Vlerick Leuven Gent Management School
the Autonomous Management School
of Ghent University and Katholieke Universiteit Leuven

Vlerick Leuven Gent Working Paper Series 2010/08

FROM CREATIVITY TO SUCCESS:
BARRIERS AND CRITICAL SUCCESS FACTORS IN THE CREATIVE PROCESS

KATLEEN DE STOBBELEIR
Katleen.DeStobbeleir@vlerick.com
INGE DE CLIPPELEER
Inge.DeClippeleer@vlerick.com
KOEN DEWETTINCK
Koen.Dewettinck@vlerick.com

D/2010/6482/14

FROM CREATIVITY TO SUCCESS:
BARRIERS AND CRITICAL SUCCESS FACTORS IN THE CREATIVE PROCESS

KATLEEN DE STOBBELEIR
Vlerick Leuven Gent Management School
INGE DE CLIPPELEER
Vlerick Leuven Gent Management School
KOEN DEWETTINCK
Vlerick Leuven Gent Management School

Contact:
Katleen De Stobbeleir
Vlerick Leuven Gent Management School
Tel: +32 09 210 97 79
Fax: +32 09 210 97 57
Email: Katleen.DeStobbeleir@vlerick.com

ABSTRACT

Considerable research efforts have been invested in identifying the individual and contextual factors that facilitate employee creativity. However, the literature also abounds with conflicting research results regarding critical factors for employee creativity. At the basis of these contradictions is the lack of attention that has been given to the study of the potential differential impact of these antecedents on specific sub-processes of creativity. Historically, scholars have focused on studying the antecedents of creativity as an outcome variable, but far less is known about how these factors differentially impact the various stages within the creative process.

Building on this research gap, the aim of this study is to explore the possible differential impact on the phases of the creative process of five antecedents previously identified as important predictors of creativity: (1) personality; (2) rewards; (3) the role of co-workers; (4) leadership; and (5) the configuration of work settings.

The present study demonstrates the need to conceive creativity as a process if we want to advance in building a comprehensive theory of employee creativity. We found that the factors that emerged in one phase of the creative process were not necessarily the same as the factors observed in other phases. In fact, the prerequisites for creativity in one phase sometimes contradicted the necessary conditions for creativity in another phase. Specifically, we found evidence for six countervailing forces.

FROM CREATIVITY TO SUCCESS:
BARRIERS AND CRITICAL SUCCESS FACTORS IN THE CREATIVE PROCESS

In the past decades, research on employee creativity has flourished (Shalley & Zhou, 2008). The increased interest in creativity in organizational literature is not surprising given that many organizations have shifted their focus from production to knowledge work and thus increasingly depend on the creativity of their employees to establish and maintain a competitive advantage (e.g., Grant & Ashford, 2008; Mumford, 2000; Rank et al., 2004; Shalley et al., 2004).

Given the importance of creativity to organizations, a large amount of studies have tried to identify and describe the individual and contextual factors that facilitate (or hinder) employee creativity (for recent reviews, see Perry-Smith & Shalley, 2003; Shalley & Zhou, 2008; Shalley et al., 2004). However, despite the notable support for how traits and contexts affect employee creativity, there are certainly a number of inefficiencies in the literature, as highlighted by some conflicting research results. Scholars have suggested that these inconsistencies might largely be explained by the conceptualization of creativity as an outcome (Shalley et al., 2004). Whereas the conceptualization of creativity as an outcome doesn't take into account the conversion process from idea to outcome and its prerequisites, the conceptualization of creativity as a process emphasizes that each phase of the creative process may be related to another – possibly conflicting – set of critical success factors (Rank et al., 2004; Shalley et al., 2004; Unsworth et al., 2000).

To date, research has not yet identified the antecedents of specific sub-processes of creativity. As a result, little is known about the extent to which distinct antecedents are associated with various phases of the creative process, neither do we know whether the antecedents that have already been identified, can be applied universally to all stages of the creative process (Amabile et al., 2002; Gilson et al., 2005; Rank et al., 2004; Shalley et al., 2004; Unsworth et al., 2000). Building on this research gap, the aim of this study is to explore the possible differential impact on the phases of the creative process of five antecedents previously identified as important predictors of creativity: (1) personality; (2) rewards; (3) the role of co-workers; (4) leadership; and (5) the configuration of work settings.

BACKGROUND

Based on research on antecedents of creativity, the main conclusion that can be drawn is that employee creativity is a function of the employee's individuality, of features of the context surrounding the employee, and of the interaction between the two. For example, regarding individual differences, research has shown that creative outcomes are more likely to occur when the creative individual is flexible in absorbing information (McCrae & Costa, 1997), prefers to solve problems in innovative ways (Kirton, 1976, 1994), and is more open to new experiences (Feist, 1998). Regarding context, the key finding is that managers and organizations can build work environments that support employee creativity by setting creativity work goals, and providing developmental feedback on creative goal progress (Amabile & Mueller, 2008; Paulus, 2008; Tierney, 2008; West & Richter, 2008; Zhou, 2008).

