# 9
# Creativity in Organizations

**JENNIFER M. GEORGE**
*Jesse H. Jones Graduate School of Management, Rice University*

**Abstract**

In this chapter, I review contemporary theories and research on creativity in organizations. After discussing key definitional issues in this domain, I review the contemporary scholarly literature proceeding from the most molecular of perspectives focusing on within-individual processes to the more molar perspective of the collective creativity that can take place in work groups. While the within-individual process featured most prominently in the extant literature is intrinsic motivation, after a treatment of some fundamental issues surrounding the intrinsic motivation construct, I review research on conscious and unconscious thinking and positive and negative affect as key internal processes relevant to understanding creativity. Next, I focus on contextual influences on creativity including safety signals, creativity prompts, supervisors, leadership, and networks. Lastly, I focus on creativity in groups (from both an input and a process perspective). In closing, I reiterate a recurrent theme throughout the review. This is an exciting era for research on creativity in organizations with many intriguing questions awaiting future scholarly inquiry.

## Introduction

Creativity is being increasingly recognized as a critical means by which organizations and their members can create meaningful, lasting value for their multiple stakeholders in today's dynamically changing environment (e.g., Amabile, 1988; George & Zhou, 2001, 2002). Thus, not surprisingly, popular business magazines such as *Business Week, Fast Company,* and *Fortune* regularly have features highlighting creativity in organizations, and practitioner-oriented publications such as *Harvard Business Review* frequently publish articles on how and why managers often inadvertently thwart creativity and on ways they can and should seek to promote it (e.g., Amabile, 1998; Amabile,

Hadley, & Kramer, 2002; Florida & Goodnight, 2005). Scholarly research on creativity in organizations, the subject of this review, is burgeoning.

Interestingly, and perhaps reflective of the nature of this elusive construct, theorizing and research on creativity is proceeding in anything but a linear fashion. Rather, just as new buds on a tree seem to sprout in seemingly random directions that nonetheless might have some underlying order that could be discerned, creativity research is developing in a variety of different promising directions that, while building from the common ground of the existing literature, are not necessarily reflective of a unified paradigmatic thrust. This is most likely a good thing given the very nature of creativity and given how little we currently know about it.

Underscoring the timeliness of this topic in the minds of academics and practitioners alike, in conducting research for this chapter, I uncovered a remarkable number of recent reviews of the literature. For example, in the 2004 Annual Review issue of the *Journal of Management*, Shalley, Zhou, and Oldham provided an extensive and comprehensive review of empirical research on how personal and contextual characteristics, individually and in interaction, influence creativity in organizations. Personal characteristics in their review include the Five Factor personality traits, creative potential (as assessed by Gough's, 1979, Creative Personality Scale [CPC]), and cognitive style (based on Kirton's, 1976, 1994, Adaptation-Innovation Theory). Contextual characteristics included job complexity, relations with supervisors and coworkers, goals and deadlines, evaluation and reward structures, and the physical work environment.

As another example, in *Research in Personnel and Human Resource Management,* Zhou and Shalley (2003) reviewed (a) theoretical frameworks underlying creativity research such as Amabile's (1988) componential model, interactionist perspectives (e.g., Woodman, Sawyer, & Griffin, 1993), and more recent theoretical models and approaches (e.g., Drazin, Glynn, & Kazanjian, 1999; Ford, 1996; Mainemelis, 2001; Perry-Smith & Shalley, 2003; Unsworth, 2001); (b) research design and measurement issues and challenges in creativity research; (c) contextual antecedents of creativity; and (d) person antecedents of creativity. Contextual characteristics covered in their review included productivity and creativity goals, performance evaluation and feedback, social influence, supervisor behaviors, leadership, and job design. Person antecedents include CPC, the Five Factor personality traits, and creative self-efficacy.

Coinciding with these reviews in the management literature, the 2004 *Annual Review of Psychology* included a chapter on creativity by Runco. This review focused on the person, product, press, and process of creativity (Rhodes, 1961, 1987), disciplinary approaches (e.g., behavioral, biological, developmental, and organizational), and other topical areas (e.g., implicit theories of creativity, problem finding, and evolutionary approaches). Additional reviews

pertaining to creativity have also appeared in other journals (e.g., Anderson, De Dreu, & Nijstad, 2004; Egan, 2005; Rank, Pace, & Frese, 2004).

The existence of these excellent, comprehensive, and relatively recent reviews of creativity theorizing and research affords me a certain luxury in this chapter. That is, it gives me the opportunity to focus in more depth on the most contemporary and perhaps especially intriguing new directions that creativity theorizing and research is taking. I will not review research that has already been reviewed elsewhere (e.g., Runco, 2004; Shalley et al., 2004; Zhou & Shalley, 2003) unless it is particularly pertinent to set the stage for the theorizing and research on which I do focus. Work reviewed in this chapter was identified by both manual and electronic searches of the scholarly literature in management, organizational behavior, psychology, and related disciplines.

The chapter unfolds as follows. After addressing definitional issues, I review contemporary theorizing and research relevant to creativity in organizations proceeding from the most molecular of approaches focused on internal processes within individuals to the influence of contextual factors to more molar approaches addressing creativity at a collective level within and across work groups. Even this very crude approach to organizing the review is inherently fuzzy, as will likely become clearer in the following sections. That is, consistent with the tenets of interactionism (e.g., Carson, 1989; George, 1992; Kenrick & Funder, 1988; Pervin, 1985; Pervin & Lewis, 1978; Rowe, 1987), even the most internal and molecular of processes occurs in a social and organizational context that cannot be ignored and interacts with these internal processes to shape behavior. Analogously, when considering creativity at more molar levels such as the collective creativity that can take place in work groups, this creativity stems, in part, from internal processes within individual group members in the context of their group membership and interactions. Thus, an ongoing dynamic interplay between more molecular and more molar influences on creativity will be a unifying thread throughout the chapter.

## Creativity Defined: Charting the Domain

*Creativity* is typically defined as the generation or production of ideas that are both novel and useful (e.g., Amabile, 1988, 1996; Oldham & Cummings, 1996; Scott & Bruce, 1994). Thus, to be considered creative, ideas must be both new and seen as having the potential to create value for organizations in the short or long run. Creativity is typically viewed as a key precursor to innovation (the successful implementation of creative ideas) and is increasingly being recognized as an important ingredient for effectiveness in all kinds of work and organizations (e.g., Amabile, 1988, 1996; George & Zhou, 2007; Oldham & Cummings, 1996). Creative ideas can relate to work procedures, products, services, and organizing structures and can vary in terms of the degree to which the idea reflects an incremental versus radical departure from the

status quo (Mumford & Gustafson, 1988; Shalley et al., 2004). Creative ideas can also vary in terms of scope or the range of their value-creating potential. Thus, creativity occurs, for example, when a nurse develops a novel approach to scheduling shifts in a hospital that alleviates recurring staff shortages while affording nurses more flexibility to deal with unforeseen nonwork demands, when an administrative assistant develops a new electronic filing system, or when a research scientist develops a promising new drug. As vastly different as these examples of new and useful ideas are, they fall under the rubrics of creativity.

Considering that both novelty and usefulness must be present for ideas to be considered creative helps to distinguish what is creative from what is not creative. Outlandish, wild ideas can be creative but they are not necessarily so; they must also be seen as being useful in an organization or having the potential to create value to be considered creative. Novelty for novelty's sake, therefore, is not the same thing as creativity. Similarly, effective problem solving is certainly useful in organizations but does not necessarily reflect creativity; in order for problem solving to be creative, generated solutions must be novel. Thus, creativity is not the same thing as problem solving (Runco, 2004).

Interestingly, theorizing and research on creativity tends to make the implicit assumption that the same causal factors will operate in a similar manner regardless of the type of creativity that occurs or that researchers are studying, with some exceptions (e.g., Elsbach & Hargadon, 2006). Thus, as Shalley and colleagues (2004) noted, "In the extant literature, the concept of creativity is generally discussed as if it were a unitary construct" (p. 949). Recently, this implicit assumption was challenged. For example, Unsworth (2001) theorized that four types of creativity could be distinguished based upon two dimensions: (a) whether initial engagement in idea generation is driven internally or externally, and (b) whether the task domain or problem type is open or closed. She theorized that causal determinants and underlying processes contributing to creativity might differ depending upon the type of creativity under consideration. As another example, Elsbach and Hargadon suggested that one needs to take the nature of jobs and workdays into account in understanding factors that might promote or inhibit creativity. They theorized that, while increasing levels of autonomy and job complexity on relatively routine jobs with predictable workdays might facilitate intrinsic motivation and creativity, the creativity of professionals who are overworked, face numerous time pressures, and already have high level of job complexity on an ongoing basis might be facilitated by scheduling periods of relatively routine "mindless" work into their workdays.

Think about the jobs and workdays of production workers, nurses, secretaries, teachers, physicians, lawyers, college professors, stockbrokers, advertising executives, engineers, managers, and chefs. The potential for creativity resides in each of these jobs and for each of these types of jobholders. Will the

same causal factors and processes contribute to creativity in the same ways in these various contexts? Clearly, this is an important issue for future theorizing and research to address.

Another implicit assumption that seems to underlie creativity theorizing and research is that "usefulness" as criteria for creative ideas is without controversy. Clearly, organizations have multiple stakeholders whose interests are often competing. What is useful and creates value for one stakeholder group might harm one or more other stakeholder groups. Essentially, a "creative idea" from the perspective of one stakeholder group might be bad decision making from the perspective of other groups. For example, a top administrator of a for-profit hospital chain might come up with new ideas for ways to increase profitability for the chain that have implications for both patients and staff. From the perspective of shareholders, these ideas would likely be viewed as creative as they are new, and they may create value in terms of increased profitability. However, these very same ideas might have negative repercussions for both staff and patients. From the perspective of these two stakeholder groups, the ideas are not only useless but also potentially harmful. In this case, what is creative from one vantage point is potentially destructive from other vantage points. Thus, perhaps more attention needs to be paid to what is meant by "useful" in this literature and the question of "useful for whom" needs to be addressed.

The notion of "useful for whom" actually relates to a broader observation with regards to the creativity literature. That is, creativity is typically thought of as an outcome (e.g., dependent variable) and attention has focused exclusively on understanding what factors can promote or inhibit it. An implicit assumption perhaps being that creativity is always "a good thing," leads to innovation and other positive outcomes (and does not lead to negative outcomes), and thus, attention is appropriately focused on how to facilitate it in organizations. As Shalley and colleagues (2004) noted, however, research has not tended to focus on the assumed benefits of creativity in organizations (or potential unintended negative consequences of creativity), and "it is not yet clear that boosting creativity at work will necessarily result in more innovative organizations that respond effectively to dynamic market conditions" (p. 952). Interestingly, in their review of the innovation literature, Anderson and colleagues (2004) made the same observation and suggested that, to significantly advance research on innovation, "it will be necessary for researchers to reconceptualize the process as one in which innovation may be the cause of multiple, spin-off outcome effects at different levels of analysis. That is, to begin to treat innovation as the independent rather than dependent variable" (p. 160). Thus, future theorizing and research might benefit from considering creativity not only as a dependent variable but also as an independent variable with multiple potential ramifications for organizations and their members. For example, all organizations need some degree of predictability, control,

and reliability. Creativity, by nature, is unpredictable, and thus has the potential to reduce levels of predictability and reliability. Anderson and colleagues (2004) proposed a model of creativity and innovation in which some form of distress (at the individual, group, or organizational level) is viewed as triggering creativity and innovation in a cyclical manner; perhaps, when individuals, groups, and organizations experience some form of distress, it signals the need for change (and a concomitant reduction in predictability and control).

