FLANDERS DC
INSPIRING CREATIVITY

Knowledge partner

Vlerick Leuven Gent Management School

the Autonomous Management School of
Ghent University and Katholieke Universiteit Leuven

RESEARCH REPORT

FROM CREATIVITY TO SUCCESS:

Barriers and Critical Success Factors in the Successful Implementation of Creative Ideas

Inge De Clippeleer
Katleen De Stobbeleir
Koen Dewettinck
Susan Ashford

July 2009

FLANDERS DISTRICT OF CREATIVITY

Flanders District of Creativity is the Flemish organization for **entrepreneurial creativity.** It was founded in 2004 by the Flemish Government as a non-profit organization and enjoys broad support. Flemish businesses, academia, and public institutions use Flanders DC as a platform for cooperation in the pursuit of a more creative Flanders region.

Creativity is the key ingredient in making companies more successful and in helping regional governments ensure a healthy economy with more jobs. Flanders DC inspires creativity and innovation:

1. by learning from the most **creative regions** in the world,
2. by igniting **creative sparks** in everyday life and business, and
3. by providing **research, practical business tools and business training,** in cooperation with the Flanders DC Knowledge Centre.

1. Districts of Creativity: Inspiration from the most creative regions

Responses to global challenges are best found within an international network of excellence. With the single aim of learning from the very best, Flanders DC aims to unite the most dynamic regions in the world within the 'Districts of Creativity' network. Every two years, Flanders DC convenes the Creativity World Forum, bringing together government leaders, entrepreneurs, and knowledge institutions to exchange ideas about how to tackle pressing economic problems and make their regions hotbeds for innovation and creativity.

CREATIVITY WORLDFORUM

November 19-20, 2008 - Antwerp, Belgium

FLANDERS DC
INSPIRING CREATIVITY

2. Raising awareness: The best way to predict the future is to invent it

Flanders DC encourages entrepreneurs and citizens to look ahead and find creative solutions today for tomorrow's problems. Flanders DC has developed an idea-generation tool to encourage people and organizations to take the first step toward innovation. In addition, Flanders DC has run an awareness campaign entitled 'Flanders' Future' and has collaborated with national TV station één (VRT) on an idea show named The Devisers (De bedenkers).

3. The Flanders DC Knowledge Centre: Academic support

The **Flanders DC Knowledge Centre** serves as a link between Flanders DC and Vlerick Leuven Gent Management School. Each year, the Flanders DC Knowledge Centre publishes several reports and develops various tools, case studies and courses. All these projects focus on the role of creativity in a business environment and identify obstacles to, and accelerators of competitive growth.

The **Creativity Talks** – brief monthly, interactive info sessions – update you on these research activities. See www.creativitytalks.be for a current calendar and subscription information.

Research reports:

- **De Vlaamse economie in 2015: Uitdagingen voor de toekomst,** Koen De Backer and Leo Sleuwaegen, September 2005, Published in Dutch
- **Ondernemingscreativiteit als motor van groei voor Vlaamse steden en Brussel,** Isabelle De Voldere, Eva Janssens and Jonas Onkelinx, November 2005, Published in Dutch
- **The Creative Economy: challenges and opportunities for the DC-regions,** Isabelle De Voldere, Eva Janssens, Jonas Onkelinx and Leo Sleuwaegen, April 2006, Published in English
- **Spelers uit de televisiesector getuigen: een verkennende studie in de creatieve industrie,** Marc Buelens and Mieke Van De Woestyne, June 2006, Published in Dutch
- **Mobiliseren, dynamiseren en enthousiasmeren van onze toekomstige zilvervloot,** Thomas Dewilde, Annick Vlaminckx, Ans De Vos and Dirk Buyens, June 2006, Published in Dutch
- **Development of a regional competitiveness index,** Harry Bowen, Wim Moesen and Leo Sleuwaegen, September 2006, Published in English
- **Innovation outside the lab: strategic innovation as the alternative,** Marion Debruyne and Marie Schoovaerts, November 2006, Published in English
- **De creatieve industrie in Vlaanderen,** Tine Maenhout, Isabelle De Voldere, Jonas Onkelinx and Leo Sleuwaegen, December 2006, Published in Dutch
- **Het innovatieproces in grote bedrijven en KMO's,** Geert Devos, Mieke Van De Woestyne and Herman Van den Broeck, February 2007, Published in Dutch
- **Creatief ondernemen in Vlaanderen**, Tine Maenhout, Jonas Onkelinx and Hans Crijns, March 2007, Published in Dutch
- **Hoe ondernemers in Vlaanderen opportuniteiten identificeren. Een rapport met tips en tools voor de ondernemer in de praktijk**, Eva Cools, Herman Van den Broeck, Sabine Vermeulen, Hans Crijns, Deva Rangarajan, May 2007, published in Dutch
- **Networking in multinational manufacturing companies**, Ann Vereecke, July 2007, published in English
- **How entrepreneurial are our Flemish students,** Hans Crijns and Sabine Vermeulen, November 2007, published in English
- **Fashionate about Creativity**, Isabelle De Voldere, Tine Maenhout and Marion Debruyne, December 2007, published in Dutch
- **Find the innovator. Identifying and understanding adopters of innovative consumer technologies in Flanders,** Marion De Bruyne and Bert Weijters, December 2007, published in English
- **De case Arteconomy**, Eva Cools, Herman Van den Broeck and Tine Maenhout, December 2007, published in Dutch

- **Entrepreneurship and globalization,** Italo Colantone and Leo Sleuwaegen, December 2007, published in English
- **HR Tools als stimulans voor creativiteit bij uw werknemers,** Kristien Van Bruystegem, Vickie Decocker, Koen Dewettinck, Xavier Baeten, December 2007, published in Dutch
- **Internationalization of SMEs**, Jonas Onkelinx, Leo Sleuwaegen, April 2008, published in English
- **HRM-uitdagingen voor groeiende ondernemingen**, Mieke Van De Woestyne, Kristien Van Bruystegem, Koen Dewettinck, March 2008, published in Dutch
- **Sociaal Ondernemerschap in Vlaanderen,** Hans Crijns, Frank Verzele, Sabine Vermeulen, April 2008, published in Dutch
- **Foreign direct investments. Trends and developments,** Frederik De Witte, Isabelle De Voldere, Leo Sleuwaegen, June 2008, published in English
- **De gezondheidszorg als complex adaptief systeem. Een ander perspectief op innovatie**, Paul Gemmel, Lieven De Raedt, November 2008, published in Dutch
- **Downstream Competitive Advantage. The cognitive Basis of Competitive Advantage. How prototypicality structures and the cognitive processes of satisficing confer strategic benefts,** Niraj Dawar, Frank Goedertier, February 2009, published in English
- **Determinants of successful internationalization by SMEs in Flanders,** Jonas Onkelinx, Leo Sleuwaegen, May 2009, published in English
- **Het gebruik van Web 2.0 ter ondersteuning van open innovatie en collectieve creativiteit. Lessen uit theorie en praktijk in Vlaanderen.** Stijn Viaene, Steven De Hertogh, Len De Looze, May 2009, published in Dutch
- **Foreign Direct Investments. Location choices across the value chain**, Frederik De Witte, Leo Sleuwaegen, May 2009, published in English
- **Prototypically Branded Innovations. Effect of the Typicality of a Brand on Consumer Adoption and Perceived Newness of Branded New Products**, Frank Goedertier, July 2009, published in English

Published research reports can be downloaded via the Vlerick Leuven Gent Management School library catalogue or via www.flandersdc.be.

In addition to these research projects, the Flanders DC Knowledge Centre has also developed the following tools and training sessions:

- **Ondernemen.meerdan.ondernemen**, an online learning platform
- **Creativity Class** for young high-potentials
- **Flanders DC Fellows**, inspiring role models in business creativity
- **Creativity Talks**, monthly seminars on business creativity and innovation
- **Innovix,** online innovation management game
- **Flanders DC Academic Seminars,** research seminars on business creativity and innovation
- **TeamScan**, online tool

TABLE OF CONTENT

TABLE OF FIGURES

In the past decade, organizational research on individual creativity has flourished (Shalley & Zhou, 2008). The rapid growth of creative concepts in organizational literature is not surprising considering 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, Pace, & Frese, 2004; Shalley, Zhou, & Oldham, 2004).

Most of the extant research on employee creativity has been conducted from a so-called *variance perspective*, i.e. a perspective focusing on explaining variance in creativity as an outcome variable by identifying and describing the factors that facilitate (or hinder) creativity. In this regard, several literature reviews have consistently concluded 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 recent reviews, see Perry-Smith & Shalley, 2003; Shalley & Zhou, 2008; Shalley et al., 2004). 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, making creativity a job requirement, providing developmental feedback on creative goal progress and rewarding employees when they achieve creative outcomes (Amabile & Mueller, 2008; Paulus, 2008; Shalley, 2008; Shalley & Liu, 2007; Tierney, 2008; West & Richter, 2008; Zhou, 2008).

However, despite the impressive support for how traits and contexts affect employee creativity, there are certainly still inefficiencies in the literature, as highlighted by some conflicting research results. For example, with regard to individual factors, some studies show that introversion (Feist, 1999) is closely linked to creativity, whereas others show that having an extraverted personality helps employees to produce creative outcomes (Taggar, 2002).

Shalley and colleagues (2004) note that these contradictory research results can largely be explained by the variance approach that has dominated the creativity literature. For example, in examining the contributions of employee personality and contextual characteristics, scholars have 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). However, 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, Kazanjian, & Glynn, 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.

As highlighted in these *process models* of creativity, 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). However, 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, Mueller, Simpson, Hadley, Kramer, & Fleming, 2002; Gilson, Mathieu, Shalley, & Ruddy, 2005; Rank et al., 2004; Shalley et al., 2004; Unsworth et al., 2000). For example, it may be that the conflicting 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 when the employee needs to convince stakeholders in the organization to invest in the idea (i.e., in the phase of idea promotion).