The impressive support for how these factors affect employee creativity has however been built on the dominant conceptualization of creativity as an outcome variable. In examining the antecedents of creativity, research has, for example, used supervisory ratings of employee's creative performance and the number of patent disclosures as measures of creativity (e.g. George & Zhou, 2001a; Oldham & Cummings, 1996; Tierney & Farmer, 2002).

Consequently, very little is known about the impact of these factors on the way that individuals start, develop, and pursue creative outcomes (Mumford, 2000; Shalley et al., 2004) and the intrapersonal and interpersonal processes through which employees' creative ideas and actions are translated into viable creative outcomes (Drazin et al., 2008). This is surprising, as early creativity theories (e.g. Kanter, 1988; West & Farr, 1989) already conceived creativity as a multistage process model consisting of three distinct phases: (1) idea generation, (2) idea promotion, and (3) idea realization.

Scholars have suggested that the dominance of the outcome approach and neglect of the process approach is at the basis of the number of inefficiencies in the literature (Shalley et al., 2004). For example, with regard to personality, some studies show that introversion (Feist, 1999) is closely linked to employee creativity, whereas others show that having an extraverted personality helps employees to produce creative outcomes (Taggar, 2002). Regarding motivation, foremost, non-material, intrinsic motivators have been demonstrated to be important for creativity (Amabile, 1985, 1997; Amabile et al., 1994). The role of extrinsic motivation for creative performance is less clear, with scientists arguing

against (Amabile, 1985, 1997; Amabile et al., 1994) and in favour of extrinsic rewards (Eisenberger & Armeli, 1997; Eisenberger & Rhoades, 2001).

As opposed to the conceptualization of creativity as an outcome, process models of creativity highlight that each phase may be associated with its own set of critical success factors and outcomes (Rank et al., 2004; Shalley et al., 2004; Unsworth et al., 2000). For example, it may be that the mixed research results regarding the link between introversion and extraversion on the one hand and employee creativity on the other hand, can be explained by the phase to which these factors apply. That is, while having an introverted personality may be linked to an individual's ability to generate new ideas, having an extraverted personality may be an advantage in the next phase of the creative process in which the employee needs to convince stakeholders in the organization to invest in the idea.

Therefore, to clarify some inconsistencies found in the literature, the first contribution of this research is to explore the differential impact of individual and contextual factors on the creative process. Based on West & Farr (1989) and Kanter (1988), we conceive creativity as a multistage process consisting of three phases: (1) idea generation, (2) idea promotion and (3) idea realization (following earlier research by Janssen 2000, 2001; Scott & Bruce, 1994; Van der Vegt & Janssen, 2003). Idea generation refers to the production of a new idea. In the phase of idea promotion, the acquisition of information, resources, and support required to move the idea into practice is central. The creative process then ends with the ultimate implementation of the idea so it can be applied within a role, group or the total organization (Kanter, 1988) (Figure 1).

Insert Figure 1 – Process model of creativity

Second, identifying how distinct antecedents are associated with the various phases of the creative process is an important research gap to be addressed, as research shows that only a minority of creative ideas are successfully translated into innovations (Ford, 1996). Sometimes ideas get rejected prematurely because the idea was brilliant in concept, but flawed in application. More often, however, ideas remain unimplemented because individuals and organizations focus their energy on the generation of ideas (e.g., brainstorming events, idea boxes, etc.), but fail to invest attention, efforts and resources in the promotion and implementation of the creative ideas that originate from those initiatives (Shalley, 2008). With the promotion and implementation of ideas being constrained in many

organizations, it is important to identify the systems and practices that both individuals and organizations can adopt to bridge the gap between idea generation and idea implementation.

To this end, we focus our research on those antecedents that have received the most research attention and are advanced as most important in affecting employee creativity (Perry-Smith & Shalley, 2003; Shalley & Zhou, 2008; Shalley et al., 2004): (1) *personality* (measures of one or more dimensions associated with the Five Factor Model of personality or the Creative Personality Scale (e.g., Amabile, 1998; Anderson & Gasteiger, 2008; Ford, 1996; George & Zhou 2001a, 2001b; Mostert, 2007; Mumford & Hunter, 2005; Scott & Bruce, 1994: Sim et al., 2007)); (2) *rewards* (contingent rewards such as monetary incentives (e.g., Amabile, 1985, 1997; Amabile et al., 1994; Eisenberger & Armeli, 1997; Eisenberger & Rhoades, 2001)); (3) *the role of co-workers* (complementarity and co-worker support and contribution (e.g., George & Zhou, 2001a; Jackson, 1992; King & Anderson, 1990; West, 2002; West et al., 2004)); (4) *leadership* (leadership style and leader-member relationship (e.g., Byrne et al., 2009; Amabile & Conti, 1999; Amabile et al., 1996; Grosse, 2007; Madjar et al., 2002; Oldham & Cummings, 1996; Wang & Casimir, 2007)); and (5) *the configuration of work settings* (e.g., Shalley et al., 2004: Woodman et al., 1993)). We aim to identify their differential impact on the different stages of the creative process (Figure 2).

