The Antecedents of Creativity Revisited: A Process Perspective

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This study invokes a process view on employee creativity to uncover how the different stages of the creative process are associated with different antecedents. Specifically, we explore the role of five previously identified antecedents of organizational creativity in the different phases of the creative process within organizations: (1) personality; (2) rewards; (3) the role of co-workers; (4) leadership; and (5) organizational resources. In an analysis of 22 case studies we found that antecedents of creativity indeed have different roles in different stages of the creative process and that antecedents that are helpful in one stage of the creative process, can be detrimental for another stage. Such results highlight the importance of conceptualizing creativity as a process, rather than as an outcome variable.

Introduction

In the past decades, research on employee creativity has flourished (Shalley & Zhou, 2008). The increased interest in creativity in the 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., Shalley, Zhou & Oldham, 2004; Grant & Ashford, 2008).

Given the importance of creativity to organizations, many studies have tried to identify and describe the individual and contextual factors that facilitate or hinder employee creativity (e.g., Perry-Smith & Shalley, 2003). By and large, this research has focused on five general categories of antecedents of employee creativity: (1) personality factors (e.g., Anderson & Gasteiger, 2008); (2) rewards (e.g., Eisenberger & Rhoades, 2001); (3) the role of co-workers and team composition (e.g., West, 2002); (4) leadership (e.g., Wang & Casimir, 2007; Byrne et al., 2009); and (5) organizational resources (e.g., Shalley, Zhou & Oldham, 2004).

Despite the notable support for how personal traits and organizational contexts affect employee creativity, there are still a number of gaps in the literature, as highlighted by some conflicting research results (for an overview, see Shalley, Zhou & Oldham, 2004). Research has suggested several factors that are related to individual creativity. Creativity is stimulated when individuals have a self-confident, flexible and extroverted personality (Shalley & Zhou, 2008), and are intrinsically motivated in the absence of financial rewards (Anderson & Gasteiger, 2008). Taking part in teams composed of people with complementary mindsets and dispositions is also found to enhance individual creativity (King & Anderson, 1990). Supporting behaviours of leaders (Zhou & George, 2001) and abundant organizational resources (Ekvall & Ryhammar, 1999) also encourage creativity. However, other studies show that these factors do not play a significant role, or even have a negative relation to individual creativity (e.g., West & Altink, 1996; Feist, 1999; De Dreu & West, 2001). These inconsistent findings may originate from the conceptualization of creativity as an outcome variable, i.e. reflecting the result of creative efforts.

The process that leads from initial idea generation to final idea implementation is still underexplored in the creativity literature and deserves explicit attention (Shalley, Zhou &

Oldham, 2004; Binnewies, Ohly & Sonnentag, 2007). Adopting a process view of creativity may allow us to relate each phase of the creative process to another set of critical success factors (Unsworth, Brown & McGuire, 2000; Shalley, Zhou & Oldham, 2004). This approach may offer a different perspective on conflicting research findings. Factors that have been linked to creativity by past research may not be universally applicable to all stages of the creative process. Some factors may be positively related to idea generation, and negatively or not at all to idea implementation.

To date, little is known about the extent to which distinct antecedents are associated with various phases of the creative process. In order to address this research gap, this study reviews the current literature about antecedents of creativity, and theorizes on their expected influence on the different phases of the creative process. Based on data collected via interviews in 22 cases with knowledge workers and employees in creative jobs, we then show that antecedents indeed play a different role, depending on the stage of the creative process. We conclude with managerial implications of our study, limitations and associated avenues for future research.

Literature Review on Antecedents of Creativity

Creativity is generally conceptualized as the production of ideas that are novel as well as useful (Amabile et al., 1996; Shalley, Zhou & Oldham, 2004). Contributions to a firm's products, services or routines are considered to be novel when they have a distinctive and original feature relative to what is already present in the firm, and they are useful when they are relevant to the strategy and ambition of the firm (Cummings & Oldham, 1997). Yet, research shows that only a minority of creative ideas successfully translate into innovations (Ford, 1996). Creative ideas occasionally stress the exploitation of current business processes and operations, in particular when they imply radical changes in the ways of working or addressing market needs (Smith & Tushman, 2005; Isaksen & Tidd, 2006; Isaksen & Ekvall, 2010). 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

(O'Reilly & Tushman, 2004; 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. However, very little is known about the way in which individuals start, develop and pursue creative outcomes (Shalley, Zhou & Oldham, 2004) and the intrapersonal and interpersonal processes through which employees' creative ideas and actions are translated into innovations (Drazin, Kazanjian & Glynn, 2008). Even less is known about factors that stimulate or hamper the various stages of these processes.