In sum, the creative process (as opposed to creativity as an outcome) has received insufficient scholarly interest as a meaningful area of research (Rank et al., 2004; Shalley et al., 2004; Unsworth et al., 2000). This 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.

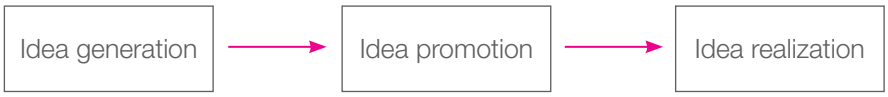
Building on this research gap, this study invokes a process view of employee creativity by developing and testing a model that describes the distinct antecedents that may be associated with each phase in the creative process. Specifically, we integrate insights derived from both variance and process models of creativity by conceiving employee creativity as a process, but at the same time considering the distinct factors that may be associated with each phase of the creative process.

As highlighted in our introduction, theorists have described creativity from two general perspectives: (1) from an outcome (or variance) perspective, and (2) from a process perspective. Research conducted from an outcome (or variance) perspective has defined creativity as the production of novel and potentially useful ideas, products or processes by an individual or a small group of individuals working together, whereas process views of creativity highlight the need for a detailed description of the unfolding dynamics of the creative process in organizations and work settings (Drazin, Glynn, & Kazanjian, 1999; Ford, 1996; Mumford, 2000) and for a consideration of the creative actors and other relevant stakeholders that determine the viability of creative ideas (Drazin et al., 2008). In this research, we will integrate both types of models and develop a unifying framework that conceives employee creativity as a process, but also identifies the distinct factors that explain the outcomes in each stage of the process.

1.1 A process model of creativity

The first view we invoke in this study is the process view on creativity. 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. This process of idea creation is often triggered when one detects an opportunity or experiences work-related problems or discontinuities. The consequent phase of the creative process consists of idea promotion to potential stakeholders. In this phase, the acquisition of information, resources, and support required to move the idea into practice is central. Therefore, friends, colleagues, superiors, and other potential sponsors are approached to provide these prerequisites. 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). This process model of creativity is illustrated in Figure 1.

Figure 1: Process model of creativity



1.2 A variance model of creativity

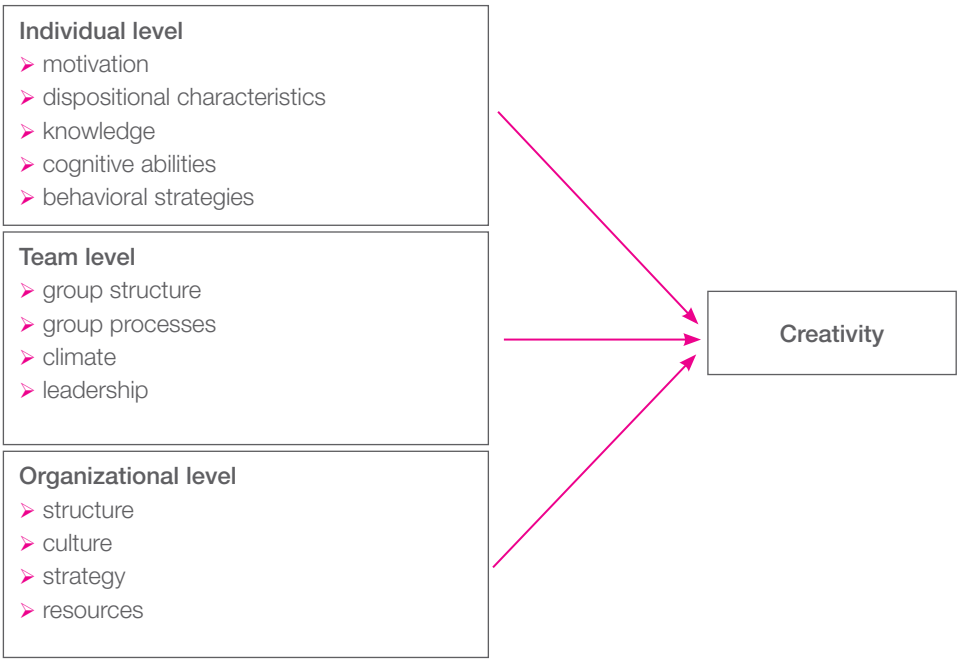
As previously outlined, a large amount of research has focused on explaining variance in creativity and we have undoubtedly progressed and advanced in identifying a number of factors that facilitate and hinder creative performance. A shift in level is however noticeable (Drazin et al., 1999; Woodman, Sawyer, & Griffin, 1993). Early research has primarily focused on antecedents of creativity at the individual level. This individualist perspective assumes that certain people have dispositions and qualities which predispose them to creative behavior (Slappendel, 1996). Subsequently, the scope has enlarged to group or social-level and, finally, to the organizational level (Drazin et al., 1999; Slappendel, 1996; Woodman et al., 1993).

However, more recent theories integrate the individual, team and organizational level and propose a multilevel model of creativity that takes into account the fact that creativity occurs simultaneously at these different levels (e.g. Drazin et al., 1999; Taggar, 2002; Woodman et al., 1993). According to Drazin et al. (1999), *"multilevel theories are emerging as powerful models for researchers to employ in mapping organizational phenomena. Because they simultaneously and interactively examine how agency at one level of analysis can interact with, and influence, that at other levels, they afford a means of describing the ever-more-complex and ever-changing organizational landscape"* (p. 304).

The main conceptual framework that has guided research on organizational creativity and that emphasizes influences across the individual, team, and organizational level, is that of Woodman et al. (1993). Their model invokes an interactionist perspective of creativity and states that both an individual's disposition and contextual factors in the work environment predict creative performance. More specifically, creativity is seen as a function of individual, group, and organizational inputs that interact and are transformed, with the potential outcome of creativity. In this respect, they identify broad constructs that bundle specific antecedents of creativity. On the individual level, for example, they describe how personality, cognitive abilities, knowledge and intrinsic motivation can influence creative performance.

As Woodman and colleagues' (1993) model has been leading research in the last decade, the second model (i.e., the variance model) that is invoked in the present study is based on their conceptual model. The model will be used as an organizing framework to group specific antecedents into broader categories. For individual characteristics, we discuss how motivation, dispositional characteristics, knowledge, cognitive abilities, and behavioral abilities are important. For group characteristics we focus on group structure, group processes, climate, and leadership. The organizational characteristics that we discuss are structure, culture, strategy, and resources. This variance model is presented by Figure 2.

Figure 2: Variance model of creativity

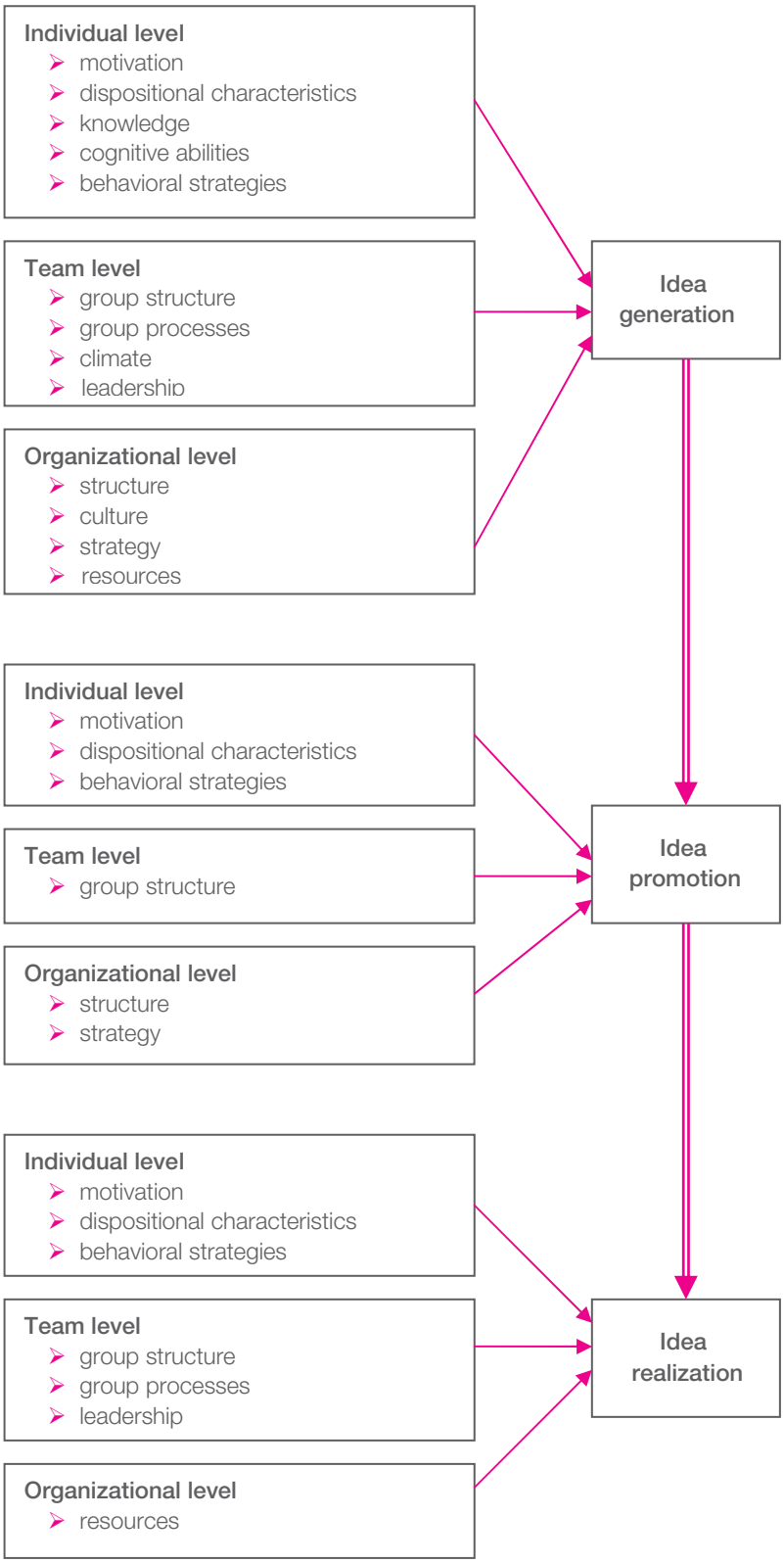


1.3 A preliminary model of creativity

Based on the conceptualization of both models individually, we introduce our preliminary model that incorporates both a process model (based on Kanter, 1988; West & Farr, 1989) and a variance model (based on Woodman et al., 1993) of creativity. The preliminary model is illustrated in Figure 3. Based on the literature reviewed below, we assume that some categories of antecedents identified in the variance model are important for a specific phase of the creative process (i.e., idea generation, idea promotion, and idea realization), whereas others are not.