Insert Figure 2 – Preliminary model

METHODOLOGY

As the purpose of the present study was to explore the role of personality, motivation, co-workers, leadership, and work settings in the creative process, an inductive methodology was most appropriate. An inductive methodology aims to develop theory that is empirically grounded (Glaser & Straus, 1967; Yin, 1989). Within inductive methodologies a distinction is made between grounded theory and analytic induction. We chose analytic induction because it explicitly accommodates existing theories (Manning, 1982). Analytic induction typically consists of an exploratory phase and a conclusive phase.

In the exploratory phase the extant literature is screened to develop a preliminary framework. In a next step, data are gathered to explore the preliminary model and develop theory (Manning, 1982).

As such, the starting point of our research was a review of the literature to develop the preliminary framework presented in Figure 2.

In the conclusive phase, the conceptual model is tested using a qualitative design. All data were gathered through in-depth interviews. All interviews were conducted face to face by one of the two members of the research team. They were recorded and typed-out afterwards. Interviews were conducted using a semi-structured questionnaire containing open questions that pertained to our conceptual model. This allowed the interviewer to tailor the questions to the interview context, and to the interviewees (Lindlof & Taylor, 2002). To build internal validity, we probed inconsistencies further (Eisenhardt, 1989).

Data collection

It was our intention to obtain data that were both broad and deep enough to ensure a rich accumulation of data from which to draw conclusions. To this end, three measures were taken. First, we chose to collect data from two broad classes of creative workers, as identified by previous research (Florida, 2002): creative professionals or 'knowledge workers' on the one hand and individuals active in the super-creative core (occupations within the arts, design, and media) on the other. Second, we selected a sample of eleven cases for each category of our research population (i.e., twenty-two cases in total). These cases were carefully selected in order to maximize their representativeness of the different industries (e.g., ICT, consultancy, product development, pharmaceutics, communication, and engineering) and creative fields (e.g., theatre, photography, literature, cabaret, painting, music, fashion, design, and media). In this respect, we examined a relatively large number of cases before selection to ensure diversity of practices and contexts and thus increase the potential vigorousness of the theory induced from the results. Third, following Ford's (1996) recommendation to incorporate the vision of key stakeholders in the creative process, interviews were also held with key advocates for the majority of cases (e.g., peers, senior managers, team members). This allowed us to trace antecedents as perceived by other individuals than just the creative person.

As highlighted by these measures, we applied theoretical sampling to select our case studies – the approach that is advised to analytic induction (Denzin, 1989) – in order to emphasize theoretical issues and to challenge the preliminary theory (Eisenhardt, 1989; Glaser & Strauss, 1967; Pettigrew, 1990).

Data analysis

Our aim was to explore the role of specific antecedents in the different phases of the creative process so that implications could be drawn for future theory testing. It was important, therefore, to identify a set of constructs that were theoretically meaningful, internally consistent, vigorous, and distinct, for which earlier creativity research proved essential to guide categorization of antecedents. Furthermore, definitions of antecedents as developed in prior research were beneficial in evaluating the meaningfulness and distinctiveness of the specific antecedents emerging out of our analyses. This was important in order to allow future research to empirically test the relationships found. The results that emerged out of our analysis was the outcome of an iterative process consisting of data collection, coding of the interview data, developing or refining emerging ideas, researching existing theory, followed by new data collection.

Finally, in order to check whether the final model was in line with all the collected data, a reanalysis was conducted to confirm that the identified antecedents described all data and not merely a part of them. For this purpose, the electronic NUDIST Qualitative Data Analysis System was used. This reanalysis confirmed the validity of the identified antecedents.

RESULTS

Our case study analysis supported our main premise that invoking a process view is important when one wants to identify and describe the antecedents of creativity. That is, we found that the phases of idea generation, idea promotion, and idea realization were each associated with a distinct set of characteristics.

Personality

Our analyses revealed four dispositions that seem to play a significant role in the idea generation phase. Most importantly, idea generation requires having a creative mind, following earlier work by Mostert (2007), Feist (1998) and Oldham & Cummings (1996). Respondents described it as *"having a rich inner experience of the world"*, *"seeing life from a wide variety of perspectives and angles"*

and *"having an eye for new opportunities in any given situation"*. However, when asked to elaborate on the downside of such a creative mind, respondents mentioned that they often burn-out when they need to put their ideas into action and have to focus on too many implementation details.

Idea generation also calls for people that are able to combine autonomy with responsibility. Autonomy is an important precondition as respondents agree that generating new ideas requires that one has the psychological freedom to leave the traditional paths. However, without the ability of the individual to correctly and responsibly deal with this autonomy, opportunities may not be seized and work-related priorities may be neglected.