Creativity can be viewed as a multistage process consisting of three phases: (1) idea generation, i.e. recognizing a new opportunity and letting an initial inspiration ripen and mature into an idea; (2) idea promotion, i.e. the gathering of support and resources for the idea; and (3) idea implementation, i.e. the implementation of the idea within the organization (Kanter, 1988; West & Farr, 1989; Scott & Bruce, 1994; Janssen, 2000, 2001; Van der Vegt & Janssen, 2003).

A process model of creativity implies that each phase may be associated with its own set of critical success factors, i.e. antecedents to the creative outcomes of that phase (Unsworth, Brown & McGuire, 2000; Shalley, Zhou & Oldham, 2004). The central question pertains to which antecedents of creativity can be expected to be important for a specific phase of the creative process. A first factor that has received much attention in the literature on antecedents of creativity is personality. Research has indicated that individuals who tend to be very open to experiences are more likely to be creative than individuals showing this attribute to a lesser extent (Mumford & Hunter, 2005; Anderson & Gasteiger, 2008). Creative behaviour is also linked to having an innovative personality, i.e. a preference to solve problems in an innovative way (Kirton, 1976, 1994). Likewise, research has found correlations between creativity and self-confidence, flexibility, self-acceptance, sensitivity and intuitiveness (Shalley & Zhou, 2008). However, there are also some inconsistencies regarding the role of personality in creativity. For example, some studies show that extraversion is closely linked to employee creativity (Taggar, 2002), whereas other studies show that having an introverted personality helps employees to produce creative outcomes (Feist, 1999).

One explanation for these inconsistencies could be that the same personality traits may have a differential impact in each phase of the

creative process. For example, having an introverted personality may be linked to an individual's ability to generate new ideas. In contrast, 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. Similarly, characteristics such as openness to experience and independence might engender the kind of exploration required for idea generation, but may not help the creative individual when promoting or implementing the idea (Rice et al., 2001; O'Connor & McDermott, 2004). In sum, the particular mindset of a person can be helpful for some phases of the creative process, but not for others. We define a mindset as a set of personal beliefs and attitudes that is so established within the person that it creates a powerful incentive to continue to adopt prior behaviours, choices or tools. We propose:

> **Proposition 1**: The role of a certain individual mindset differs in importance at the various phases of the creative process.

A second factor identified as an important antecedent of creativity is rewards, which motivate individuals to undertake an activity. While internal rewards refer to the extent to which an individual engages in an activity because of the pleasure and sense of mastery he/she derives from the activity, external rewards refer to the motivational role of external stimuli such as financial compensation or acknowledgement of achievement (Utman, 1997). Numerous studies have repeatedly shown that individuals appear to spawn more original ideas when intrinsically motivated than when extrinsically motivated (Taggar, 2002; Anderson & Gasteiger, 2008). However, the role of external rewards for creative performance is less clear, with researchers arguing both against (Amabile, 1997) and in favour (Eisenberger & Armeli, 1997; Eisenberger & Rhoades, 2001).

The inconsistent results for external rewards raise the question whether extrinsic motivation is important in all phases of the creative process. It seems likely that external rewards may inhibit the generation of ideas, as people feel that they have to live up to certain expectations. External rewards can create performance stress, as the attention is directed to achieving the goal (because of the reward) and not to the process of creating itself (Freund, Hennecke & Riediger, 2010). Focusing on the process is more likely to be associated with emotional well-being than focusing on achieving outcomes (Freund, Hennecke & Riediger, 2010). The absence of emotional well-being, i.e. negative stress, may hamper the creative spur

of free idea generation. On the other hand, external rewards may enhance idea implementation. Extrinsic drivers that are received after successful implementation may stimulate individuals to persist and complete the implementation of the idea. In this situation a focus on achieving outcomes may be perceived as stimulating. We propose:

> **Proposition 2**: The role of external rewards differs in importance at the various phases of the creative process.

In addition, there is rising agreement among scholars that co-workers and team processes also play a key role in stimulating employee creativity (West, 2002). Especially group composition has been shown to be critical for creativity (Woodman, Sawyer & Griffin, 1993). For example, King and Anderson (1990) found that team creativity is most likely to succeed when teams are composed in a diverse and complementary way, consisting of team members with different educational levels, demographics, personality, skills, knowledge and orientations. This complementarity is believed to result in constructive conflict, which in turn enhances creativity. Other scholars indicate that teams should not be too diverse, because too much conflict is not beneficial for creativity (De Dreu & West, 2001). (For a review, see Jackson, Joshi and Erhardt, 2003.)

Little is known about which group attributes stimulate creativity in which stages of the creative process (West, 2002; Jackson, Joshi & Erhardt, 2003). We assume that a complementary group structure with regard to knowledge and expertise may be essential for idea generation, as interacting with people with different factual knowledge is expected to facilitate cross-fertilization (Uzzi & Spiro, 2005; Erhardt, 2011). Complementarity of group members with respect to knowledge and expertise may be less important for the promotion of ideas, as the main objective in this stage is to get back-up for the idea from investors. This is not to deny the importance of diverse knowledge within the team as questions about technical or operational details arise. Finally, effective idea implementation may require task-related diversity, as complementary implementation skills in the team may enhance successful execution of the idea into practice. We propose:

> **Proposition 3**: Different group attributes related to homogeneity and heterogeneity of knowledge are important in each phase of the creative process.