Although this model provides an important starting point, two limitations have to be taken into consideration. First, the relationships outlined in the model are based on suppositions. To our knowledge, no past studies have systematically collected a broad range of data to determine what antecedents actually determine the three distinguished creativity phases. The depicted model is therefore built on assumptions made on the basis of the literature review discussed below. Second, the model is not fully specified. Instead of concrete factors (e.g., introversion or extraversion), categories of antecedents (e.g., dispositional characteristics) are depicted. To understand the specific antecedents of the creative process, we need to explore further what specific factors these constructs contain in a specific phase.

Figure 3: Preliminary model of creativity



1.3.1. The individual level

Motivation

On the individual level, the conceptual model of Woodman et al. (1993) describes motivation as an important antecedent of creativity. Numerous studies have stressed the need for individuals to possess a driving force as a decisive factor in order to cope with the challenges associated with creativity. Foremost, non-material, intrinsic motivators, rather than extrinsic motivators have been demonstrated to be important for creativity (e.g., Amabile, 1988; Anderson & Gasteiger, 2008; Taggar, 2002; Woodman et al., 1993). Intrinsic motivation refers 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, while extrinsic motivation refers to the tendency of individuals to achieve prescribed goals (Utman, 1997). Research by Amabile and colleagues (Amabile, 1985, 1997; Amabile, Hill, Hennessey, & Tighe, 1994) has repeatedly shown that individuals appear to be more creative when intrinsically motivated than when extrinsically motivated, with extrinsic motivation inhibiting creative performance. The role of goals and rewards for goal attainment should however not be underestimated according to other scientists, as their findings provide evidence for the stimulating effect of rewards on creative performance (Eisenberger & Armeli, 1997; Eisenberger & Rhoades, 2001).

Despite the large emphasis that is placed on motivation in creativity research, no studies have assessed whether intrinsic and/or extrinsic motivation is important in all phases of the creative process. In fact, the inconsistent results for extrinsic motivation raise the question whether extrinsic motivation is facilitative for idea generation, idea promotion, as well as idea realization. It seems likely that extrinsic motivation rather inhibits the generation of ideas as people are forced to initiate idea creation and feel compelled to accommodate external expectations. On the other hand, extrinsic motivation may enhance idea realization as extrinsic drivers that are received after successful implementation may stimulate individuals to persist and complete the realization of the idea. As for intrinsic drivers, researchers unanimously stress the importance of intrinsic motivation, which leads us to expect that intrinsic motivation will be significant in all phases of the creative process.

Dispositional characteristics

Dispositional characteristics constitute a second construct in the framework of Woodman and colleagues (1993). In fact, most of the early work on creativity has examined whether certain personality characteristics constitute an individual's potential to be creative (Slappendel, 1996). For example, individuals who tend to be very open to experiences were consistently shown to be more likely to be creative than individuals showing this attribute to a lesser extent (Anderson & Gasteiger, 2008; Mumford & Hunter, 2005). Research has also revealed correlations between creativity and intuition, independence, flexibility, energy, and distinct self-confidence, which points to substantial autonomy and a high degree of achievement motivation. Moreover, individuals scoring higher on criticality and competitiveness have been found to have a higher propensity to be creative. Truly creative minds dispose of a sense of initiative, are not afraid to take risks and are attracted to unconventionality. They have an exploring, inquisitive mind and are stimulated by diversity, ambiguity and complexity (Amabile, 1998; Ford, 1996; George & Zhou 2001a, 2001b; Scott & Bruce, 1994; Woodman et al., 1993).

Although related to creativity as an outcome, it is unlikely that each of these dispositional characteristics will predict all distinct phases of the creative process. For example, characteristics such as openness to experience and independence might engender the kind of exploration required for idea generation but not idea promotion or idea realization, just as criticality and attraction to unconventionality might foremost stimulate the generation of ideas. Similarly, it may be that achievement motivation and competitiveness are more critical for idea realization than for idea generation, as these dispositions may encourage people to persist when facing obstacles which commonly arise during implementation. Some initial support has already been provided for the differential impact of dispositional characteristics on creativity phases, as scholars have suggested that during the realization phase of the process, when the creative idea gets implemented and adopted, creativity is less needed and dispositions beneficial for implementation prevail (Amabile, Conti, Coon, Lazenby, & Herron, 1996; West, 2002; West, Hirst, Richter, & Shipton, 2004).

Knowledge

Next to personality factors, Woodman and colleagues (1993) have highlighted the critical role of knowledge for creativity. Besides dispositional characteristics, Amabile's (1988, 1996) componential theory of creativity highlights domain-relevant skills as a fundamental element of creativity. According to Amabile (1988), knowledge consists of factual information and familiarity with the work domain. Knowledge and expertise are believed to provide individuals with the theoretical and practical foundations that are needed to solve multifaceted problems that require creative thinking (Amabile & Gryskiewicz, 1989; Ford, 1996). However, well-organized knowledge that is developed too much in depth and overly fixed on functionality can impede creative performance (Ford, 1996; Woodman et al., 1993).

Again, it is unlikely that knowledge is imperative to all phases of the creative process. For example, given that literature has primarily stressed that knowledge and expertise provide the input for developing an organizing framework to solve problems, it seems likely that the usefulness of knowledge and expertise emerges in the generation phase, because this phase requires the generation of creative answers to challenges that arise out of daily work. That said, research should equally consider the role of knowledge and expertise in the promotion and implementation phase, as different kinds and types of knowledge and expertise might be important for idea generation, idea promotion and idea realization. For example, theoretical knowledge of facts, principles and paradigms might be more beneficial for idea generation, whereas technical knowledge may enhance idea implementation.

Cognitive abilities

In addition to knowledge, also cognitive abilities have emerged as critical success factors for employee creativity (Anderson & Gasteiger, 2008; Shalley et al., 2004). In fact, Amabile (1988) suggests that knowledge depends on cognitive abilities to have its effect on creative performance. Creative cognitive processes are broadly defined as the different ways in which people approach problems and solutions and their ability to combine existing ideas and transform them into new solutions (Basadur & Hausdorf, 1996). Particularly people's divergent thinking skills, i.e. individuals' abilities to provide multiple solutions for a single problem, and people's associational skills, i.e. people's abilities to spot and produce unusual relations or patterns, have been proven to be important for creative success (Ford, 1996; Kanter, 1988; Woodman et al., 1993).

Because of the literature's focus on people's ability to combine different fragments of information into new patterns and solutions in the phase of idea generation, we assume that divergent thinking and associational skills will be particularly important for the phase of idea generation and less for idea promotion or idea realization. Indeed, in the phase of idea promotion and idea realization, the idea has already reached that certain stage of completeness that is needed to be able to sell the idea and implement it. Creative cognitive abilities are less needed here.

Behavioral strategies

Even though several theories suggest that employees draw from a broad repertoire of behavioral strategies to enhance their creative performance (e.g., Ford, 1996; Frese, 2000; Rank et al., 2004), there are only a handful of studies that have empirically investigated how employees' behavioral strategies facilitate creative performance. In one seminal study, Binnewies, Ohly, & Sonnentag (2007) found that employees who engage in effective communication, perform more creatively. Similarly, there is cumulating evidence that employees use proactive strategies such as feedback-seeking behavior and voice behavior to enhance their creative performance and/or make suggestions for change (e.g., De Stobbeleir, Ashford, & Buyens, 2008; Van Dyne & Le Pine, 1998).

Such findings highlight the self-regulatory potential of employees in the creative process. We expect different proactive strategies to be crucial in the different phases of the creative process. For example, it may be that factors such as communication and feedback-seeking behavior are critical for idea generation, as feedback from other people with relevant knowledge and experience might help to improve and refine the initial idea the creative person came up with. Similarly, one could expect that proactively targeting people in the organization will be related to successful idea promotion. Existing contacts with people from top management might be used to speed up the process of acquiring resources and spreading the word in the organization might help to acquire the political power needed.

1.3.2. The team level

In addition to these individual factors, there is rising agreement among scholars that team processes also play a key role in stimulating employee creativity (West, 2002).

Group structure

A first team construct that is depicted in the conceptual model of Woodman and colleagues (1993) is group structure. In this regard, two main structural team variables have been shown to be important for creativity (West, 2002). The first structural variable that has been linked to creativity is group composition (West & Anderson, 1996; Woodman et al., 1993). For example, King & Anderson (1990) found that team creativity is most likely to succeed when teams are composed in a diverse and complementary way. Creativity requires a complementary team of team members with different educational levels, demographics, skills, knowledge, and orientations (Amabile, 1988; West, 2002; West et al., 2004). This complementarity is believed to result in constructive conflict, which in turns enhances creativity. By and large, Jackson (1992) distinguishes two sources of diversity for complementarity: diversity based on personal attributes and diversity based on task-related attributes. The second structural variable that has been linked to creativity is group size. Very small teams of two to three persons lack the diversity in vision and perspective that is crucial for creative

performance, whereas very large teams with more than twelve team members are too robust to effectively and actively exchange information (Curral, Forrester, Dawson, & West, 2001; West & Anderson, 1996).