Consistent with earlier findings relating openness to experience to creativity (Feist, 1998), respondents stressed the need to be open to experiences for idea generation. More than that, they indicated that they actively sought experiences and contact with people from a wide variety of backgrounds, for which interviewees indicated four main motives. In first instance, they are eager to broaden their horizons. Second, being in contact with others is an important way of structuring one's mind and ideas. By making ideas explicit to others, divergent thoughts are crafted into a coherent concept. Third, others act as a critical sounding board and can provide feedback as regards content, structure, and completeness of the idea. Finally, engaging in contacts helps the individual to evaluate the idea to check whether the finalized idea is valuable and has the potential for success.

Perseverance and a communicative personality emerged as the critical factors for the promotion of ideas. Perseverance is closely related to the persistent belief in the creative idea and refers to the perseverance of the individual in the face of obstacles or resistance. All respondents underscored the importance of sticking to the final idea when selling it: if at this point in the process one makes concessions to please stakeholders, this jeopardizes selling success. Not surprisingly, having a communicative personality appears to relate to the successful promotion of ideas as well.

Scholars have suggested that during the realization phase of the process, creativity is less needed and dispositions beneficial for implementation prevail (Amabile et al., 1996; Sim et al., 2007; West, 2002; West et al., 2004). This was confirmed by our data, as the phase of idea realization doesn't require a creative mind, but flexible, task-oriented and result-oriented individuals. These characteristics enable the individual to turn the ideas and concepts into plans and actions, guarantee that attention is paid to the smallest details to avoid errors and permit to efficiently handle unforeseen problems that arise during realization.

Rewards

With regard to the role of rewards in stimulating creativity in organizations, our analysis provided a possible explanation for the conflicting research results found in earlier employee creativity studies (e.g., Amabile, 1985, 1997; Amabile et al., 1994; Eisenberger & Armeli, 1997; Eisenberger & Rhoades, 2001). Results revealed that extrinsic motivation inhibits idea generation, as respondents indicated that their ability to generate ideas was hampered when they experienced external pressure and felt compelled to accommodate external expectations. However, extrinsic motivation facilitates idea realization, as extrinsic motivators were welcomed to help them persist and fully complete the realization of the idea. The prospect of being rewarded afterwards can be an important motivator to keep track of the last steps and pay attention to those final little – although important – details.

The role of co-workers

Our data clearly indicate the significance of co-workers in the idea generation phase. Previous research has identified complementarity in the team as an important precondition for creative success (Amabile, 1988; King & Anderson, 1990; West, 2002; West et al., 2004), but it remains unclear which attributes of group complementarity stimulate creativity in which stages of the creative process (Jackson, 1992; West, 2002).

We found that complementarity with regard to knowledge and expertise is important in the phase of idea generation. When the co-workers have different professional backgrounds, cross-fertilization of know-how is facilitated.

For idea promotion, it is complementarity in the networks of the team members that is essential. Occupying a different function on a different level in the organization, working in a different domain of interest, or having connections to former clients or key stakeholders are mentioned as examples of these complementarities.

With regard to idea realization, both creative people as key informants stressed that creative geniuses often burn-out when they need to put their ideas into action and have to focus on too many implementation details. In this regard, the creative persons in our study were found to be creative, flexible and result-oriented, but sometimes lacked the needed dispositional characteristic of being task-oriented. Data indicate however that successful creative minds are aware of this weakness and

therefore gather skilled people around them to take on the role of implementation experts. Hence, complementarity in personality is crucial for idea realization.

Leadership

Previous research showed that a supportive leadership style (as opposed to a controlling one) boosts creativity (Amabile & Conti, 1999; Amabile et al., 1996; Madjar et al., 2002; Oldham & Cummings, 1996) and that a trustful and understanding leader-member relationship relates to creative performance (Anderson & Gasteiger, 2008), although others have failed to duplicate these findings (Scott & Bruce, 1994). Our results suggest that the role of the leader differs greatly depending on the phase within the creative process. Whereas some phases call for a supportive, non-regulating leadership style as advanced by these authors, others call for a rather strict regime.

In the phase of idea generation, the leader plays a facilitating role. That is, the leader does not have a formal hierarchical position because this is believed to hinder idea generation. Even though equality was the key word, in most cases a clear leader was present, but his role was a largely informal one (often, this leader was the individual who had first articulated the idea). This informal team leader gave his/her team extremely high levels of autonomy, but on the other hand he/she was constantly overlooking the process and making sure that the team kept a clear sight of its vision and objective. This is consistent with earlier work of Grosse (2007).

For idea promotion, a leader who is in close contact with superiors, top management or influential people in the business will have more success in acquiring the needed resources. Moreover, if the leader can fall back on previous successes and has an established reputation, credibility is high and funds are more easily obtained.

The role of the leader in the phase of idea realization is, as opposed to the phase of idea generation, a formal and hierarchical role that mainly consists of coordination and maintaining a strict regime in which deadlines are respected and quality requirements are met. He/she has a general overview of the project and has the final responsibility for the successful implementation. His/her role as team leader entails anticipating, setting priorities, taking decisions, and making sure the team can respond adequately when unforeseen circumstances arise.