### Within-Individual Internal Processes

People generate creative ideas, and thus, attention has been focused on the internal processes that might lead to creative insights (and/or processes that can inhibit creativity). In the organizational literature, the internal process that has garnered perhaps the most significant attention (albeit, more often than not, as a theoretical and unmeasured mediating process) is intrinsic motivation (e.g., Amabile, 1988, 1996; Shalley et al., 2004). Juxtaposed against intrinsic motivation is extrinsic motivation, which is thought to be dampening of creativity (e.g., Amabile, 1988, 1996).

Intrinsic motivation stems from the work itself and positive engagement in tasks; motivation arises and it is maintained through performing work tasks including developing creative ideas (Amabile, 1996). Extrinsic motivation stems from sources external to the performance of work tasks themselves such as external pressures, job requirements, and influences from others (Amabile, 1996). The distinction between intrinsic motivation, as a facilitating internal process for creativity, and extrinsic motivation, as an inhibiting internal process (albeit one driven most typically by external forces), was prominently featured in more recent reviews of the creativity literature (e.g., Shalley et al., 2004; Zhou & Shalley, 2003), and I will not address it in depth in this chapter.

Some observations are nonetheless in order with regards to the intrinsic-extrinsic motivation distinction and intrinsic motivation as a key internal process responsible for creativity. First, as Shalley and colleagues indicated in their reviews (e.g., Shalley et al., 2004; Zhou & Shalley, 2003), very few studies directly examined to what extent intrinsic motivation is an explanatory mediating process, and the few that directly tested this proposition yielded inconsistent results (e.g., Amabile, 1979; Amabile, Goldfarb, & Brackfield, 1990; Shalley & Perry-Smith, 2001; Shin & Zhou, 2003). Thus, research has yet to support consistently and rigorously the intuitively appealing premise that intrinsic motivation underlies creativity.

Second, given the prominence of Deci and Ryan's (1985) cognitive evaluation theory in explanations of how and why intrinsic motivation mediates the effects of various factors (e.g., contextual characteristics) on creativity (Shalley et al., 2004), recent developments in the former vein might be better

integrated into creativity research (e.g., Deci, Eghrari, Patrick, & Leone, 1994; Deci & Ryan, 2000; Gagne & Deci, 2005; Ryan & Deci, 2000).

Third, recognition should be given to the fact that there might be very real sources of extrinsic motivation for creativity in organizations (George, 2007). Organizational members know that problems need to be solved, opportunities need to be taken advantage of, and their creative ideas need to be "useful." All of these external pressures can motivate individuals, and they are not clearly and necessarily negative influences on creativity.

Lastly, researchers might want to consider to what extent a singular mediating process such as intrinsic motivation can account for various types of creativity. For example, workers performing relatively routine jobs that by most counts would not be considered intrinsically motivating can and do nonetheless come up with creative ideas for improvements in work processes and procedures. As another example, academics conducting research, writing, and seeking to publish scholarly journal articles are presumably often intrinsically motivated by their work. Yet, one wonders to what extent they would carry on these often difficult and time-consuming activities were they not employed by universities and expected to engage in these very activities as part of their jobs. Clearly, these and other unanswered questions regarding the motivation for creativity suggest that, rather than assume that intrinsic motivation underlies creativity, researchers need to tackle this theorized linkage more directly and in more depth.

In the remainder of this section, I focus on the ways in which the internal processes of thinking and feeling have the potential to influence creativity in organizations. While cognition and affect are also highly interdependent and reciprocally related, for ease of exposition, I discuss each in turn with the following caveat. The literature on cognition and affect are vast, and I can by no means attempt to do justice, in this chapter, to the many ways in which cognitive and affective processes underlie creativity. I will nonetheless touch upon certain salient developments that I hope will spur organizational scholars to explore in more depth how the workings of the mind play out in creativity in organizations.

### *Conscious and Unconscious Thinking*

Given that organizations are goal driven and that the behavior of their members is presumably purposively oriented around the ultimate achievement of organizational goals, it is perhaps not surprising that contemporary work on creativity in organizations emphasizes the role of the conscious mind and conscious thought. Models of the creative process in the organizational literature have a decidedly rational flavor (e.g., Amabile, 1988). Contextual factors thought to be promotive of creativity presumably operate through increasing employees' active engagement in their work and intrinsic motivation (e.g., Amabile, 1988, 1996; Shalley et al., 2004). The current literature paints a picture

in which creativity comes about by putting into place a variety of factors (e.g., person and contextual characteristics) that will consciously lead employees to develop new ideas to solve problems and create new opportunities.

Such an approach seems to make all the more sense given that creativity does entail much hard work and sustained effort over time (e.g., Ross, 2004; Staw, 1995). It also often requires domain-specific knowledge that is acquired through effortful processes (e.g., Amabile, 1988, 1996). Just as a management scholar would be unlikely to come up with a paradigm-changing theory of behavior in organizations without knowledge of existing work in the area, a research scientist needs to be intimately familiar with theory and research findings in his or her area to come up with a scientific breakthrough, and a machinist needs to understand the functioning of mechanized parts to creatively solve a recurrent breakdown in a mechanized process. Thus, the literature focuses on how to create a set of circumstances in which the kinds of conscious thought processes that will lead to creativity will flourish.

And yet, we are all familiar with the sudden insights in the shower or on the drive to work, how putting aside a vexing problem for a while and returning to it later can lead to better insights than persistently and doggedly plugging away at it, and the stories of how famous creatives seem to have arrived at their major breakthroughs through rather unusual routes (e.g., Adams, 2001; Burke, 1978; Claxton, 1997, 2005; Dijksterhuis & Meurs, 2006). What these anecdotes suggest is that creativity is not just a product of conscious thought...something else is going on.

This something else is often thought of in terms of the rather elusive construct of incubation. Writings on incubation suggest that when trying to find creative solutions to problems and come up with new ideas, it can be beneficial to take a break from task-related activities (Jett & George, 2003) as during these breaks, the mind still may be at work (without conscious awareness; e.g., Csikszentmihalyi & Sawyer, 1995; Leonard & Swap, 1999). Until recently, however, understanding what might being going on during these breaks and periods of incubation has been a challenge to isolate (Dijkesterhuis & Meurs, 2006; Olton, 1979).

One explanation for potential benefits of incubation suggests that sometimes when people are consciously working on a task, they are blocked from considering alternative perspectives, different assumptions, or even evaluating the veracity of the information they are relying on (Dijkesterhuis & Meurs, 2006; Schooler & Melcher, 1995; Smith, 2003). That is, people consciously approach tasks with a certain mental set of heuristics, schemas, assumptions, and biases that can limit their creative insights. Taking a break from a task requiring creativity or engaging in some kind of different activity may be beneficial, as when people return to the focal task, they may approach it with a different mental set and prior blocks to creative ideas might no longer exist (Dijkesterhuis & Meurs, 2006; Schooler & Melcher, 1995; Smith, 2003). Breaks

and time away from active engagement in a particular task allows one to approach it anew upon returning to it and potentially from a different vantage point or mental set from which new information and insights might come to light. This explanation essentially suggests that incubation operates through a passive process of freeing the mind from a given mental set through distractions or breaks (Dijkesterhuis & Meurs, 2006; Jett & George, 2003).

Interestingly, and in support of anecdotal evidence that incubation entails something more than just a passive process of shifting mind-sets, growing evidence suggests that during periods of incubation, a much more active process is actually taking place (e.g., Claxton, 1997, 2005). In particular, unconscious-thought theory (UTT) and supportive empirical evidence suggests that active and beneficial "thinking" takes place during incubation, and that this kind of thinking might not even be possible when one remains consciously focused on a task (e.g., Dijksterhuis, 2004; Dijksterhuis & Meurs, 2006; Dijksterhuis & Nordgren, 2006). Importantly, UTT has significant implications for understanding creativity in organizations as it calls into question a theme in the extant literature that creativity necessarily benefits from a kind of intense and encompassing engagement in work tasks (e.g., intrinsic motivation), and to spur creativity, we need to increase levels of task complexity and engagement in work tasks. It also suggests that incubation itself might need to play a bigger role in the scholarly literature on creativity in organizations than it has to date (e.g., recent reviews are largely silent on this topic given the paucity of empirical research).

According to UCT, *conscious thought* refers to "object-relevant or task-relevant cognitive or affective thought processes that occur while the object or task is the focus of one's conscious attention" (Dijksterhuis & Nordgren, 2006, p. 96). For example, when organizational members are trying to creatively solve problems, think of improvements, or seize opportunities, and they are focused on the task or problem at hand, they are engaged in conscious thought. The scholarly literature on creativity in organizations implicitly tends to assume that conscious thought is *the* precursor to creativity—only by consciously thinking about problems and ways to improve things and only by consciously trying to come up with new ideas for products, processes, and procedures will creativity actually occur. Thus, to spur creativity, we should try to promote organizational members' active engagement and involvement in their work tasks (e.g., Amabile, 1988, 1996).

In UCT, *unconscious* thought refers to "object-relevant or task-relevant cognitive or affective thought processes that occur while conscious attention is directed elsewhere" (Dijksterhuis & Nordgren, 2006, p. 96). Essentially, conscious thought is thinking with attention being paid to the object of thought or the task; unconscious thought is thinking that takes place without attention or with attention being focused on something else. UCT and supportive research suggests that much thinking takes place without conscious

awareness, that unconscious thought is actually better suited for certain kinds of tasks, problems, and decisions (e.g., complex and difficult problems or tasks in which much disparate information needs to be taken into account and tasks requiring creativity), and that conscious and unconscious thought processes work together (e.g., Dijksterhuis, 2004; Dijksterhuis & Meurs, 2006; Dijksterhuis & Nordgren, 2006).

For example, suppose a professor has had an idea for a new theoretical approach to a substantive research area and seeks to write a conceptual, theory-building paper. The professor has a rough, general sense of what she wants to say and what literatures can be integrated to build the argument and she immerses herself in reading these and related literatures. However, as she progresses reading, a sense of frustration kicks in as she can't figure out how to integrate the disparate approaches and themes into a coherent and compelling story, and she begins to worry that she is wasting time and spinning wheels (and, unfortunately forgetting material read early on in the process). Nonetheless, not yet ready to give up, the professor continues to consciously work on the idea, engages in further reading, and plays with different ways of telling the story that still do not pass muster. While driving to pick up her children from school, a "big-picture story" suddenly pops into her head. She sees how these various and disparate literatures can be integrated to tell the story she thought was there, and she has a real sense of how it all fits together to shed new light on the substantive area (and actually how to write the paper and tell the story). As another example, imagine a developer is trying to come up with an initial prototype for a new concept and line of dishwashers. While consciously working on this task, the developer identifies a number of features of form and function and options for the line that seem viable but not terribly exciting or unique. Not under a pressing deadline, the developer decides to put the project aside for a while and complete other tasks with deadlines. While putting together an unrelated PowerPoint presentation a few days later, an idea for the prototype that combines elements of the previously identified options in a unique manner pops into his mind. In each of these cases and countless examples from our own experience, conscious and unconscious thought work together. Consciously thinking about a problem, decision, or an opportunity helps us acquire information and parameters. When the task is complex, however, integrating this information and arriving at a decision, solution, or creative idea can be difficult. UCT suggests that while not consciously thinking about the task and directing attention elsewhere, the unconscious continues to "think." At some point later on, the appropriate decision, solution, or creative idea seems to just pop into the decision-maker's consciousness out of the blue (Dijksterhuis & Nordgren, 2006).