Also with regard to group structure, little is known about which attributes stimulate creativity in which stages of the creative process (Jackson, 1992; West, 2002). Parallel to our earlier proposition that broad knowledge is important for idea generation, we assume that a complementary group structure with regard to knowledge and expertise might be essential for idea generation. Indeed, ideas often spring up when separate pieces of knowledge are being combined, so when people with different factual knowledge interact, cross-fertilization is facilitated. Complementarity with regard to personality might be salient in the phase of idea promotion. Successfully selling an idea depends on communicative people who know how to persuade people. The more diverse the personality composition of the team is, the more likely that one of them disposes of these talents. Finally, effective idea realization may require task-related diversity, as complementary implementation skills in the team may enhance successful execution of the idea into practice. For example, performing a play requires more than good actors. The scenery needs to be built, sound and light need to be arranged, costumes need to be designed.

Processes

The above benefits of a good group composition may not result in anything if team members do not engage in creativity-relevant processes (Taggar, 2002). Taggar (2002) identified eight relevant process variables that provide the right social environment for creativity: team citizenship (Axtell et al., 2000), performance management, effective communication (West, 2002), involving others, providing feedback (Zhou & George, 2001b), reaction to conflict, addressing conflict, and averting conflict. These process variables were found to make a unique contribution to creativity even after individual-level influences were taken into account (Taggar, 2002).

Research on the relation between team processes and creativity has not focused on the differential impact of team processes on the phases of the creative process. It may be that team processes such as effective communication, involving others, and providing feedback are more beneficial in one stage than in another. For example, it could be that these process variables are foremost important for idea generation, as idea generation entails building on and challenging each others' thoughts and ideas. In the phase of idea realization, other team processes such as team performance management processes might emerge, because the phase of idea realization generally requires different tasks to be handled at the same time, which involves assigning tasks and roles to team members and setting time deadlines for achieving tasks.

Climate

Regarding team climate as construct in the conceptual model (Woodman et al., 1993), West and colleagues (e.g., Anderson & West, 1998; West et al., 2003) have identified four climate dimensions that are critical for creativity: vision, participative safety, task orientation, and support for innovation. As such, a creative climate is (1) a climate in which people can focus on motivating, coherent, and accomplishable goals, (2) in which people feel free to express their ideas and participate in the decision-making processes, (3) are committed to quality and high achievement, and (4) support social norms and expectations that are critical for change.

Although West (2002) suggests that earlier stages and later stages of the creative process require different conditions for teams, the impact of team climate on the various stages of the creative process has not been empirically shown yet. One could assume that climate will be important throughout the entire creative process, although participative freedom might be more critical to idea generation, whereas task orientation might be more vital for idea realization.

Leadership

In their overview, Woodman et al. (1993) also identify leadership as a factor that is closely related to employee creativity. Especially leadership style and leader-member exchange have been depicted as potentially important factors for creativity. As for leadership style, a supportive leadership style (as opposed to a controlling one) was found to boost creativity (Amabile & Conti, 1999; Amabile, Conti, Coon, Lazenby, & Herron, 1996; Kanter, 1988; Madjar, Oldham, & Pratt, 2002; Oldham & Cummings, 1996). When leaders of a team act supportively, they are focused on interpersonal relations instead of the decision-making process. They encourage their team members to perform the best they can while showing responsiveness to their emotions, listening to their concerns and offering them non-judgmental, informational feedback about their tasks (Deci, Connell, & Ryan, 1989).

As for leader-member exchange, results are less consistent. Leader-member exchange theory refers to the quality of the relationship between a leader and his employee, which may shift from a formal, impersonal relationship to one that can be typified by mutual trust and understanding (Scott & Bruce, 1994). Although some studies have suggested support for the expected connection of a trustful and understanding leader-member relationship with creative performance (Anderson & Gasteiger, 2008), others have failed to show significant relations between supervisor and subordinate exchange and creativity (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 and who gives the team sufficient autonomy so that they can maximize their creative output. In contrast, leader characteristics such as guidance and a certain amount of control may be beneficial for idea realization, as to make sure that the team does not deviate from the initial idea. Moreover, it is common that far more people are involved in the implementation phase than in the generation phase. With the success of the implementation phase largely being determined by the effectiveness and efficiency with which the idea is realized, coordination may prove essential.

1.3.3. The organizational level

Organizational structure

At the organization level, Woodman et al. (1993) point to the important role of organizational structure for creativity. Several studies emphasize that organic organizations, characterized by structural integration, close interpersonal contact or connectedness, and broadly defined job descriptions, are more likely to stimulate creativity than mechanistic organizations (Iwamura & Jog, 1991; Kanter, 1988; Pillinger & West, 1995). As such, it is not surprising that narrowly defined job descriptions, strict control mechanisms, tight procedures and rigid management structures have been shown to hamper creativity (Amabile et al., 1996; Shalley, Gilson, & Blum, 2000).

Whereas most antecedents of creativity have not been linked to the different stages of the creative process, structural integration and broadly defined jobs have been explicitly related to the phase of idea generation, as these structural contextual features engender cross-fertilization of ideas and free exploration (Kanter, 1988). However, organizational structure may also facilitate idea promotion, as the quantity and quality of people's connections might impact the extent of their success in acquiring the political power and resources they need to ultimately implement their ideas.

Culture

In addition to organizational structures (i.e. the way the organization is configured), also organizational culture has been identified as an important antecedent of creativity. A creative organizational culture involves a focus on quality, communication, work groups, cross-departmental collaboration and visible support for change and innovation (Kanter, 1988; Pillinger & West, 1995). Ekvall & Ryhammar (1999) further emphasize the importance of stimulating goals and activities at the organizational level, providing employees with autonomy, supporting innovation, and creating an atmosphere of openness, trust, tolerance for failure, room for debate, and tolerance for uncertainty and risk.

The impact of organizational culture on the different phases of the creative process has not yet been investigated. It can be assumed, however, that organizational culture with its strong influence on all processes in the organization (Cameron & Quinn, 2005; Ekvall, 1996; Sharman & Johnson, 1997) is momentous throughout the entire creative process.

Strategy

Strategy is an important organizational antecedent of creativity (Woodman et al., 1993; Mumford & Hunter, 2005) in that organizational strategy substantially determines which ideas will be considered as worth pursuing, which ideas will eventually be pursued and how they will be pursued. Strategies and policies aimed at technological and market innovations have been found to impact creativity most. Furthermore, if top management and senior managers back up this innovative strategy and are determined of its value for the organization in everyday business, it will be easier to find the political support and acquire the resources needed (Mumford & Hunter, 2005).

With regard to the differential impact of strategy on the creative process, it seems likely that strategy will have the strongest effect during the phase of idea promotion. If an organizational strategy is long-term oriented and recognizes the value of innovation as a competitive advantage on a highly competitive global marketplace, and this message is carried out by top management, political power and financial resources to put the idea into practice will be more successfully acquired.

Resources

Three broad categories of resources have been suggested to facilitate creativity: (1) information (data, technical knowledge, political intelligence, and expertise), (2) resources (funds, materials, space, and time), and (3) support (endorsement, backing, approval, legitimacy) (Kanter, 1988). Although there is substantial theorizing proposing that the availability of resources will exert a powerful influence on creativity (e.g., Ekvall & Ryhammar, 1999; Scott & Bruce, 1994; West & Altink, 1996; West & Anderson, 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 between available resources and creativity (West & Altink, 1996).

These inconsistent results may be due to the lack of attention that has been given to creativity as a process, as the availability of resources might for example only facilitate one stage of the process. It is however 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 that their availability on the other hand allows organizations to put ideas with potential into practice (Mumford & Hunter, 2005). These hypotheses suggest that resources might be facilitative for both the stage of idea generation and the phase of idea realization.

As the purpose of the present study was to initiate a unifying theory of creativity, an inductive methodology appeared appropriate. An inductive methodology aims to develop theory that is empirically grounded (Glaser & Straus, 1967; Yin, 1989). Of the two inductive methodologies, grounded theory and analytic induction, we chose analytic induction because it explicitly accommodates existing theories (Manning, 1982). Using this approach, we began with a review of the literature to develop a set of hypotheses. With analytic induction, scientists gather data intended to challenge their emerging hypotheses, in an effort to develop theory (Manning, 1982). The relevant literature is revisited and the hypotheses are modified.

2.1 Sampling

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 hand. 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)[1]. In this respect, we examined a relatively large number of cases 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 (i.e. fifteen out of the twenty-two cases). This allowed us to trace antecedents as perceived by individuals other than just the creative person.

As highlighted by the first and second measure to ensure the richness of sample, we applied theoretical sampling to select our case studies. This is the recommended approach to analytic induction (Denzin, 1989). In contrast to statistical sampling, in which a sample is designed to be representative of a population, in theoretical sampling, cases are selected to highlight theoretical issues and to refute or challenge the theory being tested (Eisenhardt, 1989; Glaser & Strauss, 1967; Pettigrew, 1990).

2.2 Data sources

Interviews with creative persons.

Within each case, the person who initiated the idea and could be described as the creative mind instigating the creative process was identified as the primary informant. In total, we conducted twenty-two interviews with creative minds, most lasting between one hour and one hour and a half. All interviews were conducted face to face, using a semi-structured questionnaire containing open

[1] An overview of the participating creative professionals, knowledge workers, and their organizations can be found on page 51.

ended questions. All interviews were tape-recorded and then subsequently transcribed for use in the data analysis. All interviews were conducted in Dutch, except for two English interviews.

Initial interviews were kept broad in scope in an effort to expose a wide range of guiding themes and antecedents. We started each interview by asking a detailed description of the creative process and the milestones that could be identified throughout the process. Subsequently, we asked the respondent to trace the antecedents of each phase of the creative process[2]. To build internal validity, we probed inconsistencies further (Eisenhardt, 1989). Respondents were asked about the role of individual factors, stakeholders and team factors and about aspects of the broader (organizational) context that might relate to the creative process. As the research project progressed and the theory was refined, interview questions became more focused, as we tried to ascribe more detail to the emerging patterns.