In combination with a rather strict regime however, and in order to successfully implement an idea, a leader's people management skills are crucial. Successful team leaders are usually quite

demanding, but do realize that they must value and appreciate every single person that helps them accomplish the ultimate goal. They are very much aware of the fact that typically the idea generator is in the picture but that the crucial role of the doers is often overlooked. Giving them the visibility and the appreciation they deserve contributes significantly to a successful idea implementation.

Configuration of work settings

Finally, the study adds to the literature by providing a deeper understanding into the relevance of work setting configuration for creativity. Results of earlier work suggested that dense settings might diminish creativity, but clear support remains missing (Shalley et al., 2004).

Our results show that for idea generation, work settings need to stimulate interpersonal contacts as much as possible such that cross-fertilization between different departments and/or domains of expertise is promoted. Extensive and varied contacts allow for the transfer of knowledge and helps discussing problems that arise from everyday business or contact with clients. To this end, several organizations in our sample used for example landscape offices and flexible work stations to stimulate contact between colleagues.

The configuration of work settings was only of marginal importance in the phase of idea promotion.

For the idea realization stage, the importance of being physically and psychologically isolated was mentioned. Whereas external impulses stimulate idea generation, they hinder idea realization. Physical isolation allows innovative teams to work more effectively and efficiently as they have a separate space where they can concentrate on their objective without being distracted. Psychological isolation refers to the need to be protected from constant outside interference. Interest groups and stakeholders who are prone to interfere must be kept outside of the process so that they cannot distract the focus of the working team. All respondents believed isolation was the only way of ensuring that the initial creative idea was realized and not just a weak derivative of the initial idea.

DISCUSSION

Although in the last decades, organizational research on individual creativity has flourished and extensive research has been conducted on explaining variance in creativity as an outcome, little research has addressed the process that underlies creativity. This paper attempts to redress this gap by examining how important antecedents identified by previous research differentially impact each phase of the creative process. In this respect, the present study formulated an answer to the call of several scholars to pay attention to what factors enhance the different phases of the creative process (Amabile et al., 2002; Gilson et al., 2005; Rank et al., 2004; Shalley et al., 2004; Unsworth et al., 2000). The model highlights the consequent phases of idea generation, idea promotion, and idea realization and their relationship with identified antecedents as personality, rewards, the role of co-workers, leadership, and the configuration of work settings.

Theoretical and managerial implications

The present study has demonstrated the need to conceive creativity as a process if we want to advance in building a comprehensive theory of employee creativity. Different antecedents have in fact been shown to facilitate the different stages of the creative process. Investigating the antecedents of consequent phases and their interactions is imperative to gain more in-depth knowledge of what facilitates and impedes engagement in each stage of the creative process and the consequent engagement in the next phase.

In examining differential influences on the creative process in the idea generation, idea promotion and idea realization phase, a remarkable conclusion emerged. As expected, we found that the factors that emerged in one phase of the creative process were not necessarily the same as the factors observed in other phases. In fact, the prerequisites for creativity in one phase sometimes contradicted the necessary conditions for creativity in another phase. Understanding these countervailing effects and distinct antecedents of creativity phases is important for both academic and managerial reasons. With respect to academic implications, insight into countervailing effects expands our knowledge of the dynamics that shape the way the creative process unfolds. From a managerial point of view, our results suggest that stimulating creativity in organizational settings is not only a matter of continuous reflection on the presence of facilitating antecedents and absence of impeding

factors within the organization as they emerged out of previous research on creativity. This study emphasizes that organizations will have to take into account countervailing factors over consequent creativity phases and will have to invest in balancing these countervailing antecedents by use of strategies and policies.

Specifically, we found evidence for six countervailing forces.

People need rewards, sometimes…

First, at the individual level, rewards were found to have a countervailing effect in the phases of idea generation and idea implementation. In the phase of idea generation, rewards emerged as an inhibiting factor of idea creation. Findings suggest that extrinsic drivers that urge to engage in idea creation have counterproductive effects and block idea generation. In the phase of idea realization however, rewards were found to have a positive effect on the successful implementation of the creative idea. This countervailing effect of rewards is especially challenging in organizational settings, as organizations will have to monitor the presence and absence of extrinsic drivers in the different phases of the creative process.

Creators need doers

Another factor that differentially impacted the different phases was task versus creative orientation. Both disposing of a creative mind and being task-oriented appeared essential to creativity, respectively for idea generation and idea implementation. As pointed out by the respondents, however, being task-oriented is a personal disposition that is difficult to combine with the characteristic of having a creative mind, as these people have a hard time focusing on implementation details. Nevertheless, both dispositions are indispensable, depending on the phase of the creative process. In this respect, our results highlight the importance of team composition in overcoming this difficulty. One can expect the ability of the creative person to gather talented and more task-oriented people around him to prove essential.