UCT and supportive empirical research suggests a number of reasons why unconscious thought might be particularly important for creativity and why reliance on conscious thought alone might be inferior. First, unconscious

thought has much higher capacity than conscious thought (Dijksterhuis & Nordgren, 2006). Conscious thought engages with only one thing at a time and is generally limited to temporarily remembering and taking into account approximately seven elements (Dijksterhuis & Nordgren, 2006; Miller, 1956). In fact, the processing capacity of consciousness is just a small fraction of the processing capacity of the mind (e.g., Dijkesterhuis, Aarts, & Smith, 2005; Norretranders, 1998; Wilson, 2002) and the limits of consciousness for decision making on complex tasks have long been recognized in the literature (e.g. Kahneman, 2003; Simon, 1955; Tversky & Kahneman, 1974; Wilson & Schooler, 1991). Returning to our frustrated professor, when she is consciously reading a variety of disparate literatures, she has a sense that they can be woven together to yield new insights, yet how it is to be done alludes her. It is hard enough to master and remember all of what she has read, yet alone integrate and weave it together to say something new.

Second, conscious thought tends to operate in a focused, top-down manner and rely on expectations, schemas, and preconceived notions. It tends to be more convergent, while unconscious thought operates in a bottom-up manner and tends to be more divergent (Dijksterhuis & Nordgren, 2006). Thus, for example, when consciously thinking about the paper and ways to frame it, none of the approaches that come to the professor's mind reflect the new insight she believes might be there. Rather, they almost seem to be rather formulaic variations on preexisting themes in the literature. Third, unconscious thought works slowly to combine and weigh information to form a meaningful and organized whole (Dijksterhuis & Nordgren, 2006). Continuing with this running example, when engaged in unconscious thought, the professor's mind takes the time it needs to bring together and incorporate disparate approaches to yield an integrative story that represents a truly new approach to the topic rather than "old wine in a new bottle." Lastly, conscious thought can follow rules whereas unconscious thought does not follow rules and operates more in terms of estimates (Dijksterhuis & Nordgren, 2006). Thus, our professor, when engaged in unconscious thought, can focus on the bigger picture and how all the disparate pieces come together. She does not get bogged down in the details of how to convincingly challenge conventional wisdom in the area.

While research in a variety of areas supports the tenets of UCT (Dijksterhuis & Nordgren, 2006), given that it is recent and also the many complexities of the mind that remain unanswered (e.g., how and when does thought that is unconscious become crystallized and pop into consciousness in terms of a decision, solution, or new idea), clearly much more research is needed in this area. In any case, though, experimental social-psychology research tends to support the notion that on relatively complex tasks, allowing time for unconscious thought leads to better outcomes than relying exclusively on conscious thought (Dijksterhuis & Nordgren, 2006). For example, in a series of studies,

Dijksterhuis (2004) presented participants with complex judgment tasks in which they had to either evaluate or choose among apartments or roommates after being provided with information on multiple attributes of the apartments or roommates in question (one alternative being relatively superior, one alternative being relatively inferior, and an additional one or two alternatives being relatively neutral). After being presented with the information, participants (a) had to immediately make their judgments (immediate condition), (b) were given some time to think about the task (conscious-thought condition), or (c) worked on another unrelated task for the same amount of time as in the conscious-thought condition prior to returning to the focal task (unconscious-thought condition). Participants who were distracted from the focal task (those in the unconscious-thought condition) performed better than those who engaged in conscious thought about the task and those who were given no opportunity for unconscious thought (the immediate condition).

In thinking about creativity in organizations and the kinds of tasks in which employees are actually likely to have the opportunity to be creative (e.g., George & Zhou, 2001), future theorizing and research should focus on how conscious and unconscious thought, together, can lead to creative insights. It should also consider the extent to which the creativity of overextended employees performing complex tasks might actually be inhibited by time pressures and deadlines and highly complex work, which allow little or no time for unconscious thought.

Consistent with this reasoning, Elsbach and Hargadon (2006) turned traditional job design notions on their head by proposing that, for overstretched professionals, design should focus on workdays, and in particular, scheduled periods of "mindless" work (e.g., work that is low in both cognitive difficulty and performance pressure, yet is necessary for effective functioning) should be injected into workdays. As they indicated, "...tasks that are low in cognitive difficulty do not require that workers come up with creative ideas on the spot. Instead they provide the attention capacity that allows creative thinking to be an unexpected by-product of work. That is, they let creativity happen, rather than force it to be done" (p. 477). UCT takes this idea a step further. That is, for professionals performing complex tasks for which creativity is desired but often not demonstrated (Elsbach & Hargadon, 2006), scheduled periods of mindless work might be beneficial precisely because they distract attention away from complex problems in need of creative solutions and provide needed time for unconscious thought. Scheduled and unscheduled breaks might serve much the same function (Jett & George, 2003). However, for overstretched employees with multiple time pressures, deliberately taking breaks might not be feasible and may even seem nonsensical. Mindless work, on the other hand, encompasses tasks that do need to be performed in organizations and is thus a more realistic alternative to breaks.

Similarly, Ohly, Sonnentag, and Pluntke (2006) reasoned that while routinization is often thought of as detracting from creativity (e.g., Ford & Gioia, 2000), it may actually help to foster creativity as it can save time and free employees' minds to think about their work and creative ideas. Essentially, when some aspects of work are covered by routines, employees have additional cognitive resources to think about other aspects of their work that might benefit from creativity. In a field study of employees of a high-technology company working in diverse functional areas and departments (e.g., sales, marketing, production, and R&D), the researchers found that routinization was positively associated with self-reported creativity after controlling a number of other factors (e.g., control variables, other work characteristics, and curvilinear time pressure).

*Positive and Negative Affect*

Pioneering studies conducted by Isen in the 1980s (e.g., Isen, Daubman, & Nowicki, 1987; Isen, Johnson, Mertz, & Robinson, 1985) prompted interest in the link between affective states and creativity, and in particular between positive affect or mood and creativity. A somewhat coherent theme has emerged in the literature suggesting that positive affective states or moods are conducive to creativity as they promote more flexible, divergent thinking and related cognitive processes that should facilitate the generation of new and useful ideas (e.g., Greene & Noice, 1988; Hirt, McDonald, & Melton, 1996; Isen, Johnson, et al., 1985, Isen, Daubman, et al., 1987). Most recently, in a longitudinal field study of professionals working on project teams, Amabile, Barsade, Mueller, and Staw (2005) found that affective reactions characterized by pleasantness were positively associated with creativity.

Some recent theorizing and research, however, has turned the tables in terms of thinking more seriously about negative mood states, ways in which they might be promotive of creativity, and how both mood states might interact over time to influence creativity. For example, based on Martin and colleagues mood-as-input model (e.g., Martin, Abend, Sedikides, & Green, 1977; Martin, Achee, Ward, & Harlow, 1993; Martin, Ward, Achee, & Wyer, 1993; Martin & Stoner, 1996), George and Zhou (2002) theorized about conditions under which negative moods might be positively associated with creativity (and positive moods might be negatively related to creativity).

The mood-as-input model proceeds from the fundamental premise that moods provide people with information (e.g., Clore, Schwarz, & Conway, 1994; Schwarz & Clore, 1988). Recognizing that the effects of mood states are often context-dependent (e.g., Forgas, 1995), the model suggests that the nature and consequences of the information provided by one's current mood state depends upon the context (Martin & Stoner, 1996). George and Zhou (2002, p. 689) reasoned that

> people are most likely to use their mood as input to determine how well they are doing and how much effort to exert when the context provides cues or signals that there is an overall objective to be achieved, but while engaged in work activities, people decide for themselves how well they are doing on this overall objective and how much effort to exert.

Positive moods provide information or signal that all is well, good progress has been made, and current efforts are sufficient (Johnson & Tversky, 1983; Kavanagh & Bower, 1985). Alternatively, negative moods provide information that current efforts might be insufficient and thus, lead to lower levels of confidence in the progress that has been made on creative-idea generation (Martin & Stoner, 1996; Martin et al., 1993). Thus, using their mood as input, people in negative moods might exert high levels of effort to come up with truly creative ideas. George and Zhou (2002) hypothesized and found that when perceived recognition and rewards for creativity and clarity of feelings were high, negative moods were positively associated with creativity and positive moods were negatively associated with creativity in a sample of employees in a new product/process development center of a manufacturer.

Importantly, context-dependent effects of mood states and the mood-as-input model do not imply that a certain mood state will always have a positive or negative relation with an outcome or behavior such as creativity. Rather, the effects of either mood state hinge on the context, and both have the potential to have positive (or negative) effects on creativity.

More recently, and based again on mood-as-information theory, George and Zhou (2007) developed a dual-tuning perspective concerning how the combined experience of both mood states (experienced at different times) might be facilitative of creativity. That is, mood-as-information theory suggests that moods exert tuning effects on cognition. In providing information and signaling that all is well and the task environment is unproblematic, positive moods lead to less systematic and careful information processing, greater use of top-down simplifying strategies, heuristics, and schemas, and also more expansive, divergent thinking (e.g., Clore et al., 2001; Fiedler, 1988; Kaufmann, 2003; Schwarz, 2002; Schwarz & Clore, 2003). Negative moods provide information that the task environment is problematic and thus encourage people to exert high levels of effort to figure out what's wrong and improve matters (e.g., George & Zhou, 2002; Kaufmann, 2003; Martin & Stoner, 1996; Schwarz, 2002). As such, negative moods tune cognitive processes to a bottom-up, detail-oriented approach to understanding the facts at hand focused on analyzing the realities of the current situation rather than relying on top-down schemas and heuristics (e.g., Kaufmann, 2003; Schwarz & Clore, 2003). Based on this reasoning, George and Zhou (2007) hypothesized and found that in a supportive context, negative moods had the most positive relation to creativity when positive moods were high, with creativity being the highest

when both mood states were high and the context was supportive in a field study of employees in an oil-field services company.

*Recap: Within Individual Processes*

Clearly, it is not possible to do justice to the complex array of within-individual internal processes that underlie creativity in organizations. And while, in focusing on a diverse subset of internal processes (e.g., motivation, conscious/unconscious thought, and affective experience), I have raised more questions than I have provided tentative answers, an interesting theme emerges from consideration of these internal processes. That is, future theorizing and research may benefit from considering internal processes in a dialectical fashion rather than seeking to identify one process as a key facilitator of creativity and its seeming "opponent" process as a detractor (George, 2007). Rather, seemingly opponent processes exist for a reason, and it is through their complex interplay in the mind of the creator that creativity comes to fruition.

To date, theorizing and research was dominated by a quest to determine singular internal processes responsible for creativity. Perhaps a more nuanced and complex view of the mind is called for. Clearly, intrinsic motivation is a good thing and one would be hard pressed to make a convincing argument that it is not a good thing when it comes to creativity in organizations. Yet, at the same time, extrinsic motivation is a powerful force (problems need to be identified and solved, novel ideas need to be "useful," work serves important economic functions in most people's multidimensional lives). Appreciating and understanding how both intrinsic and extrinsic motivation can contribute to creativity and how it is through their complex interplay that creativity emerges might bear more fruit than positing that a singular motivational process facilitates creativity (e.g., intrinsic motivation) and another singular, seemingly opposing process (e.g., extrinsic motivation) detracts from it.

Similarly, one would be hard pressed to convincingly argue that conscious thought is not necessary for creativity or that a certain rationality does not underlie the creative process. However, "rational" models of the creative process emphasizing conscious thought (e.g., Amabile, 1988) ignore the critical role of unconscious thought in human endeavors in general, and in creative endeavors, in particular (e.g., Bechara, Damasio, Tranel, & Damasio, 1997; Claxton, 1997, 2005; Dijksterhuis, 2004; Dijksterhuis & Meurs, 2006; Dijksterhuis & Nordgren, 2006). Perhaps, as Dijksterhuis and Nordgren (2006) suggested, "Consciousness should be used to gather information and the unconscious be used to work on it" (p. 107).