Interviews with key stakeholders.

In fifteen out of the twenty-two cases, interviews were conducted with key stakeholders, which allowed us to compare the reports given by the creative minds with those of other informants. We anticipated for different antecedents to be mentioned by different stakeholders in the process, depending on their perspective on the creative process. The key stakeholders in this study consisted of, for example, senior managers that had provided resources or political support to put the idea into practice, managers of super-creatives, peers that had been asked to refine the idea or were responsible for the implementation, and customers that had been involved in the development of the idea and eventually could benefit from it after implementation. In total, we conducted twenty interviews with key stakeholders, most lasting between one hour and one hour and a half. Again, all interviews were conducted face to face, tape-recorded and transcribed for use in the data analysis. Except for two English interviews, all were conducted in Dutch.

2.3 Data analysis

Our aim was to identify and describe relevant 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. In this regard, the conceptual framework of Woodman et al. (1993) proved essential as an organizing framework 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 between the antecedents we identified and the three creativity phases (i.e., idea generation, idea promotion, and idea realization). In the early rounds of data analysis, we established whether the organizing constructs that were described in the conceptual model based on Woodman and colleagues (1993) were relevant for a certain phase of the creative process (e.g., the relevance of constructs such as knowledge or team structure for idea generation). Consequently, we developed theoretically tighter descriptions of specific antecedents as data collection and analysis proceeded (e.g., the definition of the types of complementarities that are needed for idea generation). As such, the final model that emerged out of our analysis was the

[2] Both questionnaires are available upon request.

result 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, which provides unlimited coding categories and sub-categories and allows easy retrieval of data to assess the accuracy of antecedents. This reanalysis confirmed the validity of the identified antecedents. Some minor adjustments to the definition of the antecedents were however made. For example, in the initial analysis, we labeled the behavioral strategy of 'seeking contact' as 'communicating', but reanalysis showed that the latter did not underline the proactive nature of this behavioral strategy as it was expressed by the respondents.

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, which differed for each phase. In terms of the most salient characteristics, interviewees mentioned factors on the individual, team, and broader context level, in line with the previously depicted theoretical framework. For clarity purposes, the antecedents will be listed accordingly, although results below stress the interconnectedness of factors on the three levels and attention is given to their interaction.

3.1 Idea generation

We refer to the phase of idea generation here as the phase in which one or more people recognize a new opportunity, and initiate creative idea production to seize this opportunity and mature the idea. Whereas previous theorizing considers idea generation to be one coherent phase of the creative process (Kanter, 1988; West & Farr, 1989), our findings suggests that idea generation consists of two sub-phases. The first sub-phase that was highlighted by our findings refers to the conscious and subconscious stimulation of the creative mind and the breakthrough of the initial creative idea. The second sub-phase refers to the development of the initial idea into a mature idea.

Our results confirm however the interpersonal character of idea generation as highlighted in recent literature on creativity (Zhou, 2008). Respondents stressed that the creation of ideas originates out of the interplay between the individual and its social surroundings. In the first sub-phase, the informal social connections the individual engages in are not intentionally aimed at idea creation, but spark creativity rather unconsciously. In the second sub-phase, after the breakthrough of the initial idea, social connections are intentionally sought, as respondents experience the need to further develop their idea. They gather a team around them to extend, transform or mature the initial idea. As such, antecedents on the individual, the team, and the broader context level emerged as important for idea generation.

3.1.1 The individual level

Motivation

The intrinsic **enthusiasm, eagerness, and pleasure** that a creative individual derives from generating an idea emerged as the key driver to make a person engage in the idea generation phase. When asked to explicitly identify the main sources or drivers of their motivation, respondents frequently mentioned factors such as confrontation with a fascinating development in their domain of interest, a passion for a specific artistic activity, or a business problem that had recently occurred and that they enjoy solving. As a super-creative professional put it, “I’m just ‘wonderfully’ addicted to the creation process”. Our analysis further revealed that extrinsic motivation inhibits idea generation, as respondents indicated that their ability to generate ideas was hampered when they experienced external pressure.

Dispositional characteristics

Almost all respondents indicated that for motivation to be transformed into an effective process of idea generation, motivation needs to be complemented with dispositional characteristics. Our analyses revealed three dispositions that seem to play a significant role in the idea generation phase. Most importantly, idea creation requires a **creative mind**. The creative minds in our study described themselves as people with a rich inner experience of the world, as people who see life from a wide variety of perspectives and angles and who have an eye for new opportunities in any given situation. Respondents also mentioned that they were often seen as bursting with new ideas and impressions. However, when asked to elaborate on the downside of such a creative mind, they also mentioned that they often burn-out when they need to put their ideas into action and have to focus on too many implementation details.

> ***Kristien Dieltiens*** *is a known author of children's books and has won several book prizes. She works with children on a day-to-day basis and is a mother of five. Her story underlines the interpersonal character of idea generation, as she repeatedly emphasized the role of the enriching contacts she had with children, which helped her to develop her initial idea and transform it into a book. Furthermore, she provided rich examples of how the dispositional characteristic of a creative mind and creative cognitive processes are expressed: "I definitely have a rich inner world full of experiences… They say our senses are the portals to our soul. For me, this statement is definitely true. With every smell, touch or sound, an association flashes through my head, and then one more and one more. I always link my knowledge and experiences to other experiences and because of that, I often see things beyond what is actually there."*

In addition to having a creative mind, the phase of idea generation also calls for people who 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. In sum, the phase of idea generation requires a creative, autonomous and disciplined mind.

Cognitive abilities

Respondents also indicated that in order to be successful in the idea generation phase, it is not only crucial to be motivated or have a certain disposition for creativity. It is also necessary to have the cognitive abilities to generate and create new ideas. Our data show that individuals rely on their talent to connect different domains of knowledge and expertise (**cross-fertilization**) and their abilities for **divergent and associative thinking** for the conception of truly novel ideas. They urge themselves to think cross-disciplinary. They have the ability to mentally play and experiment with different pieces of information on a continuous basis. These cognitive abilities allow the individual to integrate the information that they acquire from a wide variety of personal (e.g. colleagues and friends) and impersonal sources (e.g. books). The contribution of these cognitive abilities was truly unique for the phase of idea generation as it was not mentioned in any of the subsequent phases (i.e. the phases of idea promotion or realization).

Knowledge

Our analyses also highlight the fact that cognitive abilities are useless when knowledge is absent. Indeed, whereas respondents underlined knowledge to be of only marginal importance in the phases of idea promotion and idea realization, **professional knowledge** emerged as a crucial factor in the idea generation phase. Knowledge was believed to be important for two reasons. First, knowledge is essential to **formulating an idea**. When the creative individual has a lot of in-depth knowledge in his/her domain of interest, both from a theoretical and practical perspective, this helps the process of idea generation. Specifically, in-depth knowledge facilitates the process of linking insights, theories and facts within a domain, and these new links may result in the production of novel ideas. Having in-depth insight in various functional domains was seen as even more conducive to the production of novel ideas, as novel ideas regularly emerge at the boundaries of disciplines.

A second reason why knowledge and expertise were identified as crucial factors in the phase of idea generation is that these factors are seen as the **catalysts for differentiating a good idea from a brilliant one**. That is, in order to judge an idea and select the one with the highest chances of success, one needs to have a deep knowledge of the key elements of an idea. Specifically, our respondents advanced three characteristics of successful ideas: (1) a good appreciation of the market or target audience, (2) a long-term vision, and (3) a grasp of the uniqueness of the idea. First, a **good appreciation of the market or target audience** is crucial. It is necessary to have a finger on the pulse. In order to evaluate an idea, one needs to know what the main competitors are doing, what research is being conducted, and what current trends and opportunities can be identified. Next, a **long-term vision** is an important indicator of a successful idea. This is particularly important when the aim is to create a 'revolutionary', groundbreaking idea rather than an 'evolutionary', incremental idea. Respondents indicated that ideas that only focus on short-term wins and don't focus on targeting new markets or future personal prospects, may prove less successful in the end. Thirdly, it is imperative for creative people to grasp the **uniqueness** of the idea. Is the creative idea truly groundbreaking, one of a kind and could it be patented? All respondents indicated that issues like these can only be assessed when the creative individual has a sufficiently deep knowledge of the domain(s).

> ***Ablynx*** *is a Belgian biopharmaceutical company active in the discovery and development of Nanobodies®, a new class of antibody-derived therapeutical proteins. The story of Ablynx started about a decade ago in a laboratory, when a group of students found a strange pattern in one of their analyses. Their professor was intrigued by the pattern and initiated an empirical study to entangle what had happened. Already in the early stages of idea development, he realized the idea was not only academically relevant. He understood the uniqueness of his discovery and saw the potential impact that the idea could have in the field of biotechnology in the long term, so he decided to pursue it. His enthusiasm was not shared by everyone, but he was convinced of the potential for technological and industrial applications and patented his disclosure.*

Another finding worth mentioning here is that these key elements of successful ideas were mostly highlighted by our sample of knowledge workers. The artistically driven creative individuals mostly relied on their knowledge regarding the uniqueness of the idea in differentiating good from brilliant ideas. Super-creatives described themselves rather as free spirits who are not dependent on what their target audience thinks of their creations. They create first and foremost for the pleasure they

derive from generating ideas. As such, in the phase of idea generation, super-creatives are less occupied with the potential reactions of their target audience. This is opposed to knowledge workers, who judge an idea particularly on its potential to generate a future competitive business advantage towards their customers.