Knowing when to stand your ground

Third, idea generation depends on people that are eager to seek feedback from others in order to discuss, improve and evaluate their idea. In this respect, it is essential for the creative individual to be open to suggestions and remarks and to incorporate these into the idea. Openness to feedback and willingness to redirect and refine the idea, however, appear detrimental in the phase of idea promotion.

Here, perseverance is needed to avoid the individual from making concessions to stakeholders that in the end devalue the idea. This implies a crucial lesson for creative individuals, as they are challenged to tailor the countervailing tendencies to adjust or to persevere. Depending on the phase of the creative process, they have to let openness to feedback or persistence prevail.

Experts and networkers: teams of all the talents

Furthermore, different forms of team complementarity emerged to be crucial depending on the phase of the creative process. In the phase of idea generation, a complementary group structure with regard to knowledge and expertise was found to be important for idea generation, whereas complementarity with regard to networks is crucial for idea promotion. In the phase of idea realization, it was complementarity with regard to personality that emerged as essential. The need for teams to be complementary with respect to knowledge, networks, as well as personalities makes it however difficult to compose a team that meets all these requirements. In fact, this is further aggravated by the need for continuity of team members, as every loss and replacement within the team endangers the success of the creative process (Kanter, 1988).

The best leaders wear many hats

Fifth, our findings highlight the countervailing roles that team leaders must take on throughout the different phases of the creative process. Whereas in the phase of idea generation, the leader plays the role of an informal facilitator who does not have a formal hierarchical position and has an equal voice with the rest of the team, in the phase of idea realization, hierarchy is imperative for successful implementation as there needs to be a coordinator that takes the decisions and bears final responsibility. These countervailing effects of leadership in distinct creativity phases stress the importance of a knowledgeable and competent leader who is able to change his leadership style according to the phase of the creative process. The phase of idea promotion can in this regard be seen as a pivoting point for both the leader and his team, and clear communication is crucial to ensure that no problems arise out of the shift from facilitator to coordinator.

Please do (not) disturb!

Sixth, as for the broader organizational context, both interpersonal contacts and isolation appeared to be critical in the creative process. Previous research has already shown the importance of organizational structure on cross-fertilization and the creation of ideas (Iwamura & Jog, 1991; Kanter,

1988; Pillinger & West, 1995). However, our research expands these findings by showing the importance of physical and psychological isolation for idea realization. Thus, creativity requires the balance to shift from maximal inclusion to isolation during the creative process. Organizations are thus challenged to stimulate connectedness in the organization to enable creative thinking, while providing the possibility to creative teams to isolate themselves physically and psychologically when reaching the implementation phase. Findings of our study seem to suggest that organizations will have the best chance to manage this conflicting need if they invest in an organizational culture and structure that promotes continuous contact, but at the same time structurally offer creative teams the possibility to temporally isolate themselves.

Limitations and suggestions for future research

The findings in this study are subject to a number of caveats, which point to the need of future research. The first caveat concerns the limitations of the used research design. The used research was inductive in design, as the aim of the present study was to build substantive generalizable theory in an underresearched area. The strength of this design is that it permits us to identify new insights and relationships with regard to the distinct antecedents of the phases of the creative process. The weakness of this research design is that it does not give researchers an estimate of the relative importance of antecedents or the variance that each antecedent explains in the idea generation, idea promotion, or idea realization phase. Our data identify antecedents that appear important in shaping the outcome of a particular phase of the creative process. However, these antecedents and their relationship with the distinct phase could not be tested because the constructs and their relationships were induced from this data set. Future research could test the variance of each factor on the outcome of a distinct phase and of the creative process as a whole.

Second, cases were studied after the creative process had already unfolded. As for the methodology's limitations, one might argue, for example, that phenomena like imperfect recall, memory distortion, and attributional biases may compromise the accuracy of the respondents' retrospective accounts and perceptions. In spite of our efforts to validate the accounts offered by creative people by comparing them with the vision of the interviewed stakeholders, this research is still subject to these biases. Participative observation (Singleton & Straits, 2005) would have been a valid alternative,

although we would have had to reduce the number of case studies, which would have resulted in reduced data validity and reliability.

Third, although we have tried to capture a broad range of studies to represent creativity in work settings, this research is generalizable only to the extent that we succeeded in capturing relevant control variables. Even though we tried to control for some industry effects for knowledge workers and creative fields for super-creatives, other relevant effects may not have been controlled for.

Despite of these limitations, we believe that this study has extended our understanding of employee creativity and has identified some systems and practices that both individuals and organizations can adopt to bridge the gap between idea generation and idea implementation.

REFERENCES

Amabile, T. M. (1985). Motivation and creativity: Effects of motivational orientation on creative writers. Journal of Personality and Social Psychology, 48(2), 393-399.

Amabile, T. M. (1997). Motivating creativity in organizations: On doing what you love and loving what you do. Californian Management Review, 40(1), 39-58.