Fourth, in the literature, leadership style and leader-member exchange (LMX) have

been depicted as potentially important factors for creativity (Woodman, Sawyer & Griffin, 1993). A supportive leadership style (as opposed to a controlling one) is found to boost creativity, as leaders are focused on interpersonal relations instead of the decision-making process (Kanter, 1988; Amabile, et al., 1996; Madjar, Oldham & Pratt, 2002). For LMX, results are less consistent. LMX theory refers to the quality of the relationship between a leader and his employee, which may range from a formal, impersonal relationship to one of mutual trust and understanding (Scott & Bruce, 1994). Although some studies connect a trustful and understanding LMX with creativity (Anderson & Gasteiger, 2008), others did not find a significant relationship (Scott & Bruce, 1994).

With regard to the differential impact of leadership in the different phases of the creative process, it seems plausible that the leader will take on a different role throughout the creative process. For example, during idea generation, the team may require a leader who facilitates the process (Isaksen, 2000; Buijs, 2007) and who gives the team sufficient autonomy so that they can maximize their creative output. This supportive leadership style is known in the literature as transformational leadership. Transformational leadership is characterized by a style that consists of articulating an inspirational vision, providing intellectual stimulation and challenge, charismatic role modelling and coaching and mentoring (Bass & Avolio, 1994; Vera & Crossan, 2004). In contrast, leader characteristics such as guidance and control may be beneficial for idea implementation, so as to make sure that the team does not deviate from the initial idea. Moreover, typically far more people are involved in the implementation phase than in the generation phase of an idea. With the success of the implementation phase being determined largely by the effectiveness and efficiency with which the idea is realized, co-ordination among individuals may prove to be essential. A leader with more controlling characteristics might be just what is needed at this stage. In other words, depending on the phase of the creative process, other processes and tasks have priority and therefore a different leadership style may be required. This reasoning is in line with studies on situational leadership (Hersey & Blanchard, 1969). We propose:

Proposition 4: Different leadership styles are important in each phase of the creative process.

A fifth factor concerns organizational resources. Previous studies have suggested three broad categories of organizational resources to facilitate creativity: (1) information (data, technical knowledge, political intelligence and expertise), (2) physical resources (funds, materials, space and time), and (3) support (endorsement, backing, approval and legitimacy) (Kanter, 1988). Although substantial theorizing proposes that the availability of resources will exert a powerful influence on creativity (e.g., Scott & Bruce, 1994; West & Altink, 1996), only a handful of studies have found evidence for the positive effects of resources on creativity (Ekvall & Ryhammar, 1999). Some scholars even found a negative relation (West & Altink, 1996).

When viewing creativity as a process, it is conceivable that the availability of resources only facilitates one stage of the process. It is unclear which stage that might possibly be, as it is argued that resources on the one hand provide organizations with the flexibility needed to pursue ideas, and on the other hand their availability allows organizations to put ideas with potential into practice (Mumford & Hunter, 2005). This suggests that resources may facilitate idea generation as well as idea implementation. We propose:

Proposition 5: The role of organizational resources differs at the various phases of the creative process.

Methodology

The purpose of the present study is to explore the role of individual mindsets, rewards, co-workers, leadership and organizational resources in the creative process. We used in-depth interviews to investigate the stages at which the antecedents are relevant and how they are relevant to a particular stage in the creative process.

Sample

As is generally accepted in qualitative research, we used purposive sampling (Eisenhardt, 1989; Yin, 1989). We collected data from (1) knowledge workers, i.e. people employed in a firm whose main capital is knowledge (Davenport, 2005; Reinhardt et al., 2011) and (2) individuals active in occupations within the arts, design and media. We distilled a list of possible contacts by analysing newspapers and magazines and identifying people and organizations. This set was supplemented with input from experts in the field of innovation and creativity. Then, we selected a sample of 11 cases for each category of our research population (i.e., 22 cases in total). The creative professional cases were selected in order to

maximize representation of different industries (e.g., ICT, consultancy, product development, pharmaceutics, communication, and engineering). We chose to have knowledge workers in our sample, because coming up with solutions to 'non-routine' problems is an essential part of their job. This requires a combination of convergent, divergent and creative thinking (Reinhardt et al., 2011). The artists cases were selected to represent different creative fields (e.g., theatre, photography, literature, cabaret, painting, music, fashion, design, and media). Table 1 presents the list of key informants and shows how the interviews were distributed over the different cases and how they were split between knowledge workers and people employed in creative occupations.