Lastly, clearly positive moods have the potential to promote creativity through a variety of means—expansive, divergent thinking, playfulness, and confidence (e.g., Clore et al., 2001; Fiedler, 1988; Kaufmann, 2003; Schwarz, 2002; Schwarz & Clore, 2003). Yet, a dominant and singular focus on positive affect as a precursor of creativity ignores the important functions that

negative affect serves in people's lives in general and in facilitating creativity (e.g., Frijda, 1988; George & Zhou, 2007; Kaufman, 2003; Schwarz, 2002). For example, when people are in negative moods, they are more likely to identify problems and performance shortfalls in need of creative solutions, they are more likely to push themselves to exert high levels of effort to come up with truly new and useful ideas, and they are more likely to pay attention to detail and the facts at hand rather than rely on preexisting schemas, assumptions, and mental sets that may be faulty or inaccurate (e.g., George & Zhou, 2002, 2007; Kaufmann, 2003; Martin & Stoner, 1996; Schwarz, 2002; Schwarz & Clore, 2003). Mood-as-information theory, dual-tuning effects of both moods states, and theorizing and research in diverse areas suggest that positive and negative moods serve important functions and contribute to effective functioning in different ways (e.g., George & Zhou, 2007; Schwarz, 2002; Schwarz & Clore, 2003). Thus, research focused on the affect-creativity link might benefit from considering the combined effects of both mood states.

### Contextual Influences

As mentioned earlier, Shalley and colleagues (2004) and Zhou and Shalley (2003) reviewed theorizing and research on a variety of contextual factors as potential facilitators or detractors of creativity in organizations (e.g., job complexity, relations with supervisors and coworkers, goals and deadlines, evaluation and reward structures, physical work environment, and leadership). The more recent literature on contextual influences not only focuses on some of these same kinds of contextual influences, but also branches off in a number of intriguing directions. For ease of exposition, I have grouped contextual influences into four main categories: (a) signals of safety, (b) creativity prompts, (c) supervisors and leaders, and (d) social networks. Before proceeding, clearly some of these factors are not purely contextual influences. From an interactional perspective, organizational members most likely contribute often to creating the context, which, in turn, influences their behavior. For example, the kinds of networks and network ties organizational members develop are clearly a function, at least in part, of their personal characteristics. And, of course, from a measurement perspective, given that self-reports of contextual characteristics are often relied upon, the contextual characteristics that are perceived are partially a function of the nature of the perceiver.

#### *Signals of Safety*

Creativity is often a risky endeavor for organizational members as it may entail some kind of challenge to the status quo. Given that organizational structures and routines are developed to enhance predictability and control, creativity can be seen as raising levels of uncertainty and reducing predictability and control. Creativity also can be risky as there is always an associated risk of failure and mistakes. Generating creative ideas often means coming up with

many ideas, some of which end up not being new and some of which are not really useful (George & Zhou, 2007). Thus, creativity may be discouraged to the extent that a work context signals that potential negative repercussions might accompany creative ideas. Alternatively, creativity may be encouraged to the extent that signals of safety are present.

One signal of safety that is of much contemporary concern in both business and government circles is information privacy. Alge, Ballinger, Tangirala, and Oakely (2006) suggested, "Information privacy entails the degree of control that an organization affords its employees over practices relating to collection, storage, dissemination, and use of their personal information (including their actions and behaviors) and the extent that such practices are perceived as legitimate" (p. 222). Alge and colleagues (2006) theorized that information privacy enhances levels of intrinsic motivation by increasing levels of psychological empowerment and hypothesized that information privacy would be positively associated with creativity and operate through the mediating mechanism of psychological empowerment. They reasoned that privacy enables employees to generate and develop ideas without fear of critical scrutiny (Westin, 1967) and also gives employees a sense of having time to think on their own without evaluation pressure, which can foster experimentation (Pedersen, 1997). Privacy also potentially entails a lack of close monitoring, which can be detrimental for creativity (George & Zhou, 2001). Relying on data from two field studies, Alge and colleagues (2006) found that while psychological empowerment was positively associated with creativity and perceived information privacy contributed to feelings of empowerment, information privacy per se was not positively associated with creativity. Perhaps, as these authors suggested, direct links between information privacy and creativity may be context dependent. For example, to the extent that privacy concerns or assurances relate more directly to creative endeavors, stronger relations might be uncovered. Clearly, this is an important topic for future research given the increasing ease with which a variety of organizations are able to gather personal information and the increasing public concerns about the extent to which such information gathering is necessary and legitimate or capricious and in violation of important rights to privacy.

Based on the premise that psychological safety can encourage experimentation and lessen concerns about failure (Edmondson, 1999, 2003), Lee, Edmondson, Thomke, and Worline (2004) explored to what extent inconsistency among contextual conditions (normative values, instrumental rewards, and evaluation pressures) influences experimentation, an often critical contributor to creativity (Ciborra, 1996; Thomke, 2003; Vincente, 1990). They reasoned that inconsistency can reduce psychological safety because it may increase employees' levels of uncertainty about how their actions will be perceived and responded to, can be a significant source of stress, and might lead to confusion, distrust, and potential "threat rigidity" effects (Argyris, 1990;

Masserman, 1971; Staw, Sandelands, & Dutton, 1981). In a field and laboratory study, they found that when evaluation pressures were high, people facing inconsistent values and rewards regarding experimentation had lower levels of experimentation whereas when evaluation pressures were low, inconsistent values and norms lead to higher levels of experimentation.

These findings suggest that future theorizing and research might benefit from adopting what Lee and colleagues (2004) referred to as a *combinational perspective* regarding contextual conditions with the potential to influence creativity in organizations rather than following the *componential perspective* that is currently dominant in the literature. The combinational approach suggests the need to look at how contextual conditions interact with each other (e.g., their consistency or inconsistency) while the combinational perspective considers independent effects with the implicit or explicit assumption that such effects are additive (and not interactive). Consistent with this reasoning, George and Zhou (2001) found that task characteristics (unclear ends and unclear means) interacted with feedback valence and the five-factor personality trait of openness to explain creativity—such that creativity was highest when individuals were high on openness to experience, worked on heuristic tasks (ends were unclear or means were unclear), and received positive feedback—than when any other combination of openness and these two contextual factors existed. They also determined that having unsupportive coworkers and supervisors who engaged in close monitoring interacted with conscientiousness to explain creativity such that it was lowest when individuals high on conscientiousness had unsupportive coworkers (e.g., coworkers provided inaccurate communication, coworkers did not provide constructive help, or coworkers provided a negative work environment) and supervisors engaged in close monitoring than when any other combination of conscientiousness and these two contextual factors existed.

*Creativity Prompts*

In addition to signaling that it is safe to be creative, organizational contexts can also more directly prompt creative behavior. While prior reviews have highlighted factors, such as creativity goals and recognition and rewards for creativity that can prompt creativity (e.g., Shalley et al., 2004), Unsworth, Wall, and Carter (2005) suggested that the creativity requirement of a job might be a more proximal influence on creativity. They defined creativity requirement as "the perception that one is expected, or needs to generate work-related ideas....the experienced, psychological aspect of both explicit requirements (e.g., being told to be creative) and other cues (e.g., as a response to task demands)" (p. 542). In a field study of health-service employees, they found that creativity requirement fully mediated the effects of leadership and role requirements on creativity (assessed via self-report) and partially mediated the effects of empowerment and time demands on creativity. While Unsworth and colleagues suggested that including a creativity requirement in jobs

in which creativity is desired may be a simpler way to encourage creativity than, for example, other approaches such as altering job design, Lee and colleagues's (2004) combinational perspective suggested that other contextual factors still need to be taken into account and addressed. For example, a creativity requirement on a job with low levels of autonomy and discretion and in which supervisors engage in close monitoring could potentially backfire as the requirement is inconsistent with other contextual factors linked to creativity.

Another creativity prompt (which is sometimes viewed as a creativity detractor) is time pressure. In fact, time pressure has typically been viewed as a deterrent to creativity because it discourages exploration and increases reliance on established ways of doing things (e.g., Amabile, 1996; Andrews & Smith, 1996). Nonetheless, results from prior research have tended to be weak or inconclusive (e.g., Amabile, Conti, Coon, Lazenby, & Herron, 1996; Madjar & Oldham, 2006).

Baer and Oldham (2006) sought to advance our understanding of time pressure as a potential creativity prompt and provided an explanation for inconclusive prior research in this area in a field study of employees in a manufacturer. They reasoned that one potential explanation for inconclusive prior research findings on the time pressure-creativity link is that prior studies have typically assessed overall time pressure experienced on a job, instead of time pressure as it pertains to creative activities. In particular, for jobs that are not necessarily in creative domains, employees, could, for example, not experience time pressure on the job in terms of performing their day-to-day activities, yet have little leftover time during the workday for creative endeavors. Hence, they focused on time pressure specifically as it relates to not having time for creativity-related pursuits. Additionally, they hypothesized that the relation between creativity time pressure and creativity is curvilinear (e.g., an inverted U) based on activation theory (Gardner & Cummings, 1988) and that openness to experience and support for creativity would moderate this inverted U relation. They did not find support for a curvilinear relation between creativity time pressure and creativity. They also did not find support for the hypothesized moderating effects of openness to experience on this relation. However, they did find support for a moderated curvilinear relation between creativity time pressure and creativity (moderated by support), and in a post hoc analysis, for a three-way interaction between curvilinear creativity time pressure, openness to experience, and support.

Consistent with these results, Ohly and colleagues (2006) found a curvilinear relationship between time pressure and creativity after controlling for the effects of control variables and job characteristics. Again, this hypothesized relation was based on the tenets of activation theory (Gardner, 1986; Scott, 1966), which suggests that up until some optimal point, time pressure increases levels of activation, which allows for more cognitive resources to be devoted to creative idea generation.

*Supervisors and Leaders*

Supervisors and leaders have long been recognized for their critical role in providing a work context that is either supportive of or discouraging of creativity (e.g., Oldham & Cummings, 1996; Shalley et al., 2004), and researchers have continued to explore the ways in which managers can either encourage or thwart creativity. In a study linking goal orientation (e.g., mastery goal orientation and performance-goal orientation) to performance and satisfaction via the mediating mechanism of leader-member exchange, Janssen and Van Yperen (2004) included in the performance domain a measure of what they referred to as *innovative job performance.* Their measure of innovative job performance (Janssen, 2000, 2001) included items assessing both idea generation and items measuring idea promotion and realization. Thus, it appears to tap into both creativity and aspects of innovation (or the implementation of creative ideas).

Janssen and Van Yperen (2004) theorized that mastery-goal orientations lead employees to develop high-quality relations with their supervisors, which, in turn, positively affect behaviors and attitudes, whereas performance-goal orientations prevent the establishment of high-quality leader-member exchanges. In a field study of employees of a Dutch energy supply company holding a variety of jobs in diverse functional areas, they found that a mastery-goal orientation was positively associated with innovative job performance and that leader-member exchange mediated this relation. Contrary to their expectations, however, performance-goal orientation was not found to be significantly associated with innovation job performance.