Behavioral strategies

One factor that has been largely overlooked in creativity research, but for which we found large support, is that individuals also consciously and deliberately engage in specific behavioral strategies in the phase of idea generation. First, most of our respondents indicated that they **actively sought contact** with people with a wide variety of backgrounds. The underlying reason that most respondents had for these networking activities was the belief that individuals who constantly **broaden their horizons** through diverse experiences and contacts are more likely to be challenged and gather the knowledge mentioned above. Hence, through their informal connections, they are more likely to experience the spark of a truly novel idea, as illustrated by the following statement of one of our interviewees: *"The craziest ideas emerge after a talk with someone at the coffee machine!"*

Whereas actively seeking contact with all kinds of people appeared essential to experience the initial spark of a creative idea, respondents stressed the importance of actively approaching specific people when an initial idea had popped up. Respondents stressed these people's abilities to help them further develop their idea into a mature concept. In this respect, interviewees indicated that three main motives underlied these networking behaviors. First, the vast majority of respondents indicated that 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. We found evidence for this motive both in our sample of knowledge workers and in our sample of super-creatives. These conversations can be conducted with anybody who shows interest, even laymen, as long as they provide a challenging perspective.

Both groups of respondents (i.e. knowledge workers and super-creatives) further indicated an additional reason for engaging in networking activities, namely that others often act as a critical **sounding board**. Specifically, others can provide feedback regarding content, structure, and completeness of the idea to help improve the initial idea. This feedback-seeking behavior is foremost directed towards peers who have the knowledge or expertise to help refine the idea. Especially peers who have knowledge that the individual lacks are valued as they substantially help improving the initial idea because of the cross-fertilization of knowledge and expertise.

> *"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 humble 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, communication helps the individual to **evaluate** the idea. This motive was emphasized by our sample of knowledge workers (and only to a lesser extent by our super-creative sample). After respondents had incorporated feedback from peers and finalized their initial idea into a mature concept (i.e. communication as a sounding board), interviewees indicated that they actively sought out evaluation from others to check whether the finalized idea was valuable and had the potential

for success. Respondents actively sought out 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. The painter in our sample, for example, frequently participates in painting competitions, not in order to win a prize, but ***"in order to be able to compare my ideas expressed in my paintings to those of others"***.

3.1.2 The team level

Group structure

Our data clearly indicate the significance of group structure in the idea generation phase. Previous research has identified complementarity in the team as an important precondition for creative success. This view was largely confirmed in our research, as a complementary group structure appeared to be one of the key antecedents in the idea generation phase. More importantly, our analyses shed light on the dimensions on which this complementarity should be based. Specifically, we found that complementarity with regard to **knowledge and expertise** is important in the phase of idea generation. When the team members have different professional backgrounds, cross-fertilization of know-how is facilitated. Complementarity with regard to team members' personalities was found to be less essential in idea generation.

Interviewees almost unanimously indicated that they (or their team) spent a lot of time in selecting the "right" team members. The definition of "right" was found to be contingent on the specific phase of the creative process. Respondents indicated that they largely looked for critical individuals when selecting team members for the idea generation phase. One respondent compared these critical individuals to **virus scanners**: demanding individuals, who set high standards and who give their harsh opinion about the clarity, accuracy, comprehensiveness, logic and relevance of the idea, with the aim of clarifying and further developing the idea into a clear and integrated concept. As one respondent (a writer) told us:

> *"Then I send the manuscript to my editor. He reads it as if he was the devil's advocate himself. I want him to do that. I only want the very best editor, the one that aims high and challenges me the most!"*

Processes

Even though complementarity of the group is important, it is only part of the story. A complementary group composition is pointless if the group processes fail. Previous research has identified multiple process variables that are important for creativity. Our research underlines the significance of two of these process variables when it comes to idea generation: **effective communication and feedback**. Respondents all emphasize that team communication is important because it helps them challenge each other (without getting personal). As such, it improves the development of the idea. All respondents indicated that throughout the idea generation phase, team members constantly use communication to push one another to aim higher. Feedback is not restrained, but always well-founded, based on numerous arguments and never formulated personally (or taken personally).

Climate

Our analyses further suggest that a positive **team climate** is a necessary precondition for effective communication and feedback in the idea generation stage. Interviewees stressed the importance of a safe environment characterized by (1) mutual trust and respect, (2) a clear and accomplishable common goal, (3) a commitment to quality and high achievement, and (4) an innovative group orientation. These results highlight the relevance of all four climate variables that have been identified as important by previous research for the stage of idea generation.

> *"Our discussions have undeniably improved the idea, but if someone in the team wouldn't have listened or wouldn't have been open to conversation, that definitely would not have been the case".*

Leadership

Respondents also emphasized leadership as a critical success factor throughout the creative process. The role of the leader differed greatly depending on the phase within the creative process. In the phase of idea generation, the leader plays a **facilitating role**. That is, the leader does not have a formal hierarchical position within the team because this is believed to hinder idea generation. Even though **equality** was the key word that was mentioned when we asked respondents about the role of the leader in the idea generation phase, 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. These leaders expected to be kept informed about the course of action, but they were aware of the importance of autonomy. They all indicated that they felt it was crucial not to steer or intervene too much because this would derail the further development of the idea.

3.1.3. The broader (organizational) context

The broader context plays a significant role in the conception and further development of a creative idea as well. For knowledge workers, this context encompasses both the organization they work in, and contacts outside their organization. For the super-creative professionals in our sample, this comprises contacts within and outside their field of expertise, usually without a specific organizational context. The basic features of the broader context are however very similar for both groups.

(Organizational) structure

In organizational settings, such a culture is supported by an organizational structure that promotes cross-fertilization between different departments and/or domains of expertise. *Extensive and varied contacts* with colleagues allow for the transfer of knowledge and help discussing problems that arise from everyday business or contact with clients. Because of these extensive and varied contacts, both the initial impetus for innovation – the definition of a problem – and the production of creative answers are being fostered. In this regard, several organizations in our sample used landscape offices to stimulate contact between colleagues.

Furthermore, we found that **broadly defined jobs, rather than narrow job descriptions** stimulate idea generation. Broadly defined jobs allow people to handle assigned tasks in their own way, which

gives them the opportunity to leave traditional paths and experiment with new ways of answering challenges. Furthermore, broad jobs provide employees with the possibility to pursue self-chosen work-related objectives. For example, time may become available to work on a business problem that has emerged. Installing broadly defined job descriptions is more of a challenge for knowledge workers and their organizations than for super-creative professionals, who mostly work freelance and as such have enough autonomy to work on self-chosen creative projects.

(Organizational) culture

For idea generation, the broader (organizational) context needs to stimulate interpersonal contacts as much as possible. An **open, helpful, somewhat informal culture** in which people can easily call on others, facilitates formal and informal social connections and idea generation.

> ***IBM*** *is a multinational computer technology and IT consulting corporation. For already more than ten years in a row, IBM is number one in patenting disclosures. Next to their research labs worldwide, the company has invested in structurally embedded global initiatives such as IBM's Innovation Jam (an electronic brainstorming session), ThinkPlace (an open, collaborative platform where ideas are matured into innovative solutions), IBM's Emerging Business Opportunities program (the development and nurturing of new businesses inside the management constructs) and SameTime (an internal informal communication network). Well-established organizational structures for creativity are however not the only asset of IBM. Its organizational culture seems just as stimulating for idea generation. One of the employees: "Here at IBM, we really have an open organizational culture. People cross each other on the way to the coffee machine or when returning from a meeting and they start a conversation about emerging problems in day-to-day business. [...] Furthermore, if you have a question or a problem yourself, everybody is prepared to help. You just have to ask. Those conversations and discussions on work-related things, yes, that's really how one can experience the spark of an idea."*

3.2 Idea promotion

The phase of idea generation is followed by idea promotion. This is the phase in which the creative individual/team tries to acquire the resources and support that are needed to put the idea into practice. This involves selling the project to potential allies and/or interested parties. Whereas the creative individual and/or team tended to approach peers for feedback in the idea generation phase, in the idea promotion phase, the individual/team officially approaches powerful superiors in the organization (for knowledge workers) or individuals with financial resources (for our super-creative sample). All interviewees stressed the importance of seizing the "right" time to initiate the phase of idea promotion. The idea needs to be mature enough. An underdeveloped or immature idea will get shot down immediately, even if it has potential in the long run.

3.2.1. The individual level

Motivation

Whereas the phase of idea generation is mainly driven by the pure pleasure of creating, the stage of idea promotion is triggered by a very different intrinsic motive. The key motivator here is the **persistent belief** that the idea has definite potential and is worth pursuing: *"If you are not genuinely confident of your case, or not one hundred percent enthusiastic about every detail, you cannot go and fight for it".* This deep-rooted conviction is not only a prerequisite to engage in idea promotion, it is necessary throughout the entire promotion process. Almost all interviewees emphasized that without a firm and unconditional faith in the idea they could not successfully defend and sell the idea to stakeholders and acquire the resources needed for implementing it.

Dispositional characteristics

We also found the dispositional characteristics that facilitate idea promotion to be different from idea generation. Rather than having a creative mind and being autonomous and responsible (factors that were crucial for idea generation), 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 (or individual team members) in the face of obstacles or resistance. Whereas interviewees indicated that openness to feedback is important in the idea generation phase, they all 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. 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, it is not communication as a behavioral strategy that appears important, but the talent for communication as such.

Knowledge

Being able to communicate persuasively is however not sufficient. One also needs to be able to identify potential coalition members of whom one can tap resources. Professional knowledge emerged as an essential factor in the phase of idea generation. In the phase of idea promotion it is the **knowledge of the organization or market** itself that is the most important. When individuals know who is responsible for which domains and who has funds for which purposes, they can target the right people from the beginning and increase their success in finding the necessary financial resources or political support for the idea. If individuals do not readily dispose of this knowledge, it is advisable that they undertake action and prospect their organization or the market to learn where to acquire the needed resources.

> *"It would have been even better if we had still known our organizational structure better. How does everything work around here, who has which resources and can they possibly be allocated to our project? Who do we really need to get on board of this project to make sure we have all the support needed?"*

Behavioral strategies

We also identified two strategies that are important in the phase of idea promotion. The first refers to the **packaging of the idea**. As one interviewee illustrates: *"It is the package, the way of presenting the idea and the attention you give to certain aspects that partly do the trick"*. As such, respondents stress that different elements of the idea must be taken into consideration when defending the idea. Ideas get sold more easily when the innovativeness of the idea (1), its feasibility (2) and the customer value (3) can easily be demonstrated. Similarly, ideas are more easily sold if they have reached a certain stage of concreteness, as stakeholders can then visualize the implemented idea more easily (4), and if they are communicated intelligibly and jargon-free (5). Last but not least, respondents indicated that carefully choosing the right time to pitch an idea is advisable (6).