We examined a large number of cases to ensure diversity of practices and contexts and thus increase the potential vigorousness of the theory induced from the results. One case includes all interviews around the creative process associated with one specific idea. Eleven cases were chosen based on the saturation principle. After a certain amount of cases/ interviews, new data does not shed any further light on the issue under investigation (Glaser & Strauss, 1967; Mason, 2010). In each case, our primary informant was the person who initiated the idea, i.e. the creative mind who instigated the creative process. Following Ford (1996), additional interviews were held with key stakeholders in 15 cases (e.g., peers, senior managers, and team members). This allowed us to trace antecedents as perceived by other individuals than solely the creative person. The interviews with key stakeholders complemented the report of the primary informants.

Interview Protocol

A total of 36 in-depth interviews were conducted, tape recorded and subsequently transcribed. Coding was done using the electronic NUDIST Qualitative Data Analysis System. Interpretive notes were created for each case, based on a compilation and comparison of the interview transcripts, the researcher's field observations and supplementary archival documentation. Comparing these different data sources helps to ensure reliability (Miller & Crabtree, 1992). Consistency in coding was achieved by letting only one researcher perform the coding. Colleagues checked the research plan and implementation, which is a generally accepted means of ensuring consistency and dependability in the data gathering (Lincoln & Guba, 1985; Krefting, 1991). Furthermore, the researcher increased consistency by revisiting the data in intervals, recoding and comparing results (Krefting, 1991).

The interviews were semi-structured, using a protocol that included (open) questions

Table 1. Number of Respondents per Case

Creative professional's cases	Number of respondents	Knowledge worker's cases	Number of respondents
Photographer	1	Bio-pharmaceutical	2
Painter	1	Electronics, projectors and displays	2
Actress, cabaret artist and author	1	Biotechnology	2
Designer	1	Computers	2
Author children's books	1	Micro-Electronics, Belgium firm	2
Theatre group	4	Micro-Electronics, Dutch firm	2
Cabaret group	2	Electronics	2
Actor	1	Record company, music production	2
Songwriter for choir	1	Consultancy firm in supply chain optimization	2
Museum and exposition organizers	1	Architecture bureau	1
Interior design and architecture	1	Radio station	2
Total	15		21

pertaining to our propositions. This allowed the interviewer to tailor the questions to the interview context, and to the interviewees (Lindlof & Taylor, 2002). Interviews typically lasted 60–90 minutes. Interviews were kept broad in scope, in an effort to expose a wide range of guiding themes and antecedents. Critical incidents were gathered, a different one for each case. Respondents were asked to describe a typical example of an idea that they have had, how the creative process had unfolded in this situation, and which milestones could be identified throughout the process. They were then asked to keep this specific idea in mind while answering questions about antecedents of each phase of the creative process. Respondents reflected on the role of individual factors, team factors and on aspects of the broader (organizational) context that may relate to the creative process. For example, we posed open questions about which people played a role in the development of the idea and how contact was established. We asked respondents to elaborate in order to make sure that we received information about each phase in the creative process. We queried for more in-depth elaboration to gather information about the specific content of the exchange with others, in cases where respondents would not voice this by themselves. To build internal validity, we probed inconsistencies (Eisenhardt, 1989).

Results

The main findings regarding the role of the various antecedents of creativity in each phase of the creative process are reported and discussed below. We use the findings to refine our propositions.

Respondents on Individual Mindsets

Respondents indicated that having a creative mindset is conducive to *idea generation*. Respondents described this mindset 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'. Furthermore, respondents repeatedly pointed out that generating new ideas requires that one has the psychological freedom to leave traditional paths. Respondents stressed the need to be open to experiences for idea generation.

With regard to *idea promotion*, all respondents underscored the importance of sticking to the idea while selling it. The general feeling was that if at this point in the process one makes concessions to please stakeholders, this jeopardizes selling success. Furthermore,

respondents reported that if one is willing to continuously adapt the original idea, then this easily becomes an endless process, and the idea will never pass the promotion phase. Respondents pointed out the importance of having a communicative personality for successful idea promotion. They indicated that people who are open and outgoing have less difficulty in approaching others and feel more relaxed when they need to sell their idea. It is often easier for them to find the right words and, therefore, they are better in pushing forward their ideas. In this regard, as respondents suggested, it is not communication as a behavioural strategy that appears important, but the talent for communication as such.

Respondents associated *idea implementation* with being task-oriented, result-oriented and flexible individuals. Being task-oriented was seen as being well-organized and working efficiently and systematically. In addition, respondents emphasized the importance of being result-oriented, which they associated with paying attention to details and 'working hard'. For example, the following sentiment was expressed by a knowledge worker and echoed by several others: 'You need to be able to work hard. If your ambition is limited to working from nine to five – and nothing wrong with that – you will never get the opportunity to work on a big creative project'. Additionally, respondents stressed the importance of being flexible during the implementation of an idea, 'because one must be able to handle unforeseen problems that arise during implementation'. Creative people as well 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, several creative persons admitted that they were not as much task-oriented as they perceived necessary for successful implementation. However, respondents said that they were aware of this weakness and therefore contacted skilled people to take on the implementation.