The role of supervisor support has also been addressed in other recent studies (e.g., Janssen, 2005; Rice, 2006) that also support some of the ways in which supervisors can provide a supportive work environment for creativity identified in prior research (e.g., by providing developmental feedback; George & Zhou, 2007). George and Zhou (2007) identified two additional ways in which supervisors can provide a supportive environment for creativity that, while receiving widespread attention in their respective literatures (e.g., Bies, 2005; Greenberg, 1993; Lewis & Weigert, 1985; McAllister, 1995; Niehoff & Moorman, 1993), have not previously been linked to creativity. More specifically, they identified (a) interactional justice and (b) cognitive trust as two additional ways that supervisors can provide a supportive work context for creativity. They found that these forms of justice and trust interacted with employee positive and negative mood to explain creativity. Perhaps when supervisors display interactional justice and are trustworthy, they contribute to creating a secure environment for creative idea generation and can serve as a prompt to creativity. For example, when employees are treated with dignity, kindness, and respect (e.g., interactional justice is high), they may be more likely to take the risks that accompany creativity. As another example, when employees believe that their supervisors are knowledgeable, competent, professional,

and dedicated (e.g., cognitive trust is high), this may prompt them to generate ideas for improvements, because they are more likely to be confident that their supervisors can be depended upon to respond to and follow through on creative ideas.

Clearly, supervisors and leaders play a critical role in providing a context that encourages or stifles creativity (Shalley et al., 2004). Research also continues to explore some of the ways in which managers can provide a supportive context and the mechanisms through which such support operates to stimulate creativity. Yet, at the same time, one gets the sense that the literature assumes that creativity is something that supervisors either allow and encourage or discourage. Perhaps this is actually the case for jobs that are not in creative domains or do not necessarily require that employees come up with new and useful ideas to perform effectively. However, for jobs that do require creativity, the same supervisory behavior that potentially can encourage creativity in noncreative jobs might actually inhibit creativity. For example, if a designer is trying to discover a new concept for a dishwasher, developmental feedback from a supervisor might actually inhibit creativity as the feedback could potentially serve to block or constrain the designer's creativity and lead to fixation along more conventional and well-trodden paths (Smith, 2003). Thus, whether or not supervisors do play a critical role in creativity might depend upon the actual nature of jobs and work tasks and it might be the case, that on certain tasks that are by nature creative, supervisors may be well advised to just stay out of the picture all together. Perhaps this is the reason why some organizations in which creativity is explicitly desired give employees specific times where they can pursue their own ideas without having to answer questions.

*Networks*

Recognizing the importance of social influence from others, contemporary research has also sought to further our understanding of how various properties and characteristics of individuals' social networks influence their creativity. In particular, Uzzi and Spiro (2005) explored how the small-world networks of creative artists influenced the Broadway musicals they produced (e.g., the artistic and financial performance of the musicals) from 1945 to 1989. As these authors indicated, "a small world is a network structure that is both highly locally clustered *and* has a short path length" (p. 448), conditions that "enable the creative material in separate clusters to circulate to other clusters as well as to gain the kind of credibility that unfamiliar material needs to be regarded as valuable in new contexts" (p. 449). Uzzi and Spiro (2005) found an inverted U-shape relationship between networks' small-world typologies and the artistic and financial performance of musicals. They reasoned that up until a certain point, small-world features are beneficial for creativity as they facilitate the spread of information and material across clusters. However, when small worldliness becomes very high, a homogenizing effect takes

place, which makes it more difficult to come up with novel ideas representing a departure from preexisting mind-sets.

In a field study of researchers working in two laboratories, Perry-Smith (2006) discovered that weak network ties were beneficial for creativity (and strong ties were not) and that weak ties may facilitate creativity by providing individuals with a more heterogeneous group of contacts. She also found that closeness centrality ("the distance between an actor and all other actors in the network," p. 88) within an organizational network interacted with ties outside the network to explain creativity such that centrality had a positive relation to creativity when outside ties were low. Under these conditions, individuals in central positions might have more confidence to take risks (Perry-Smith & Shalley, 2003) and might have access to different clusters within the network. However, they are not distracted by having too many contacts and disparate sources of information.

Clearly, the burgeoning interest in social networks during the past several decades (e.g., Brass, 1984, 1995; Burt, 1992; Granovetter, 1982), and the increasing acknowledgment of the social side of creativity (e.g., Perry-Smith, 2006; Perry-Smith & Shalley, 2003; Simonton, 1984), suggests that further research is needed to understand the complex interrelations between social networks and creativity. In particular, to answer the questions: Why do some individuals have social networks that appear to foster creativity to a greater extent than other individuals? Through what processes do social networks exert their potential effects? Some, so far unexplained, causal factor might be responsible for both the kinds of networks individuals develop over time and their levels of creativity. For example, one might conjecture that individuals with broader, more wide-ranging interests (or perhaps individuals high on the personality trait of openness to experience) might develop networks with weaker ties and might not develop networks that are overly small-worldish in typology.

*Recap: Contextual Influences*

Progress continues to be made in terms of identifying and understanding how the work context can signal that it is safe to be creative, how the work context can prompt creativity, and the role of supervisors and social networks in facilitating creativity. Information privacy, a growing concern in both private and public sectors, has the potential to signal safety as it can reduce fears concerning close monitoring and critical scrutiny of time use and behavior that may discourage employees from generating new and useful ideas (e.g., Alge et al., 2006; George & Zhou, 2001; Pedersen, 1997; Westin, 1967). While Alge and colleagues (2006) did not find information privacy to have a direct association with creativity, they did find that information privacy contributed to feelings of psychological empowerment, and that psychological empowerment was positively associated with creativity. Future research on information privacy and other contextual influences may be advanced by Lee and colleagues's

(2004) proposed combinational perspective. That is, rather than assuming that contextual factors have additive or main effects on creativity, researchers should consider potential interactive effects. In particular, to the extent that contextual factors are consistent with each other, safety may be signaled whereas inconsistency may signal the absence of a safe environment for generating new and useful ideas (Lee et al., 2004). Thus, for example, the effects of creativity prompts such as the creativity requirement of jobs (Unsworth et al., 2005) might depend upon the extent to which a creativity requirement is consistent or inconsistent with other contextual factors such as close monitoring and levels of autonomy.

In an era when time pressures on many jobs seem to be exponentially increasing, the relation between such pressures and creativity has received increased attention in literature. While clearly much more research is needed in this area, there is some initial support for a potential curvilinear relation between time pressure and creativity (Baer & Oldham, 2006; Ohly et al., 2006); however, it appears that to understand this relation, a number of additional factors need to be taken into account such as the nature of the time pressure, support, personality, and job characteristics (Baer & Oldham, 2006; Ohly et al., 2006).

High-quality relations between supervisors and subordinates and supervisor support have long been recognized as important contributors to creativity (e.g., Shalley et al., 2004). What contributes to high-quality relations and supervisor support for creativity? Research has focused on answering this fundamental question from the perspective of both the subordinate and the supervisor. In particular, Janssen and Van Yperen (2004) found that subordinates with mastery-goal orientations were more likely to have high-quality relations with their supervisors which, in turn, were positively associated with innovative job performance. From the perspective of the supervisor, George and Zhou (2007) suggested that displaying interactional justice and being trustworthy are important ways in which supervisors can provide a supportive work environment for creativity. Clearly, supervisors and subordinates influence each other and thus, supervisor support for creativity may be partially influenced by subordinates' own behavior.

Research on the relation between social networks and creativity suggests that network characteristics that promote the sharing and spreading of heterogeneous information and perspectives promote creativity. In particular, networks with a moderate small-world typology might be more advantageous for creativity than networks with low or high degrees of small worldiness, because they may lead to rapid sharing of information that is not homogeneous or redundant (Uzzi & Spiro, 2005). Similarly, weak network ties might be advantageous for creativity because they lead to more heterogeneous contacts and sources of information (Perry-Smith, 2006).

In terms of these and other contextual characteristics, it is important for future research not only to consider how contextual factors might interact with each other to support or discourage creativity (Lee et al., 2004) but also how person factors interact with the context in a multitude of ways. At a very basic level, person factors may play a role in creating the contextual conditions existing at any given time.

### Group Creativity

In their review, Shalley and colleagues (2004) concluded that research has tended to focus on individual creativity, with little empirical research focused on creativity at the group or team level. This appears to continue to be true for organizational research on group creativity. While psychologists are intrigued by group creativity and are working to understand creativity as a collective phenomenon (Paulus & Nijstad, 2003), organizational research has been focused on the individual level of analysis (Shalley et al., 2004). This is somewhat paradoxical given the increasing reliance of organizations on flatter, more flexible, team-based structures (e.g., Applebaum & Batt, 1994; Ilgen, 1999; Mannix & Neale, 2005), but it is perhaps understandable given that the study of creativity in organizations is a relatively new and emerging area of research and the very real challenges of studying creativity in ongoing teams in organizations. Nonetheless, progress is being made in this area and research has focused on understanding the inputs and conditions that foster or hinder creativity in groups and the kinds of processes that take place in groups resulting in creativity. This is reminiscent of the input-process-outcome paradigm existing in group research (e.g., Cohen & Bailey, 1997).

#### *Inputs and Conditions*

Inputs and conditions for creativity in groups include both compositional and contextual factors that presumably influence group processes in ways that can serve to promote or hinder creativity. At a very basic level, who is in a group influences what the group does. Conventional wisdom in the popular business press as well as among organizational scholars suggests that groups composed of diverse members should be more creative than more homogenous groups because they presumably can call upon a greater diversity of knowledge, skills, expertise, and perspectives to generate new and useful ideas (Mannix & Neale, 2005). Adopting a broad definition of diversity (e.g., variation arising from any characteristic that a person can use to distinguish one group member from another; Jackson, 1992; Williams & O'Reilly, 1998), Mannix and Neale (2005) reviewed 50 years of research on the effects of diversity in teams and concluded that there is

> a tension between the promise and the reality of diversity in team process and performance...surface-level social-category differences such as

> race/ethnicity, gender, or age tend to be more likely than underlying differences to have negative effects on the ability of groups to function effectively....Underlying differences, such as differences in functional background, education or personality, are more often positively related to performance, for example, in terms of creativity or group problem solving, but only when the group process is carefully controlled...However, the actual evidence for the input—process—outcome linkage is not as strong as one might like. (pp. 31, 43)

Mannix and Neale (2005) suggested that future research in this area will benefit from considering moderating factors such as contextual conditions, considering additional forms or types of diversity, and paying more attention to theorized mediating processes.

Choi and Thompson (2005) addressed group composition vis-à-vis the effects of membership change and the introduction of newcomers in groups. They suggested that membership change might promote creativity in groups by increasing task focus (e.g., Ziller, 1965; Ziller, Behringer, & Goodchilds, 1962) and the heterogeneity of knowledge, perspectives, and viewpoints in a group (e.g., Levine & Choi, 2004; Staw, 1980), and by establishing more dynamic group processes such as minority dissent (e.g., Nemeth, 1992; Nemeth & Owens, 1996). In two laboratory experiments, Choi and Thompson (2005) found that membership change resulted in groups generating ideas that were more fluent and flexible and that the creativity of old-timers in groups was enhanced by the introduction of newcomers.

In another laboratory experiment, Goncalo and Staw (2006) explored to what extent groups with an individualist orientation would outperform groups with a collectivist orientation given established links between collectivism and conformity (e.g., Bond & Smith, 1996; Kim & Markus, 1999) and factors that may moderate the cultural orientation-creativity relation. While they did not find a significant effect for cultural orientation, they found that groups with an individualistic orientation that were instructed to be creative were actually more creative than collectivist groups given the same creativity instructions.