The second behavioral strategy important for the phase of idea promotion is **tapping into available resources**. Most importantly, people need to address their personal and professional networks to get the power and resources they need to move the idea into reality. Existing relations are essential to get the initial support and resources, and can then be used to convince other stakeholders.

> *"He occupied a rather high position in the organization and had some political power to push our idea forward. This got us started, but afterwards we of course needed to convince others. So, he approached colleagues and top management to convince them of the value of our idea".*

Respondents who did not have such contacts readily available, indicated that to get their idea promoted, they needed to be bold and actively seek out people and organizations that might have the resources needed for the implementation of the idea.

3.2.2. The team level

Group structure

Also at the team level, the factors that are important for idea promotion are quite different from those we identified for the stage of idea generation. Whereas complementarity in knowledge and expertise were vital for idea generation, it is **complementarity in the networks** of the team members that is essential for idea promotion. 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.

Leadership

Next to these complementarities in networks, a leader who is in **close contact with superiors, top management or with influential people** in the (super-creative) business will have more success in acquiring the needed resources. Moreover, if the leader can fall back on previous (creative) successes and has an established reputation, credibility is high and funds are more easily obtained.

3.2.3. The broader (organizational) context

With regard to the broader (organizational) context level, we found two key factors that make a unique contribution to the phase of idea promotion. These were primarily mentioned by knowledge workers, but might be relevant for super-creative people as well.

(Organizational) structure

Transparency of the structures of the organization helps individuals promote their creative ideas successfully within the organization. When the organization's structure and the way of working in the organization are transparent, people know what procedures they need to follow to acquire financial resources and political power. Clear structures also ensure that people know who they need to approach for information and knowledge.

Strategy

Respondents also emphasized the importance of a long-term organizational strategy for creativity. Creative activities may initially disrupt current activities because these activities often target new markets and do not provide quick wins in the short run. A long-term organizational strategy that fosters creativity and recognizes the **value of innovation**, combined with **policies** that allow for a careful consideration of each idea before it is killed, provide good conditions for idea promotion. Furthermore, managers that occupy a higher position in the organization and carry out such an innovative, long-term vision, can tremendously help creative individuals in acquiring resources, as they dare invest in more risky ventures.

> **Genzyme** *is one of the world's leading biotechnology companies and is dedicated to making a major positive impact on the lives of people with serious diseases. The organization takes pride in its efforts to develop and apply the most advanced technologies in bioscience. The company explicitly states that innovation, entrepreneurialism and drive (next to compassion, collaboration and integrity) have to guide the actions of the organization and – based on the data analysis of this case study – this focus on an innovative strategy seems to be very present in the day-to-day activities of its employees. In explaining the creative process and its antecedents, the importance of the organizational strategy and these three values was repeatedly stressed. The drive to advance solutions for unmet medical needs and the initiative to try something totally new, direct employees' actions.*

3.3 Idea realization

The phase of idea realization refers to the implementation of the idea into practice. Again, we found evidence for a process view of creativity, as several salient characteristics on the individual, team and broader (organizational) context level within this phase were different from the ones we identified in the phases of idea generation and idea promotion.

3.3.1. The individual level

Motivation

Whereas the pleasure derived from creating an idea and a persistent belief in the idea were found to be crucial in the phases of idea generation and promotion, it is the **prospect of seeing the idea in practice** that drives the individual when it comes to implementation. Interviewees emphasize the unselfish nature of this drive: "We had the interest of the organization in mind, not our own interest. We weren't doing it for our ego or our career and I think that's one of the main reasons why it became a success: we worked hard, were unselfish and gave it everything we had". However, when explicitly asked about the role of extrinsic motivation, respondents highlighted that extrinsic motivators were facilitative for idea realization. Next to intrinsic motives, extrinsic motives were welcomed to help them persist and fully complete the realization of the idea.

Dispositional characteristics

Similarly, when compared to idea generation and idea promotion, different dispositional characteristics facilitate idea realization. Whereas a creative, autonomous and responsible mind was found to be crucial in the stage of idea generation, and perseverance and communicativeness were found to advance idea promotion, the phase of idea realization requires individuals to be flexible and task- and result-orientated. Being **task-oriented** is indispensable because it enables the individual to turn the ideas and concepts into plans and actions. When asked to define a task orientation, most of our respondents indicated that a task orientation involves being well-organized and working efficiently and systematically. In addition to this task-orientation, respondents also emphasized the importance of being **result-oriented**. This guarantees that the implementation process gets all the attention that is needed. Respondents defined a result orientation as being somewhat perfectionist and paying attention to the smallest details to avoid errors. As a result, being result-oriented was often associated with "hard work". 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 nine-to-five – and nothing wrong with that – you will never get the opportunity to work on a big creative project"*. Finally, implementing a novel idea is inextricably associated with moving away from the beaten tracks. **Flexibility** is vital since it entails being able to handle these unforeseen problems that arise during realization.

Behavioral strategies

Also with regard to the behavioral strategies needed during the idea realization phase, our results point to the relevance of differentiating between the three phases of the creative process. Whereas seeking contact and external feedback were important for idea generation, and carefully packaging the proposal and tapping into resources were crucial for idea promotion, the phase of idea realization

requires people to build on their existing knowledge and expertise. **Using readily available knowledge and expertise** prevents precious time being lost. The crucial time frame to launch the idea could be missed if the individual doesn't use the competencies and knowledge available within his/her personal network, organization or his/her broader external environment. For knowledge workers and their organizations, partnerships with other organizations may be of particular value. This is reflected in the following comment of a knowledge worker.

> *"We are not going to reinvent the wheel. If we can work with other experts, then we will definitely pursue that option. We are the contact persons who steer the process, but we are not going to invest time in activities someone else is expert in. Therefore, during the implementation process, we constantly checked whether experts were available instead of initiating in research ourselves."*

3.3.2. The team level

Group structure

Respondents unanimously described successful idea realization as a team effort. They indicated that assembling a competent working team is necessary to provide the creative geniuses with the help they need to realize the idea. Both creative people and 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 they were aware of this weakness and therefore gathered skilled people around them to take on the role of implementation experts. In some of the cases, the initial team that worked on the generation and the promotion of the idea was therefore extended. Hence, complementarity in team roles is crucial for idea realization. The creative genius needs to be involved in idea implementation to direct the team towards the ultimate goal, while implementation experts need to focus on the practical realization.

> **Stijn and Steven Kolacny** *are the driving forces of Scala, a Belgian girls' choir of 200 female voices that is known for its unique repertoire. The idea on which the success of Scala is based? "Transpose a rock song into the sound world of female voices and a piano." The uniqueness of their idea is however not their only asset. In their story, the complementarity of their 'team' – consisting of the two brothers – with respect to team roles is highlighted in almost every sentence. Steven is the creative genius behind Scala: he writes the songs and the arrangements. He has a good feel of the audience and is a real convincer: no matter how wild an idea is, he always succeeds in convincing others of it. Stijn on the other hand, is the implementation expert. He is responsible for the tour management and stage management of Scala. He is task-oriented and according to his brother a very good people manager.*

Processes

As in the idea generation phase, **team communication** was the most important process variable for idea implementation. However, whereas in the idea generation phase communication was mainly

used as a “divergent” tool to challenge each other, in the idea realization phase it is mainly used as a “converging” tool that is used to inform each other about the progress being made. Implementing creative ideas is usually a huge project requiring many people to work together. This can be realized effectively and efficiently only if all team members pass on information and make sure they aren’t working at odds with each other.

Leadership

The role of the leader in the phase of idea realization is, as opposed to the phase of idea generation, a formal and hierarchical one that mainly consists of coordination. He/she has a general overview of the project and has the final responsibility for the successful implementation. **Flexibility** is vital. His/her role as team leader entails anticipating, setting priorities and making sure the team can respond adequately when unforeseen circumstances arise. In addition to this, it is the leader’s responsibility to **take decisions**. Precious time may be lost if the team lingers or repeatedly postpones important decisions. As opposed to idea generation where a hierarchical leader impedes creativity, hierarchy is needed for idea implementation.

Moreover, in order to successfully implement an idea, a leader’s people management skills are crucial. On the one hand, the leader needs to have **insight into the talents of his team members**, and use the group’s full potential to flexibly allocate people and competences where needed. This is highlighted by the following comment: “I value my team and the talents of my team members a lot. I feel it is the leader’s responsibility to choose the right people, the ones with the right talents. In the end, you have to feel confident in them”. On the other hand, a good leader knows how to **motivate and stimulate his/her team**. Successful team leaders are usually quite demanding, but do realize that they must value and appreciate every single person who 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.

3.3.3. The broader (organizational) context

Resources

In order to successfully implement an idea, **resources** need to be available at the organizational level. Within organizational settings (for knowledge workers), these resources involve financial resources, time, and specific competencies. Our sample of super-creative individuals largely relied on their network and possible connections with organizations in this regard. For knowledge workers however, gathering the necessary resources was as much the responsibility of the organization as it was the responsibility of the team. The organization needs to provide the necessary preconditions for idea implementation: space and 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.