Respondents on External Rewards

With regard to the role of extrinsic motivators, interviewees indicated that external rewards inhibit *idea generation*, as rewards create a sense of external pressure, and compels them to accommodate external expectations. We found that during idea generation respondents prefer to be independent of what their target audience thinks of their creations. They create first and foremost for the pleasure they derive from generating ideas and/or solving a particular problem. It is the process of creation that fascinates them and compels them to keep

working. As a creative professional stated: 'I'm just wonderfully addicted to the creation process'.

Whereas respondents indicated that idea generation was mainly driven by the pure pleasure of creating, *idea promotion* was associated with a very different intrinsic motive. Respondents indicated to be driven by the persistent belief that the idea has potential and it is worth pursuing: 'If you are not genuinely confident of your case, or not one hundred per cent enthusiastic about every detail, you cannot go and fight for it'. Respondents pointed out that this deep-rooted conviction is necessary throughout the entire promotion process. Almost all interviewees emphasized that without an unconditional faith in the idea, they could not successfully defend and sell it to stakeholders and acquire the resources needed for implementation. Respondents indicated that external rewards were unnecessary in this stage of the process and could even undermine it, because a reward for 'unfinished business' would not motivate them to further refine or implement the idea. Respondents also mentioned that the mere acknowledgement of their idea and the visibility they received for their idea during the promotion stage was sufficient to motivate them to advance it into the implementation stage.

Extrinsic motivation in the form of tangible and intangible rewards was perceived as facilitating *idea implementation*. Respondents gave examples about how they perceived external rewards as an acknowledgement of their work. They also mentioned that the foresight of receiving a reward after implementation helped them to persevere until the end. The prospect of being rewarded afterwards was seen as an important motivator to keep pushing towards the full implementation and taking care of all details.

Respondents on Group Composition

Concerning the role of group composition, respondents indicated that during *idea generation* they actively sought contact with people from a wide variety of backgrounds. The interviewees signposted four main motives. First, respondents stressed their hunger for broadening their horizons. They believed that through diverse experiences and contacts they were more likely to be challenged and gather relevant knowledge.

Second, being in contact with others was voiced as an important way of structuring one's mind and ideas. Respondents stated that by making ideas explicit to others, divergent thoughts are crafted into coherent concepts. Respondents said that these conversations could be conducted with anybody who shows interest, even laymen, as long as they provide a challenging perspective. It was stressed that feedback should always be well-founded, based on numerous arguments and never formulated as an attack. One respondent said: 'Our discussions have undeniably improved the idea, but this was only the case because all team members actively listened and were open to conversation. If that would not have been the case, then the discussions would not have been fruitful'.

Third, respondents indicated that other people can act as a critical sounding board and are used to provide feedback with regard to content, structure and completeness of the idea. This feedback-seeking behaviour was said to be foremost directed towards peers who have the knowledge or expertise to help refine the idea. Especially valued are peers who have knowledge that the individual lacks, as they substantially help to improve the initial idea because of the cross-fertilization of knowledge and expertise. One of the respondents indicated: 'You can be brilliant, but if you do not have the humbleness to seek feedback from others, you will never bring the idea to fruition. You need to be modest enough to acknowledge that others know things that you don't, and you need to ask others whether they can share their insights with you so that the best solution can be found'.

Finally, engaging in contacts was said to help the individual to evaluate the idea and to check whether a finalized idea is valuable and has potential for success. Respondents actively pursued their personal contacts inside the organization, their acquaintances in the corporate world, the target audience or sources outside the organization and asked them to evaluate the finalized idea. For example, one respondent frequently participated in painting competitions, not in order to win a prize, but 'in order to be able to compare the ideas expressed in my paintings to those of others'.

On the subject of the role of co-working during *idea promotion*, respondents indicated that it is essential to have complementarity of the different networks in which group members engage. Occupying a different function at different levels in the organization, working in different domains of interest, or having connections to former clients or key stakeholders are mentioned by the interviewees as examples of these complementarities that help idea promotion.

Respondents unanimously described successful *idea implementation* as a group effort. They indicated that assembling a competent team is necessary to provide idea generators with the help they need to implement the idea. In some of the cases, the initial team that

worked on the generation and the promotion of the idea was extended to include implementation experts. Complementarity in team roles was perceived to be crucial for idea implementation. Interviewees stressed that the idea generator needs to direct the team towards the ultimate goal, while implementation experts need to focus on the practical realization.