*Group Processes*

In a qualitative study involving six professional service firms, Hargadon and Bechky (2006) identified when interactions within groups led to "moments of collective creativity," which they nonetheless characterized as "a rare and fleeing phenomenon even in the most creative of organizations" (p. 494). Essentially, they identified the kinds of interactions that yield collective creativity, the latter resulting from coming up with new ways to combine old or existing ideas, procedures, and processes to arrive at creative solutions to problems (e.g., Amabile, 1988; Hargadon & Sutton, 1997; Weick, 1979). When

individuals with diverse backgrounds and experiences come together to solve a problem creatively or develop a new product design, what is it about their interactions that enables them to combine aspects of their differential areas of expertise and knowledge in new ways to creatively solve a problem or come up a new idea for a product? Based on their field data, they theorized that four sets of interrelated behavior patterns yield moments of collective creativity: (a) help seeking, (b) help giving, (c) reflective reframing, and (d) reinforcing.

Help seeking includes all of the activities individuals engage in to obtain the assistance of others in solving a problem. In the organizations studied, this appeared to be a dynamic and changing process with the result that ultimately creative solutions depended upon whose help was sought to arrive at them. Help giving, the flip side of help seeking, includes spontaneously devoting attention, time, and effort to assist others and is reminiscent of treatments of organizational citizenship behavior and related constructs such as organizational spontaneity (e.g., Bateman & Organ, 1983; George & Brief, 1992). Reflective reframing "represents the mindful behavior of all participants in an interaction, where each respectfully attends to and build upon the comments and actions of others" (Hargadon & Bechky, 2006, p. 489) and seems to represent how ideas evolve through reciprocal interactions to be truly collective. Reinforcing encompasses all of the activities that echo organizational values to encourage help seeking, help giving, and reflective reframing. In professional service firms like those studied by Hargadon and Bechky (2006; e.g., IDEO) such values were likely prevalent, and reinforcing perpetuated and maintained both the values and the behaviors they encourage (e.g., help seeking, help giving, and reflective reframing). Interesting questions for future research are, (a) How can the behaviors underlying collective creativity be encouraged in other kinds of organizations (e.g., those more bureaucratic in nature)? and (b) How might mounting pressures in many such organizations mitigate against collective creativity? That is, in an era of seemingly never-ending layoffs and downsizings, overstretched employees face considerable time pressures to accomplish increasing workloads. Under such conditions, employees might be reluctant to seek help from others because they know that others are also overstretched with their own work tasks. Those being asked for help might not have the time or energy to spontaneously offer it. Reflective reframing may be particularly likely to suffer under such conditions, as those not specifically assigned to solve a problem in need of a creative solution might not have the time or energy for active involvement in reframing.

Clearly, help seeking, help giving, and reflective reframing take place in an affective context. Specifically, the moods and emotions group members experience are reciprocally related to both their thought processes and behaviors. In fact, based on George's (1990) theorizing that affect may be a meaningful construct at the group level of analysis, research has focused on understanding the antecedents and consequences of group affective tone (e.g., Bartel

& Saavedra, 2000; George, 1995; Grawitch, Munz, Elliot, & Mathis, 2003; Grawitch, Munz, & Kramer, 2003; Mason & Griffin, 2003; Totterdell, Kellett, Teuchmann, & Briner, 1998), defined as relatively consistent or homogeneous affective reactions within a group. An implicit, and at times explicit, assumption in the literature on group affective tone is that a positive affective tone is functional for groups and their members (George & King, 2007).

George and King (2007) theorized that in order to understand the potential consequences of group affective tone, researchers need to consider the kinds of tasks and information that groups deal with. Specifically, they proposed that for groups dealing with complex, equivocal information, problems, and opportunities and for those who need to come up with creative solutions to problems and responses to opportunities, a positive affective tone may be dysfunctional and group functioning may be better served by heterogeneity in moods states within groups (George & King, 2007; Tiedens, Sutton, & Fong, 2004).

George and King (2007) theorized that a positive affective tone might be dysfunctional for such groups, because it may lead to groups developing a single shared reality (Hardin & Conley, 2000; Hardin & Higgins, 1996; Levine & Higgins, 2001) concerning goals and objectives, problems and opportunities, cause-and-effect relations, parameters of problems, and the task environment which, due to its shared nature and collective verification, might come to take on a seemingly "objective" status for the group (Baron et al., 1996; Goethals & Darley, 1977; Levine & Higgins, 2001; Sniezek, 1992). For groups facing equivocal, dynamic, and uncertain conditions in which creative solutions to problems and responses to opportunities are desired, multiple shared realities rather than a single shared reality might lead to superior outcomes. Moreover, a positive affective tone might lead to group centrism and an emphasis on coherence in the group (Kruglanski, Pierro, Mannetti, & De Grada, 2006). These posited effects of a positive affective tone were theorized to operate through the collective effects of positive mood effects on cognition and information processing (e.g., Abele, 1992; Fiedler, 1988, 2000; Hirt et al., 1996; Kaufmann, 2003; Kaufmann & Vosburg, 1997; Schwarz, 2002; Vosburg, 1998a,b).

Thus, George and King (2007) proposed that for groups engaged in creative activities, and for those that need to develop creative solutions to problems and responses to opportunities, heterogeneity in affect within the group rather than homogeneity (or an affective tone) might be desired. Mood as information theory (e.g., Schwarz, 2002; Schwarz & Clore, 1983, 1996, 2003), and dual-tuning effects of positive and negative mood (George & Zhou, 2007), while focused on the individual level of analysis, suggest ways in which heterogeneity in affect within groups might promote creativity (George & King, 2007).

*Recap: Group Creativity*

Perhaps what is most striking about the literature on group creativity is how much we currently do not know about the creativity of ongoing groups in organizations. And, even things we thought we might have known (e.g., diversity in groups fosters creativity) are much more nuanced than commonly thought (Mannix & Neale, 2005). Interestingly, of the scholarly work reviewed here, only one study actually explores creativity in ongoing groups in an organizational context (Hargadon & Bechky, 2006). What does seem to be clear is that more research is needed focusing on what actually takes place in groups or group processes and this research needs to consider the context in which groups function.

## Conclusions

Clearly, it is an exciting time for theorizing about and researching creativity in organizations. Not only is creativity increasingly being recognized as critical for organizational effectiveness, but also the existing literature is at a point where there are many interesting questions in need of research to answer them. Moreover, when one considers that many of the factors and relations covered in this chapter have the potential to interact with each other (e.g., within individual affective and cognitive processes occur within collective organizational contexts), ever more intriguing questions arise.

And yet in reviewing this literature, one might wonder to what extent the literature on creativity is succumbing to a certain single-mindedness or routinization (Anderson et al., 2004) that, while enriching our understanding of creativity in incremental ways, is not leading to the kinds of breakthrough advances that are the true marks of creativity in the scholarly domain. While perhaps a harsh overstatement, the existing literature has approached creativity in ways that do not always do justice to the very nature of creative endeavors. That is, creativity, especially in complex, modern organizations, often arises through the interaction of opposing dualities, paradoxes, or contradictions (George, 2007; Runco, 1994). For example, in contrast to the somewhat dominant focus on the importance of pleasurable intrinsic motivation in the creativity literature, Runco (1994) suggested, "Some kind of tension must precede the intrinsic motivation that characterizes creative effort" (p. 102).

The current literature assumes that creativity is a unitary construct (Shalley et al., 2004), that the "usefulness" condition for ideas to be considered creative is uncontested, and that creativity is a universally desired outcome that should be promoted. While there is merit to each of these positions, consideration of presumably opposing perspectives suggests potentially interesting questions for future research. Might not the nature of creativity be fundamentally different depending upon the nature of jobs and organizations under consideration? From whose perspective are creative ideas considered useful, and when

are useful ideas for one stakeholder group harmful for another? What are the positive and negative consequences of creativity in organizations, and how are they differentially borne by various stakeholder groups? For example, creativity often requires considerable hard work, effort, and sacrifices on the part of creators, and can have both positive and negative consequences for them personally and professionally (e.g., Janssen, 2003; Ross, 2004; Staw, 1995); perhaps a more nuanced perspective on creativity is called for that acknowledges not only the benefits of creativity but also its potential hidden costs (Ross, 2004).

In terms of individual processes, perhaps rather than focusing on singular processes such as intrinsic motivation, conscious thought, and positive affect as presumed facilitators of creativity, research should consider how seemingly opposing processes interact to bring about creativity. How might extrinsic pressures bring about intrinsic involvement and how does intrinsic involvement uncover extrinsic pressures (e.g., via problem finding)? How do conscious and unconscious thought work together? How are alternating experiences of positive and negative affect both antecedents and consequences of creativity?

Contextual antecedents of creativity typically are viewed as exogenous factors that can serve to promote or inhibit the generation of new and useful ideas. Yet, perhaps these contextual antecedents are reflective of broader forces with their own implications. If signals of safety are not present, for example, and employees are closely monitored, perhaps this is because the presumed need for control in an organization is higher than the desire for creativity. If supervisors are unsupportive or if time pressures are overwhelming, perhaps this is because supervisors do not really want or trust employees to generate organizationally useful new ideas and real work pressures mitigate against employees taking the time to be creative.

Essentially, there are deep-rooted paradoxes of context embedded in all organizations, and how these play out determines the extent to which a work context is supportive of creativity. On the one hand, organizations require predictability, control, and reliable performance and are dependent on collective learning whereby solutions to problems become embedded in organizational routines (or the wheel is not reinvented repeatedly in slightly different forms). On the other hand, organizations face dynamically changing environments, the nature of problems and opportunities change, and creative responses are required. Understanding how work contexts can support or inhibit creativity might be enhanced by considering the broader issue of the mechanisms by which organizations balance competing pressures for collective learning, predictability, and control with pressures for creative responses to new problems and opportunities and dynamically changing circumstances.

As another example, in thinking about job and workday design, clearly autonomy, interesting work, and heuristic tasks have the potential to facilitate

creativity; yet, so, too, does having the opportunity to think, acquire knowledge and information, and process that information consciously and unconsciously. While job complexity is presumed to foster creativity via intrinsic motivation (Shalley et al., 2004), highly complex jobs in today's economy often result in very taxing demands on already overstretched workers who perhaps simply do not have the time to be creative (Elsbach & Hargadon, 2006; Gini, 2001). Thus, research might benefit from considering potential paradoxical effects of contextual factors (e.g., job design) on creativity.

And while much research continues to focus on creativity in groups and teams, perhaps research in this area will benefit from consideration of how groups manage the fundamental paradox of needing both a coming together and meeting of the minds that fosters collective endeavors and divergent opinions and perspectives, meaningful dissent, and distinctive contributions that enable the achievement of real synergies and creative approaches.

Thus, perhaps, a more nuanced approach to creativity is called for which reflects the fundamental paradoxes surrounding this elusive construct. Now, more than ever, we might need some big-picture thinking about creativity in organizations. And, such thinking might only come about by considering the very complex nature of creativity in organizations.

**Acknowledgment**

I am very grateful to Art Brief and Jim Walsh for their very helpful comments on a prior draft of this chapter.

**References**

Abele, A. (1992). Positive vs. negative mood influences on problem solving: A review. *Polish Psychological Bulletin, 23,* 187–202.

Adams, J. L. (2001). *Conceptual blockbusting: A guide to better ideas* (4th ed.). New York: Perseus Books.

Alge, B. J., Ballinger, G. A., Tangirala, S., & Oakely, J. L. (2006). Information privacy in organizations: Empowering creative and extrarole performance. *Journal of Applied Psychology, 9,* 221–232.

Amabile, T. M. (1979). Effects of external evaluation on artistic creativity. *Journal of Personality and Social Psychology, 37,* 221–233.

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, pp. 123–167). Greenwich, CT: JAI Press.

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

Amabile, T. M. (1998, September-October). How to kill creativity. *Harvard Business Review,* 77–87.