Amabile, T. M., & Mueller, J. S. (2008). Studying Creativity, Its Processes, and Its Antecedents: An Exploration of the Componential Theory of Creativity. In J. Zhou, & C. E. Shalley (Eds.), Handbook of Organizational Creativity (pp. 33-64). New York: Lawrence Erlbaum Associates.

Amabile, T. M., & Conti, R. (1999). Changes in the work environment for creativity during downsizing. Academy of Management Journal, 42, 630-641.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. Academy of Management Journal, 39(5), 1154-1184.

Amabile, T. M., Hill, K. G., Hennessey, B. A., & Tighe, E. M. (1994). The work preference inventory: Assessing intrinsic and extrinsic motivational orientations. Journal of Personality and Social Psychology, 66(5), 950-967.

Amabile, T.J., Mueller, J.S., Simpson, W.B., Hadley, C.N., Kramer, S.J., & Fleming, L. (2002). Time Pressure and Creativity in Organizations: A Longitudinal Field Study. Working paper.

Anderson, N. R. & Gasteiger, R. M. (2008). Innovation and creativity in organisations: Individual and work team research findings and implications for government policy. In B. Nooteboom & E. Stam (Eds.), Innovation and creativity in organisations (pp. 249-272). Amsterdam: Amsterdam University Press.

Byrne, C. L., Mumford, M. D., Barrett, J. D., & Vessey, W. B. (2009). Examining the Leaders of Creative Efforts: What Do They Do, and What Do They Think About? Creativity and Innovation Management, 18(4), 256-268.

Denzin, N. K. (1989). The research act: A theoretical introduction to sociological methods. Englewood Cliffs, NJ: Prentice-Hall.

Drazin, R., Kazanjian, R. K., & Glynn, M. (2008). Creativity and Sensemaking among Professionals. In J. Zhou & C. E. Shalley (Eds.), Handbook of Organizational Creativity (pp. 263-282). New York: Lawrence Erlbaum Associates.

Eisenberger, R., & Armeli, S. (1997). Can Salient Reward Increase Creative Performance Without Reducing Intrinsic Creative Interest? Journal of Personality & Social Psychology, 72(3), 652-663.

Eisenberger, R., & Rhoades, L. (2001). Incremental Effects of Reward on Creativity. Journal of Personality & Social Psychology, 81(4), 728-741.

Eisenhardt, K. M. (1989). Building theories from case study research. Academy of Management Review, 14(4), 532-550.

Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. Personality and Social Psychology Review, 4, 290–309.

Feist, G. J. (1999). The influence of personality on artistic and scientific creativity. In R.J. Sternberg (Ed.), Handbook of creativity (pp. 273-296). New York: Cambridge University Press.

Florida, R. (2002). The Rise of the Creative Class. And How It's Transforming Work, Leisure and Everyday Life. New York: Basic Books.

Ford, C. (1996). A Theory of Individual Creative Action in Multiple Social Domains. Academy of Management Review, 21(4), 1112-1142.

George, J. M., & Zhou, J. (2001a). 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. (2001b). When Job Dissatisfaction Leads to Creativity: Encouraging the Expression of Voice. Academy of Management Journal, 44, 682-696.

Gilson, L. L., Mathieu, J. E., Shalley, C. E., & Ruddy, T. M. (2005). Creativity and Standardization: Complementary or Conflicting Drivers of Team Effectiveness? Academy of Management Journal, 48(3), 521-531.

Glaser, B. G., & Straus, A. L. (1967). The discovery of grounded theory. Chicago: Aldine.

Grant, A., & Ashford, S. J. (2008). The Dynamics of Proactivity at Work. Research in Organizational Behavior, 28, 3-34.

Grosse, D. (2007). Leadership in R&D Projects. Creativity and Innovation Management, 16(4), 447-45.

Iwamura, A., & Jog, V. M. (1991). Innovators, organization structure and management of the innovation process in the securities industry. Journal of Product Innovation Management, 8, 104-116.

Jackson, S. E. (1992). Consequences of group composition for the interpersonal dynamics of strategic issue processing. Advances in Strategic Management, 8, 345-382.

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness, and innovative work behaviour. 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.

Kanter, R. (1988). When a thousand flowers bloom: structural, collective, and social conditions for innovation in organizations. In B. M. Staw, & L. L. Cummings (Eds.), Research in organizational behavior (Vol. 10, pp. 169-211). Greenwich, CT: JAI Press.

King, N., & Anderson, N. R. (1990). Innovation in Working Groups. In M. A. West and J. L. Farr (Eds.), Innovation and Creativity at Work (pp. 81-100). Chichester, England: Wiley.

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. London: Routledge.

Madjar, N., Oldham, G. R., & Pratt, M. G. (2002). There's no place like home? The contributions of work and non-work creativity support to employees' creative performance. Academy of Management Journal, 45(4), 757-767.

Manning, P. K. (1982). Analytic induction. In P. K. Manning & R. B. Smith (Eds.), A handbook of social science methods (pp. 273-302). Cambridge, MA: Ballinger.