Respondents on Leadership

Respondents indicated that the leader has a facilitating role in *idea generation* instead of a formal hierarchical position, because the latter is believed to hinder the process. Respondents repeatedly talked about 'equality' as a key characteristic a leader should have in this phase. Various respondents reported that an 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 long-term vision and objective. The leaders that were interviewed all indicated that they felt it was crucial not to steer or intervene too much, because this would hinder the further improvement of the idea. Leaders expected to be kept informed about the course of action, but they were very much aware of the importance of autonomy.

With regard to *idea promotion*, respondents preferred a leader who is in close contact with superiors, top management and influential people in the business, and who is therefore likely to be successful in acquiring the necessary resources. Respondents indicated that if the leader has a track record of previous successes and has an established reputation, his credibility is high and funds are more easily obtained.

The ideal role of the leader during *idea implementation* is said to be a formal and hierarchical role that consists mainly of co-ordination and maintaining a strict regime in which deadlines are respected and quality requirements are met. Respondents stated that the leader should have a general overview of the project and he should carry the responsibility for a successful implementation. The interviewees pointed out that a leader should set priorities, take decisions and make sure the team can respond adequately when unforeseen circumstances arise. Furthermore, people management skills were said to be crucial. Respondents stated that successful team leaders are usually quite demanding, but do realize that they must value and appreciate every single person that contributes to the ultimate goal. Respondents preferred leaders who are aware that the people implementing the idea should not be overlooked, and giving them the visibility and appreciation they deserve contributes significantly to successful idea implementation.

Respondents on Resources

Respondents indicated that during *idea generation*, organizational resources need to stimulate interpersonal contacts as much as possible such that cross-fertilization between different departments and/or domains of expertise is enhanced. Access to organizational resources in terms of access to information and expertise is voiced prominently by the interviewees. In their view, extensive and varied contacts allow for the transfer of knowledge and information, and help in discussing problems that arise from everyday business or contact with clients.

With regard to *idea promotion*, respondents indicated the key importance of transparency of the organization structure. They said that clarity about the organizational procedures helps them to know how to acquire financial resources and political backing for their idea, and who to approach for information and knowledge. This is voiced to be supportive for successfully promoting their creative ideas within the organization. Respondents also emphasized the importance of a long-term organizational strategy for creativity. They pointed out that creative activities may initially disrupt current business activities, because new activities often target new markets and do not provide quick wins in the short run. Long-term organizational strategies that foster creativity and recognize the value of innovation, combined with policies that allow for a careful consideration of each idea, were indicated to provide good organizational conditions for idea promotion. Hence, organizational resources in terms of endorsement and backing for creative projects is voiced to be crucial in this phase.

Concerning the resources needed to successfully *implement* an idea, our respondents reported relying largely on their network and possible connections with organizations. The knowledge workers indicated their need for financial resources, time and specific competencies in this phase of the creative process. For knowledge workers, gathering the necessary resources was seen as a responsibility of not only the team, but of the organization as well. Respondents pointed out that the organization should provide the necessary preconditions for idea implementation, i.e., time must be made available, financial resources must be structurally assigned to the project, and the organization needs to ensure that people and competences can be flexibly allocated when and where needed. Management support is

indispensable in this regard. One of the respondents said: 'He was the senior manager. [. . .] He supported us, he did his very best. That wasn't always easy for him, but he tried to do so. And not only for the big financial resources, but also for the equipment, for example when this was suddenly needed in the project'.

Discussion and Conclusion

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 variable, little research has addressed the process that underlies creativity. Our study addresses this gap by examining in which way important antecedents play a role in each phase of the creative process. In this respect, the present study answers the call of several scholars to study how several antecedents of creativity enhance the different phases of the creative process (Unsworth, Brown & McGuire, 2000; Amabile et al., 2002; Shalley, Zhou & Oldham, 2004; Gilson et al., 2005).

Regarding mindsets, previous research has shown that creative outcomes are more likely to occur when the creative individual has a creative mind, i.e. 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). We found that having a creative mind is beneficial especially during idea generation. This is consistent with an earlier study by Mostert (2007) about the diversity of mind needed for bringing forth ideas. However, for the promotion of ideas, traits such as perseverance and having a communicative personality come into play. Perseverance refers to having a persistent and unwavering belief in the creative idea. It points to the tenacity of the individual in the face of obstacles or resistance. As leaders are often biased against radically new ideas and the associated risks and uncertainties (Sheaffer et al., 2011; Mueller, Melwani & Goncalo, 2012), it is important for individuals to be sensitive to these apprehensions and be able to adapt and mould their arguments in order to take away the trepidations of investors and decision makers. This can be done, for example, by connecting the idea to more familiar projects that have been successful in the past. This is found to be indispensable especially during idea promotion. During idea implementation the accent lays not so much on having a creative mind, but more on being flexible, task-oriented and result-oriented. This is in line with scholars who have suggested that during the implementation phase of the process, creativity is less needed and dispositions beneficial for implementation prevail (Amabile et al., 1996; West, 2002; West et al., 2004; Sim et al., 2007). Notably, the interviews indicated that successful creative minds are aware of this weakness and therefore gather skilled people around them to take on the role of implementation experts.