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., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal, 39,* 1154–1184.

Amabile, T. M., Goldfarb, P., & Brackfield, S. C. (1990). Social influences on creativity: Evaluation, coaction, and surveillance. *Creativity Research Journal, 3,* 6–21.

Amabile, T. M., Hadley, C. N., & Kramer, S. J. (2002). Creativity under the gun. *Harvard Business Review, 80*(8), 52–61.

Anderson, N., DeDreu, 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.

Andrews, J., & Smith, D. C. (1996). In search of the marketing imagination: Factors affecting the creativity of marketing programs for mature products. *Journal of Marketing Research, 33,* 174–187.

Applebaum, E., & Batt, R. (1994). *The new American workplace.* Ithaca, NY: ILR Press.

Argyris, C. (1990). *Knowledge for action: Changing the status quo.* San Francisco: Jossey-Bass.

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.

Baron, R. S., Hoppe, S. I., Kao, C. F., Brunsman, B., Linneweh, B., & Rogers, D. (1996). Social corroboration and opinion extremity. *Journal of Experimental Social Psychology, 32,* 537–560.

Bartel, C. A., & Saavedra, R. (2000). The collective construction of work group moods. *Administrative Science Quarterly, 45,* 197–231.

Bateman, T. S., & Organ, D. W. (1983). Job satisfaction and the good soldier: The relationship between affect and employee "citizenship". *Academy of Management Journal, 26,* 587–595.

Bechara, A., Damasio, H., Tranel, D., & Damasio, A. R. (1997). Deciding advantageously before knowing the advantageous strategy. *Science, 275,* 1293–1295.

Bies, R. J. (2005). Are procedural justice and interactional justice conceptually distinct? In J. Greenberg, & J. A. Colquitt (Eds.), *Handbook of organizational justice* (pp. 85–112). Mahwah, NJ: Erlbaum.

Bond, R., & Smith, P. B. (1996). Culture and conformity: A meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychological Bulletin, 119,* 111–137.

Brass, D. J. (1984). Being in the right place: A structural analysis of individual influence in an organization. *Administrative Science Quarterly, 29,* 518–539.

Brass, D. J. (1995). Creativity: It's all in your social network. In C. M. Ford, & D. A. Gioia (Eds.), *Creative action in organizations* (pp. 94–99). Thousand Oaks, CA: Sage.

Burke, J. (1978). *Connections.* Boston: Little, Brown.

Burt, R. S. (1992). *Structural holes.* Cambridge, MA: Harvard University Press.

Carson, R. C. (1989). Personality. *Annual Review of Psychology, 40,* 227–248.

Choi, H.-S., & Thompson, L. (2005). Old wine in a new bottle: Impact of membership change on group creativity. *Organizational Behavior and Human Decision Processes, 98,* 121–132.

Ciborra, C. (1996). The platform organization: Recombining strategies, structures, and surprises. *Organization Science, 7,* 103–118.

Claxton, G. (1997). *Hare brain tortoise mind: Why intelligence increases when you think less.* London: Fourth Estate.

Claxton, G. (2005). *The wayward mind: An intimate history of the unconscious.* London: Little, Brown.

Clore, G. L., Gaspar, K., & Garvin, E. (2001). Affect as information. In J. P. Forgas (Ed.), *Handbook of affect and cognition* (pp. 121–144). Mahwah, NJ: Erlbaum.

Clore, G. L., Schwarz, N., & Conway, M. (1994). Affective causes and consequences of social information processing. In R. S. Wyer & T. K. Srull (Eds.) *Handbook of social cognition* (2nd. ed., Vol. 1, pp. 323–417). Hillsdale, NJ: Erlbaum.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management, 23,* 239–290.

Csikszentmihalyi, M., & Sawyer, K. (1995). Creative insight: The social dimension of a solitary moment. In R. J. Sternberg, & J. E. Davidson (Eds.), *The nature of insight* (pp. 329–363). Cambridge, MA: MIT Press.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62,* 119–142.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227–268.

Dijksterhuis, A. (2004). Think different: The merits of unconscious thought in preference development and decision making. *Journal of Personality and Social Psychology, 87,* 586–598.

Dijksterhuis, A., Aarts, H., & Smith, P. K. (2005). The power of the subliminal: Perception and possible applications. In R. Hassin, J. Uleman, & J. A. Bargh (Eds.), *The new unconscious* (pp. 77–106). New York: Oxford University Press.

Dijksterhuis, A., & Meurs, T. (2006). Where creativity resides: The generative power of unconscious thought. *Consciousness and Cognition, 15,* 135–146.

Dijksterhuis, A., & Nordgren, L. R. (2006). A theory of unconscious thought. *Perspectives on Psychological Science, 1,* 95–109.

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.

Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44,* 350–383.

Edmondson, A. C. (2003). Speaking up in the operating room: How team leaders promote learning in interdisciplinary action teams. *Journal of Management Studies, 40,* 1419–1452.

Egan, T. M. (2005). Factors influencing individual creativity in the workplace: An examination of quantitative empirical research. *Advances in Developing Human Resources, 7,* 160–181.

Elsbach, K. D., & Hargadon, A. B. (2006). Enhancing creativity through "mindless" work: A framework of workday design. *Organization Science, 17,* 470–483.

Fiedler, K. (1988). Emotional mood, cognitive style, and behavior regulation. In K. Fiedler, & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 101–119). Toronto, Canada: J. Hogrefe.

Fiedler, K. (2000). Toward an account of affect and cognition phenomena using the BIAS computer algorithm. In J. P. Forgas (Ed.), *Feeling and thinking: The role of affect in social cognition* (pp. 223–252). Paris: Cambridge University Press.

Florida, R., & Goodnight, J. (2005, July-August). Managing for creativity. *Harvard Business Review,* 125–131.

Ford, C. (1996). A theory of individual creative action in multiple social domains. *Academy of Management Review, 21,* 1112–1142.

Ford, C. M., & Gioia, D. A. (2000). Factors influencing creativity in the domain of managerial decision making. *Journal of Management, 26,* 705–732.

Forgas, J. P. (1995). Mood and judgment: The affect infusion model. *Psychological Bulletin, 117,* 39–66.

Frijda, N. H. (1988). The laws of emotion. *American Psychologist, 43,* 349–358.

Gagne, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior, 26,* 331–362.

Gardner, D. G. (1986). Activation theory and task design: An empirical test of several new predictions. *Journal of Applied Psychology, 71,* 411–418.

Gardner, D. G., & Cummings, L. L. (1988). Activation theory and job design: Review and reconceptualization. In B. M. Staw, & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol.10, pp. 81–122). Greenwich, CT: JAI Press.

George, J. M. (1990). Personality, affect, and behavior in groups. *Journal of Applied Psychology, 75,* 107–116.

George, J. M. (1992). The role of personality in organizational life: Issues and evidence. *Journal of Management, 18,* 185–213.

George, J. M. (2007). Dialectics of creativity in complex organizations. In T. Davila, M. J. Epstein, & R. Shelton (Eds.), *The creative enterprise: Managing innovative organizations and people,* (Vol. 2, pp. 1–15). Westport, CT: Praeger.

George, J. M., & Brief, A. P. (1992). Feeling good—Doing good: A conceptual analysis of the mood at work-organizational spontaneity relationship. *Psychological Bulletin, 112,* 310–329.

George, J. M., & King, E. B. (2007). Potential pitfalls of affect convergence in teams: Functions and dysfunctions of group affective tone. In E. A. Mannix, M. A. Neale, & C. P. Anderson (Eds.), *Research on managing groups and teams: Affect and groups* (Vol. 10, pp. 97–123). New York: Elsevier.

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.

Gini, A. (2001). *My job, my self: Work and the creation of the modern individual.* New York: Routledge.

Goethals, G. R., & Darley, J. M. (1977). Social comparison theory: An attributional approach. In J. M. Suls, & R. L. Miller (Eds.), *Social comparison processes: Theoretical and empirical perspectives* (pp. 259–278). Washington, DC: Hemisphere Publishing.

Goncalo, J. A., & Staw, B. M. (2006). Individualism—Collectivism and group creativity. *Organizational Behavior and Human Decision Processes, 100,* 96–109.

Gough, H. G. (1979). A creative personality scale for the adjective check list. *Journal of Personality and Social Psychology, 37,* 1398–1405.

Granovetter, M. S. (1982). The strength of weak ties: A network theory revisited. In P. V. Marsden, & N. Lin (Eds.), *Social structure and network analysis* (pp. 105–130). Beverly Hills, CA: Sage.

Grawitch, M. J., Munz, D. C., Elliott, E. K., & Mathis, A. (2003). Promoting creativity in temporary problem-solving groups: The effects of positive mood and autonomy in problem definition on idea-generating performance. *Group Dynamics: Theory, Research, and Practice, 7,* 200–213.

Grawitch, M. J., Munz, D. C., & Kramer, T. J. (2003). Effects of member mood states on creative performance in temporary work groups. *Group Dynamics: Theory, Research, and Practice, 7,* 41–54.

Greenberg, J. (1993). The social side of fairness: Interpersonal and informational classes of justice. In R. Cropanzano (Ed.), *Justice in the workplace: Approaching fairness in human resource management* (pp. 79–103). Hillsdale, NJ: Erlbaum.

Greene, T. R., & Noice, H. (1988). Influence of positive affect upon creative thinking and problem solving in children. *Psychological Reports, 63,* 895–898.

Hardin, C. D., & Conley, T. D. (2000). A relational approach to cognition: Shared experience and relationship affirmation in social cognition. In G. B. Moscowitz (Ed.), *Future directions in social cognition* (pp. 3– 17). Hillsdale, NJ: Erlbaum.

Hardin, C. D., & Higgins, E. T. (1996). Shared reality: How social verification makes the subjective objective. In E. T. Higgins (Ed.), *Handbook of motivation and cognition* (Vol. 3, pp. 28–84). New York: Guilford Press.

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.

Hargadon, A. B., & Sutton, R. I. (1997). Technology brokering and innovation in a product development firm. *Administrative Science Quarterly, 42,* 716–749.

Hirt, E. R., McDonald, H. E., & Melton, R. J. (1996). Processing goals and the affect-performance link: Mood as main effect or mood as input? In L. L. Martin, & A. Tesser (Eds.), *Striving and feeling: Interactions among goals, affect, and self-regulation* (pp. 303–328). Mahwah, NJ: Elrbaum.

Ilgen, D. (1999). Teams embedded in organizations: Some implications. *American Psychologist, 54,* 129–139.

Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology, 52,* 1122–1131.

Isen, A. M., Johnson, M. M. S., Mertz, E., & Robinson, G. R. (1985). The influence of positive affect on the unusualness of word associations. *Journal of Personality and Social Psychology, 48,* 1413–1426.

Jackson, S. (1992). Team composition in organizations. In S. Worchel, W. Wood, & J. Simpson (Eds.), *Group process and productivity* (pp. 138–173). Newbury Park, CA: Sage.

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 behavior 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 behavior. *Journal of Occupational and Organizational Psychology, 78,* 573–579.

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.

Jett, Q. R., & George, J. M. (2003). Work interrupted: A closer look at the role of interruptions in organizational life. *Academy of Management Review, 28,* 494–507.

Johnson, E., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal of Personality and Social Psychology, 45,* 20–31.

Kahneman, D. (2003). A perceptive on judgment and choice: Mapping bounded rationality. *American Psychologist, 58,* 697–720.

Kaufmann, G. (2003). The effect of mood on creativity in the innovation process. In L. V. Shavinina (Ed.), *The international handbook on innovation* (pp. 191–203). Oxford, U.K.: Elsevier Science.