McCrae, R. R., & Costa, P. T. (1997). Conceptions and correlates of Openness to Experience. In R. Hogan, J. Johnson & S. Briggs (Eds.), Handbook of personality psychology (pp. 825-847). San Diego, CA: Academic Press.

Mostert, N. M. (2007). Diversity of the Mind as the Key to Successful Creativity at Unilever. Creativity and Innovation Management, 16(1), 93-100.

Mumford, M. D. (2000). Managing creative people: strategies and tactics for innovation. Human Resource Management Review, 10, 313-351.

Mumford, M. D., & Hunter, S. T. (2005). Innovation in organizations: A multi-level perspective on creativity. Multi-Level Issues in Strategy and Methods, 4, 11-73.

Oldham, G. R., & Cummings, A. (1996). Employee Creativity: Personal and Contextual Factors at Work. Academy of Management Journal, 39(3), 607-634.

Paulus, P. B. (2008). Fostering Creativity in Groups and Teams. In J. Zhou & C. E. Shalley (Eds.), Handbook of Organizational Creativity (pp. 165-188). New York: Lawrence Erlbaum Associates.

Perry-Smith, J. E. & Shalley, C. E. (2003). The Social Side of Creativity: A Static and Dynamic Social Network Perspective. Academy of Management Journal, 28, 89-106.

Pettigrew, A. M. (1990). Longitudinal field research on change: Theory and practice. Organizational science, 1, 267-291.

Pillinger, T., & West, M. A. (1995). Innovation in UK manufacturing: Findings from a survey within small and medium sized manufacturing companies. Sheffield, England: Institute of Work Psychology, University of Sheffield.

Rank, J., Pace, V. L., & Frese, M. (2004). Three Avenues for Future Research on Creativity, Innovation, and Initiative. Applied Psychology: An International Review, 53(4), 518-528.

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(3), 580-607.

Shalley, C. E. & Zhou, J. (2008). Organizational Creativity Research: A Historical Overview. In J. Zhou, & C. E. Shalley (Eds.), Handbook of Organizational Creativity (pp. 3-31). New York: Lawrence Erlbaum Associates.

Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The Effects of Personal and Contextual Characteristics on Creativity: Where Should We Go from Here? Journal of Management, 30, 933-958.

Sim, E. W., Griffin, A., Price, R. L., & Vojak, B. A. (2007). Exploring Differences between Inventors, Champions, Implementers and Innovators in Creating and Developing New Products in Large, Mature Firms. Creativity and Innovation Management, 16(4), 422-436.

Singleton, R. A., & Straits, B. C. (2005). Approaches to Social Research (Fourth Edition). New York/Oxford: Oxford University Press.

Taggar, S. (2002). Group composition, creative synergy, and group performance. Journal of Creative Behavior, 35, 261-286.

Tierney, P. (2008). Leadership and Employee Creativity. In J. Zhou & C. E. Shalley (Eds.), Handbook of Organizational Creativity (pp. 95-124). New York: Lawrence Erlbaum Associates.

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

Unsworth, K. L., Brown, H., & McGuire, L. (2000). Employee Innovation: The roles of idea generation and idea implementation. Paper presented at SIOP Conference, New Orleans, Louisiana, April 14-16.

Van der Vegt, G. S., & Janssen, O. (2003). Joint Impact of Interdependence and Group Diversity on Innovation. Journal of Management, 29(5), 729-751.

Wang, K. Y., & Casimir, G. (2007). How Attitudes of Leaders May Enhance Organizational Creativity: Evidence from a Chinese Study. Creativity and Innovation Management, 16(3), 229-238.

West, M. A. (2002). Sparkling Fountains or Stagnant Ponds: An Integrative Model of Creativity and Innovation Implementation in Work Groups. Applied Psychology: An International Review, 51(3), 355-424.

West, M. A., & Richter, A. (2008). Climates and Cultures for Innovation and Creativity at Work. In J. Zhou & C. E. Shalley (Eds.), Handbook of Organizational Creativity (pp. 211-236). New York: Lawrence Erlbaum Associates.

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

West, M. A., Hirst, G., Richter, A., & Shipton, H. (2004). Twelve Steps to Heaven: Succesfully Managing Change through Developing Innovative Teams. European Journal of Work and Organizational Psychology, 13(2), 269-299.

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

Yin, R. K. (1989). Case study research. Newbury Park, CA: Sage.

Zhou, J. (2008). Promoting Creativity through Feedback. In J. Zhou & C. E. Shalley (Eds.), Handbook of Organizational Creativity (pp. 125-146). New York: Lawrence Erlbaum Associates.

FIGURE 1

Process model of creativity

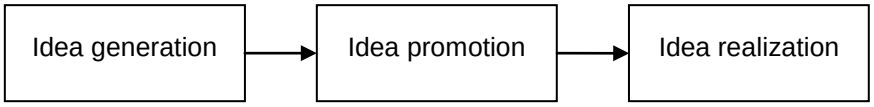

FIGURE 2

Preliminary model