> **Proposition 1 refined**: The role of individual mindsets differs at various phases of the creative process. More specifically, having a creative mind and being open to experiences is especially important in the idea generation phase; perseverance and having a communicative personality is desirable for the idea promotion phase; and being flexible, task-orientated and result-oriented is supportive in the idea implementation phase.

With regard to the role of external 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, 1997; Eisenberger & Armeli, 1997; Eisenberger & Rhoades, 2001). Our study indicates that extrinsic motivation inhibits idea generation and promotion. External rewards put individuals under a psychological pressure to perform, which is perceived as impeding the generation of ideas and demotivating further effort for promoting an idea. This concurs with findings in the domain of innovation management by, for instance, Baer and Frese (2003). In contrast, external rewards facilitate idea implementation, as rewards were welcomed to help individuals to persist and fully complete the implementation of the idea.

> **Proposition 2 refined**: The role of external rewards differs at various phases of the creative process. More specifically, external rewards hinder creativity in the idea generation and promotion phases; implementation of ideas is facilitated by external rewards.

Previous research has identified complementarity in the team as an important precondition for creative success (King & Anderson, 1990; West, 2002; West et al., 2004), but it remained unclear which attributes of group complementarity stimulate creativity in which stages of the creative process (Jackson, 1992; West, 2002). Our data indicate that complementarity with regard to knowledge and expertise is important during idea generation, because it stimulates cross-fertilization of know-how. Furthermore, it is important that

group members exchange challenging perspectives and focus on the development of the idea instead of being judgemental and negative. For idea promotion, it is diversity in the networks of the group members that is essential. With regard to idea implementation, it was found to be important to assemble a competent workgroup and include implementation experts. Furthermore, complementarity in team roles was perceived to be crucial for idea implementation. On the basis of our empirical findings we refine proposition 3.

> **Proposition 3 refined**: Different group attributes are important in each phase of the creative process. More specifically: in the idea generation phase, group members need to be complementary in their knowledge and expertise. Also group members need to provide challenge and a safe environment to voice ideas. During idea promotion, group members have to have a complementary network and in the idea implementation phase it is important that there is complementarity in team roles and group members have explicit expertise.

Previous research showed that a supportive leadership style (as opposed to a controlling one) boosts creativity (Amabile et al., 1996; Madjar, Oldham & Pratt, 2002), and that a trustful and understanding leader–member relationship relates to creative performance (Anderson & Gasteiger, 2008). Other scholars 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. During idea generation, the leader has the role of an informal facilitator who does not have a formal hierarchical position, and has an equal voice compared to other team members. In contrast, during idea implementation, hierarchy is imperative for success as there needs to be a co-ordinator who takes decisions and bears final responsibility. Hence, some phases call for a supportive, non-regulating leadership style (idea generation and promotion), while other stages call for a rather strict regime that is combined with effective people management skills (idea implementation).

> **Proposition 4 refined**: Different leadership styles are important in each phase of the creative process. More specifically, hierarchical leadership hinders creativity during idea generation, while a facilitative attitude helps; idea promotion benefits from having a leader with close contact with influential people, an established reputation and high credibility; idea implementation fares well by hierarchical leadership.

Studies have shown that adequate resources provide employees with the possibility to learn about their tasks, gain task-related knowledge, and resources enable them to explore, generate and exploit creative ideas (Holman & Wall, 2002; Leach, Wall & Jackson, 2003). Resources consist of access to information/knowledge/expertise, funds/materials/time and endorsement/backing (Kanter, 1988). Our results indicate that the necessity for these three types of resources is present throughout the creative process. However, during idea generation individuals primarily need access to information and knowledge. During idea promotion this need for information is enforced but it shifts from technical knowledge to more political intelligence of the playing field. Also endorsement and backing of the organization is required. For idea implementation the emphasis lies on funds, materials, space and time.

> **Proposition 5 refined**: The role of organizational resources differs at various phases of the creative process. Specifically, resources stimulate interpersonal contacts and provide access to information in the idea generation phase. A transparent organizational structure is particularly helpful for idea promotion. Idea implementation is stimulated by funds, time and competencies.

Table 2 sums up our findings and points out how the phases of idea generation, idea promotion and idea implementation are each associated with different accents on different antecedents. Our study shows that it is necessary to investigate the antecedents of the phases in the creative process in order to gain more in-depth knowledge of what facilitates and impedes engagement in each stage of the creative process. Further research will need to explicitly pay attention to the phase of the creative process when investigating antecedents of creativity. More generally, insight into countervailing effects of antecedents of creativity expands our knowledge of the dynamics that shape the way the creative process unfolds.