Kaufmann, G., & Vosburg, S. K. (1997). 'Paradoxical' mood effects on creative problem-solving. *Cognition and Emotion, 11,* 151–170.

Kavanaugh, D. J., & Bower, G. H. (1985). Mood and self-efficacy: Impact of joy and sadness on perceived capabilities. *Cognitive Therapy and Research, 9,* 507–525.

Kenrick, D. T., & Funder, D. C. (1988). Profiting from controversy: Lessons from the person-situation debate. *American Psychologist, 43,* 23–34.

Kim, H., & Markus, H. R. (1999). Deviance or uniqueness, harmony or conformity: A cultural analysis. *Journal of Personality and Social Psychology, 77,* 785–800.

Kirton, M. J. (1976). Adaptors and innovators: A description and measure. *Journal of Applied Psychology, 61,* 622–629.

Kirton, M. J. (1994). *Adaptors and innovators: Styles of creativity and problem solving* (2nd ed.). New York: Routledge.

Kruglanski, A. W., Pierro, A., Mannetti, L., & De Grada, E. (2006). Groups as epistemic providers: Need for closure and the unfolding of group-centrism. *Psychological Review, 113,* 84–100.

Lee, F., Edmondson, A. C., Thomke, S., & Worline, M. (2004). The mixed effects of inconsistence on experimentation in organizations. *Organization Science, 15,* 310–326.

Leonard, D., & Swap, W. (1999). *When sparks fly: Igniting creativity in groups.* Boston: Harvard Business School Press.

Levine, J. M., & Choi, H.-S. (2004). Impact of personnel turnover on team performance and cognition. In E. Salas & S. M. Fiore (Eds.), *Team cognition: Process and performance at the interindividual level* (pp. 163–176). Washington, D.C.: American Psychological Association.

Levine, J. M., & Higgins, E. T. (2001). Shared reality and social influence in groups and organizations. In F. Butera, & G. Mugny (Eds.), *Social influence in social reality* (pp. 33–53). Seattle, WA: Hogrefe & Huber.

Lewis, J. D., & Weigert, A. (1985). Trust as a social reality. *Social Forces, 63,* 967–985.

Madjar, N., & Oldham, G. R. (2006). Task rotation and polychronicity: Effects on individuals' creativity. *Human Performance, 19,* 117–131.

Mainemelis, C. (2001). When the muse takes it all: A model for the experience of timelessness in organizations. *Academy of Management Review, 26,* 548–565.

Mannix, E., & Neale, M. A. (2005). What differences make a difference: The promise and reality of diverse teams in organizations. *Psychological Science in the Public Interest, 6*(2), 31–55.

Martin, L. L., Abend, T., Sedikides, C., & Green, J. D. (1997). How would I feel if...? Mood as input to a role fulfillment evaluation process. *Journal of Personality and Social Psychology, 73,* 242–253.

Martin, L. L., Achee, J. W., Ward, D. W., & Harlow, T. F. (1993). The role of cognition and effort in the use of emotions to guide behavior. In R. W. Wyer, & T. K. Srull (Eds.), *Advances in social cognition,* (Vol. 6, pp. 147–157). Hillsdale, NJ: Erlbaum.

Martin, L. L. &, Stoner, P. (1996). Mood as input: What we think about how we feel determines how we think. In L. L. Martin, & A. Tesser (Eds.), *Striving and feeling: Interactions among goals, affect, and self-regulation* 279–301. Mahwah, NJ: Erlbaum.

Martin, L. L., Ward, D. W., Achee, J. W., & Wyer, R. S. (1993). Mood as input: People have to interpret the motivational implications of their moods. *Journal of Personality and Social Psychology, 64,* 317–326.

Mason, C. M., & Griffin, M. A. (2003). Group absenteeism and positive affective tone: A longitudinal study. *Journal of Organizational Behavior, 24,* 667–687.

Masserman, J. H. (1971). The principle of uncertainty in neurotigenesis. In H. D. Kimmel (Ed.), *Experimental psychopathology: Recent research and theory* (pp. 13–32). San Diego: Academic Press.

McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal, 38,* 24–59.

Miller, G. A. (1956). Information theory. *Scientific American, 195,* 42–46.

Mumford, M., & Gustafson, S. (1988). Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin, 103,* 27–43.

Nemeth, C. J. (1992). Minority dissent as a stimulant to group performance. In S. P. Worchel, W. Wood, & J. L. Simpson (Eds.), *Productivity and process in groups* (pp. 95–111). Newbury Park, CA: Sage.

Nemeth, C. J., & Owens, P. (1996). Making work groups more effective: The value of minority dissent. In M. A. West (Ed.), *Handbook of work group psychology* (pp. 125–142). Chichester, U.K.: Wiley.

Niehoff, B. P., & Moorman, R. H. (1993). Justice as a mediator of the relationship between methods of monitoring and organizational citizenship behavior. *Academy of Management Journal, 36,* 527–556.

Norretranders, T. (1998). *The user illusion: Cutting consciousness down to size.* New York: Viking.

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.

Olton, R. (1979). Experimental studies of incubation: Searching for the elusive. *Journal of Creative Behavior, 13,* 9–22.

Paulus, P. B., & Nijstad, B. A. (Eds.). (2003). *Group creativity: Innovation through collaboration.* New York: Oxford University Press.

Pedersen, D. M. (1997). Psychological functions of privacy. *Journal of Environmental Psychology, 17,* 147–156.

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

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

Pervin, L. A. (1985). Personality: Current controversies, issues, and directions. *Annual Review of Psychology, 36,* 83–114.

Pervin, L. A., & Lewis, M. (1978). Overview of the internal-external issue. In L. A. Pervin, & M. Lewis (Eds.), *Perspectives in interactional psychology* (pp. 1–22). New York: Plenum.

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.

Rhodes, M. (1961/1987). An analysis of creativity. In S. G. Isaksen (Ed.), *Frontiers of creativity research: Beyond the basics* (pp. 216–222). Buffalo, NY: Bearly.

Rice, G. (2006). Individual values, organizational context, and self-perceptions of employee creativity: Evidence from Egyptian organizations. *Journal of Business Research, 59,* 233–241.

Ross, A. (2004). *No collar—The humane workplace and its hidden costs.* Philadelphia: Temple University Press.

Rowe, D. C. (1987). Resolving the person-situation debate: Invitation to an interdisciplinary dialogue. *American Psychologist, 42,* 218–227.

Runco, M. A. (1994). Creativity and its discontents. In M. P. Shaw, & M. A. Runco (Eds.), *Creativity and affect* (pp. 102–123). Norwood, NJ: Ablex.

Runco, M. A. (2004). Creativity. *Annual Review of Psychology, 55,* 657–687.

Ryan, R. M., & Deci, E. L. (2000). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychological Inquiry, 11,* 319–338.

Schooler, J. W., & Melcher, J. (1995). The ineffability of insight. In S. M. Smith, T. B. Ward, & R. A. Finke (Eds.), *The creative cognition approach* (pp. 97–134). Cambridge, MA: MIT Press.

Schwarz, N. (2002). Situated cognition and the wisdom of feelings: Cognitive tuning. In L. Feldman Barrett, & P. Salovey (Eds.), *The wisdom in feelings* (pp. 144–166). New York: Guilford.

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology, 45,* 13–23.

Schwarz, N., & Clore, G. L. (1988). How do I feel about it? The information function of affective states. In. K. Fiedler & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 44–62). Toronto: C. J. Hogrefe.

Schwarz, N., & Clore, G. L. (1996). Feelings and phenomenal experiences. In E. T. Higgins, & A. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 433–465). New York: Guilford.

Schwarz, N., & Clore, G. L. (2003). Mood as information: 20 years later. *Psychological Inquiry, 14,* 296–303.

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.

Scott, W. E. J. (1966). Activation theory and task design. *Organizational Behavior and Human Performance, 1,* 3–30.

Shalley, C. E., & Perry-Smith, J. E. (2001). Effects of social-psychological factors on creative performance: The role of informational and controlling expected evaluation and modeling experience. *Organizational Behavior and Human Decision Processes, 84,* 1–22.

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

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

Simon, H. A. (1955). A behavioral model of rational choice. *Quarterly Journal of Economics, 69,* 99–118.

Simonton, D. K. (1984). Artistic creativity and interpersonal relationships across and within generations. *Journal of Personality and Social Psychology, 46,* 1273–1286.

Smith, S. M. (2003). The constraining effects of initial ideas. In P. B. Paulus, & B. A. Nijstad (Eds.), *Group creativity: Innovation through collaboration* (pp. 15–31). New York: Oxford University Press.

Sniezek, J. A. (1992). Groups under uncertainty: An examination of confidence in group decision making. *Organizational Behavior and Human Decision Processes, 52,* 124–155.

Staw, B. M. (1980). The consequences of turnover. *Journal of Occupational Behavior, 1,* 253–273.

Staw, B. M. (1995). Why no one really wants creativity. In C. M. Ford, & D. A. Gioia (Eds.), *Creative action in organizations* (pp. 161–166). Thousand Oaks, CA: Sage.

Staw, B. M., Sandelands, L. E., & Dutton, J. E. (1981). Threat-rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly, 26,* 501–524.

Thomke, S. (2003). *Experimentation matters: Unlocking the potential of new technologies for innovation.* Boston: Harvard Business School Press.

Tiedens, L. Z., Sutton, R. I., & Fong, C. T. (2004). Emotional variation in work groups: Causes and performance consequences. In L. Z. Tiedens, & C. W. Leach (Eds.), *The social life of emotions* (pp. 164–186). New York: Cambridge University Press.

Totterdell, P., Kellett, S., Teuchmann, K., & Briner, R. B. (1998). Evidence of mood linkage in work groups. *Journal of Personality and Social Psychology, 74,* 1504–1515.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185,* 1124–1131.

Unsworth, K. (2001). Unpacking creativity. *Academy of Management Review, 26,* 289–297.

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

Uzzi, B., & Spiro, J. (2005). Collaboration and creativity: The small world problem. *The American Journal of Sociology, 111,* 447–504.

Vincente, W. (1990). *What engineers know and how they know it.* Baltimore: John Hopkins University Press.

Vosburg, S. K. (1998a). The effects of positive and negative mood on divergent thinking performance. *Creativity Research Journal, 11,* 165–172.

Vosburg, S. K. (1998b). Mood and the quantity and quality of ideas. *Creativity Research Journal, 11,* 315–324.

Weick, K. E. (1979). *The social psychology of organizing.* Reading, MA: Addison-Wesley.

Westin, A. F. (1967). *Privacy and freedom.* New York: Atheneum.

Williams, K., & O'Reilly, C. (1998). The complexity of diversity: A review of forty years of research. In B. Staw, & R. Sutton (Eds.), *Research in organizational behavior* (Vol. 21, pp. 77–140). Greenwich, CT: JAI Press.

Wilson, T. D. (2002). *Strangers to ourselves: Discovering the adaptive unconscious.* Cambridge, MA: Harvard University Press.

Wilson, T. D., & Schooler, J. W. (1991). Thinking too much: Introspection can reduce the quality of preferences and decisions. *Journal of Personality and Social Psychology, 60,* 181–192.

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

Zhou, J., & Shalley, C. E. (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 Resource Management* (Vol. 22, pp. 165–217). Oxford, U.K.: Elsevier Science.

Ziller, R. C. (1965). Toward a theory of open and closed groups. *Psychological Bulletin, 65,* 164–182.

Ziller, R. C., Behringer, R. D., & Goodchilds, J. D. (1962). Group creativity under conditions of success or failure and variations in group stability. *Journal of Applied Psychology, 46,* 43–49.