativity in the workplace: A review of different approaches to creativity research. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology*, vol. 1: 275-302. Washington, DC: American Psychological Association.

Zhou, J., Shin, S. J., Brass, D. J., Choi, J., & Zhang, Z. 2009. Social networks, personal values, and creativity: Evidence for curvilinear and interaction effects. *Journal of Applied Psychology*, 94: 1544-1552.

Zhou, J., & Su, Y. 2010. A missing piece of the puzzle: The organizational context in cultural patterns of creativity. *Management and Organization Review*, 6: 413.