Managerial Implications

From a managerial point of view, our results suggest that stimulating creativity is not only a matter of continuously ensuring the presence of facilitating antecedents and eliminating impeding factors. This study emphasizes that organizations will have to take into account the differential impact of antecedents of creativity in subsequent phases of the creative process. Organizations will have to design a

Table 2. Results

Refined proposition		Idea generation	Idea promotion	Idea implementation
P1	Personality	Have a creative mind, openness to experience	Perseverance, have a communicative personality	Flexible, task-oriented and result-oriented
P2	Rewards	Extrinsic rewards hinders creativity	No role/demotivating role for extrinsic rewards	Extrinsic rewards motivate creativity
P3	Group/team composition	Complementarity of group members in knowledge and expertise, provide challenge, safe environment	Complementarity of networks	Complementarity in team roles, include experts, build competent team
P4	Leadership	Hierarchical leader hinders creativity	Close contacts with influential people, established reputation, high credibility	Hierarchical leader needed
P5	Organizational resources	Stimulate interpersonal contacts, provide access to information	Transparent organizational structure	Funds, time and competencies

strategic approach to the creative process and put different accents on different antecedents in different phases.

Having a creative mind as well as being task-oriented appeared essential to creativity, respectively for idea generation and idea implementation. However, as pointed out by the respondents, creative individuals usually have a hard time focusing on implementation details. Nevertheless, both dispositions are indispensable, depending on the phase of the creative process. Managers should be aware of this and facilitate creative persons who want to involve more task-oriented people in further stages of the creative process. Our findings with respect to the countervailing effects of external rewards on idea generation versus implementation (see Table 2) is especially challenging in organizational settings. Managers will have to closely monitor the presence and absence of extrinsic drivers in the different phases of the creative process. We also established the importance of complementarity of group members on different aspects depending on the phase of the creative process. The need for teams to be complementary with respect to knowledge, networks, as well as

roles may make it difficult to compose a team that meets all these requirements. Managers should regularly evaluate the composition of the team in order to assess whether the composition is still conducive to the creative process. As the idea evolves into a more tangible artefact or process description, it might be wise to add people to the team that are part of relevant networks and who are skilled in promoting the idea. Later on in the creative process, team members might be added again. This time the focus may lie on involving individuals who have a knack for implementation-related tasks and display a 'getting things done' behaviour. Furthermore, our findings highlight the opposing roles and behaviours that team leaders must demonstrate throughout the different phases of the creative process (see Table 2). The need for these diverse leadership roles in distinct creativity phases stresses the importance of attracting 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 pivotal point for both the leader and his team, and clear communication is crucial to ensure

that no problems arise out of the shift from a facilitator role to a co-ordinator role. With respect to the differential influence of organizational resources during each creative phase, organizations are challenged to stimulate connectedness in the organization to enable creative thinking and exchange of technical and political knowledge that are so important in the earlier stages of the creative process.

Limitations and Suggestions for Future Research

The findings in this study are subject to a number of caveats, which point to the need for future research. The first caveat concerns limitations of the adopted research design. As the aim of the present study was to build substantive generalizable theory in an under-researched area, we employed an explorative research design. The strength of this design is that it permits us to identify new insights and relationships with regard to the role of distinct antecedents in the phases of the creative process. The weakness is that it does not provide an estimate of the relative importance of antecedents in each of the different phases. Future research could test the variance of each factor on the outcome of each distinct phase, and on the outcome of the creative process as a whole.

Second, cases were studied after the creative process had unfolded. As for the methodology's limitations, one might argue that phenomena like imperfect recall, memory distortion and attributional biases may compromise the accuracy of the respondents' retrospective accounts and perceptions. Special caution is needed when interpreting the reported results with regard to the individual mindset as these are based on self-reports. People are not always very good at judging their own 'personality'. 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. Future research could provide several in-depth cases that are studied by employing participative observation. The study by Amabile and Kramer (2011) shows a useful approach to in-depth case research.

Third, since Kanter (1988), several studies have looked into stages and dimensions of innovative work behaviour (e.g., Buijs,

Smulders & van der Meer, 2009). The results of these studies are not conclusive. Some propose five dimensions (Kleysen & Street, 2001), others propose four (De Jong & Den Hartog, 2010), and yet others suggest two (Hammond et al., 2011). In interviews, respondents indicated that they felt that the three phases we proposed were actually present in practice. They could identify with each of the distinct phases. Hence, we have chosen to adhere to the phases from Kanter (1988), Janssen (2000, 2001), Scott and Bruce (1994) and Van der Vegt and Janssen (2003); however, for other studies a different choice might be justifiable as well. That being said, note that in reality, creativity may not always be as linear as implied in process models of creativity (Buijs, Smulders & van der Meer, 2009). Different research designs, such as participative observation, could provide more insight in this regard.

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

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