> *“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”.*

(Organizational) structure

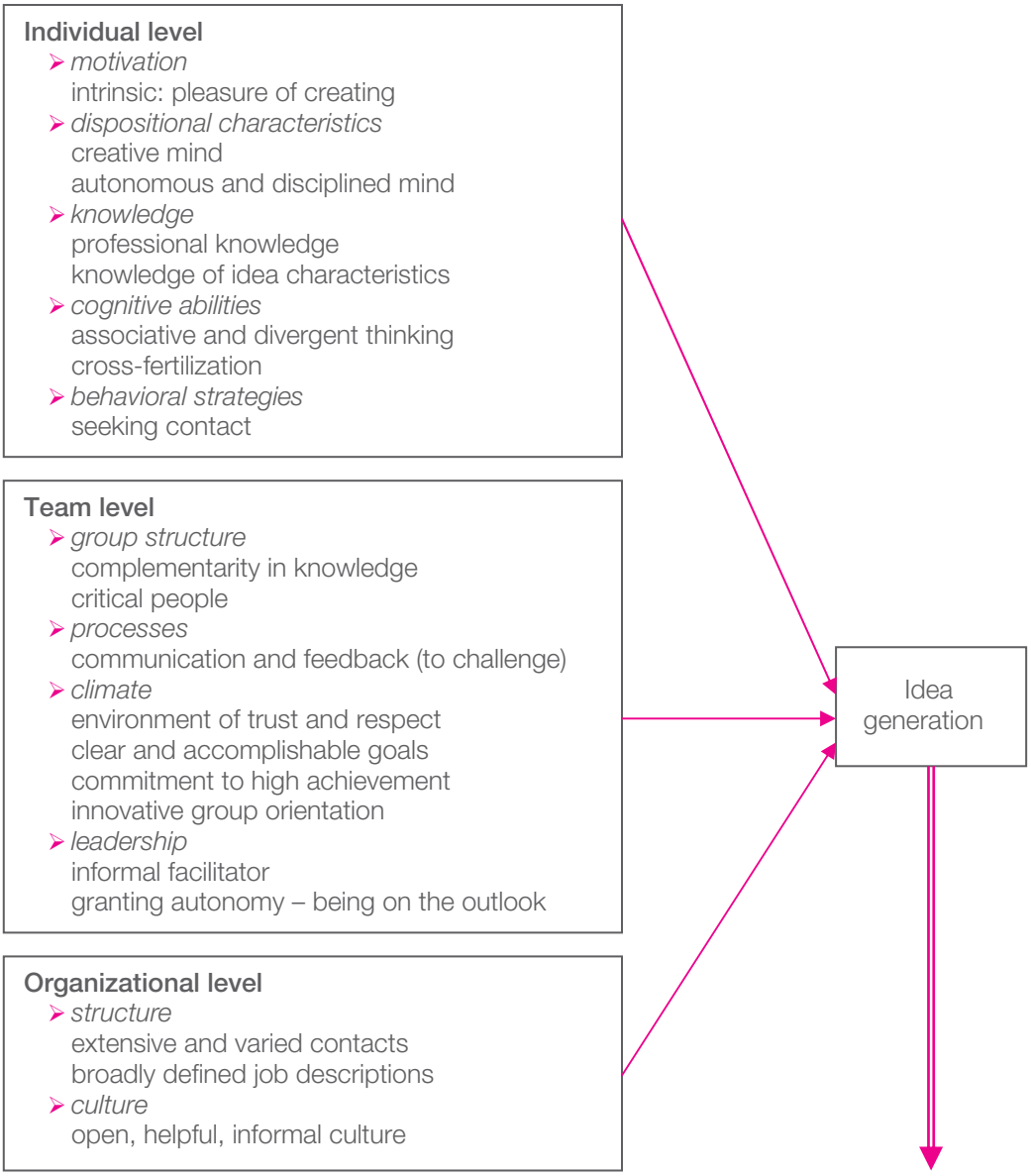
Both the super-creative individuals and the knowledge workers in our sample mentioned the importance of being physically and psychologically isolated during the idea realization stage. Whereas external impulses stimulate idea generation, they hinder idea realization. **Physical isolation** allows innovative 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. Even after the final idea is selected and resources and political power have been acquired, different interest groups and stakeholders still want to have their say. Therefore, those 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.

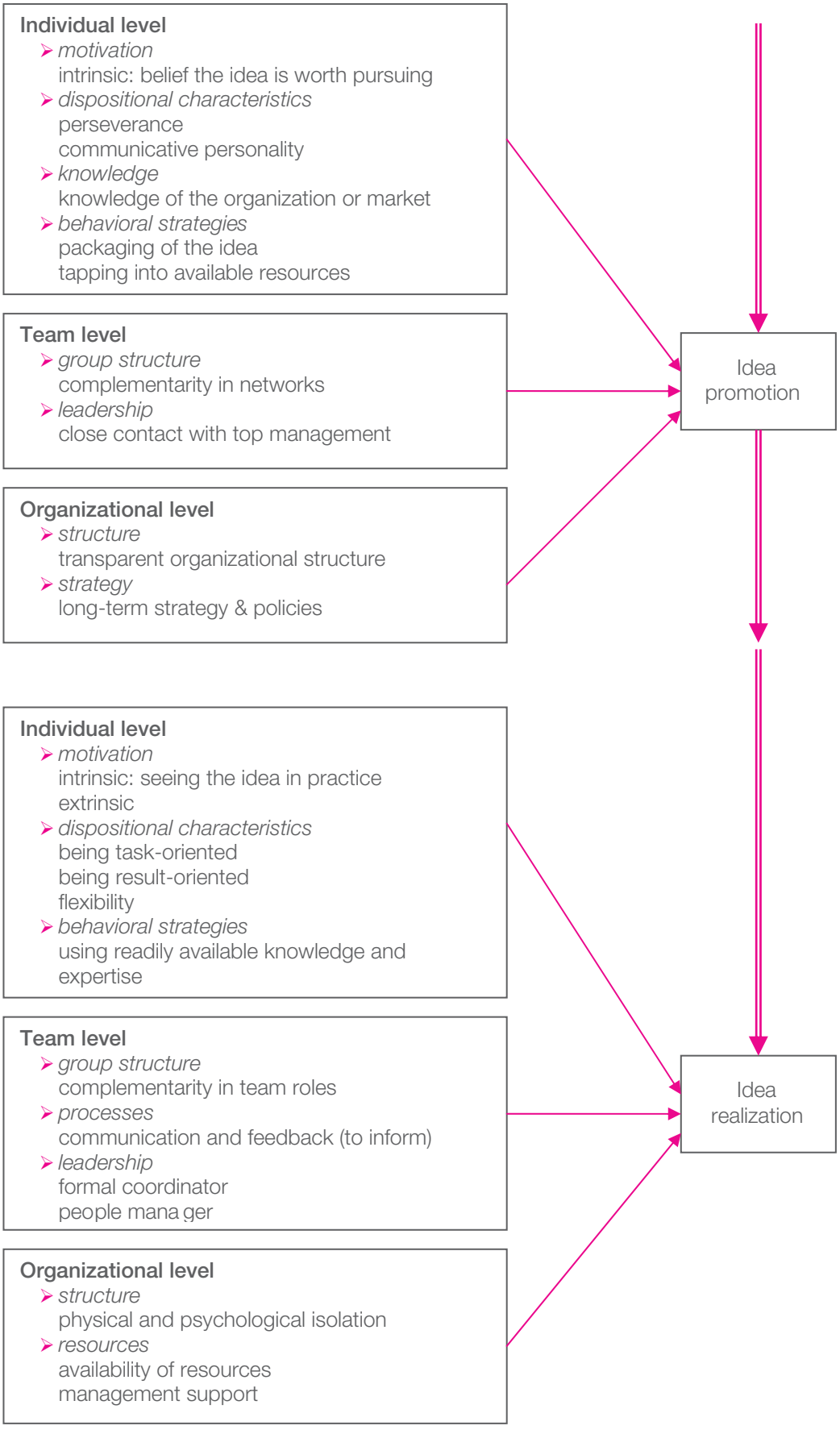
4 DISCUSSION

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 attempted to redress this gap by introducing and testing a unifying framework that conceived employee creativity as a process, but also identified the distinct factors that explain the outcomes in each phase of the process. In this respect, the present study formulated an answer to the call of several scholars to pay attention to which factors enhance each of the 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).

By use of an inductive methodology, the study contributed to the development of a model of the creative process that brings together antecedents addressed in previous research and variables that emerged from this study (Figure 4). The model highlights the consequent phases of idea generation, idea promotion, and idea realization and their relationship with identified antecedents on the individual, the team, and the broader (organizational) level.

Figure 4: Unified model of creativity




Individual level
motivation
intrinsic: belief the idea is worth pursuing
dispositional characteristics
perseverance
communicative personality
knowledge
knowledge of the organization or market
behavioral strategies
packaging of the idea
tapping into available resources
Team level
group structure
complementarity in networks
leadership
close contact with top management
Organizational level
structure
transparent organizational structure
strategy
long-term strategy & policies
Idea promotion
Individual level
motivation
intrinsic: seeing the idea in practice
extrinsic
dispositional characteristics
being task-oriented
being result-oriented
flexibility
behavioral strategies
using readily available knowledge and expertise
Team level
group structure
complementarity in team roles
processes
communication and feedback (to inform)
leadership
formal coordinator
people mana ger
Organizational level
structure
physical and psychological isolation
resources
availability of resources
management support
Idea realization

4.1 Theoretical and managerial implications

The present study has demonstrated the need to conceive creativity as a process and has illustrated that there is value in integrating variance models with process models of organizational creativity 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 in the idea generation, idea promotion, and idea realization phase of the creative process.

First, at the individual level, extrinsic motivation was found to have a countervailing effect in the phases of idea generation and idea implementation. In the phase of idea generation, extrinsic motivation emerged as an inhibiting factor for 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, extrinsic motivators were found to have a positive effect on the successful implementation of the creative idea. This countervailing effect of extrinsic motivation 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.

Another individual 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 several 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.

Third, idea generation depends on people who 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.

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 team roles that emerged as essential. The need for teams to be complementary with respect to knowledge, networks, as well as team roles 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) and hence team members may not be substituted in subsequent phases. The challenge arises for creative people to carefully consider who they involve in the creative process as to provide a maximum of diversity with regard to knowledge, networks, and team roles to meet the requirements for idea generation, as well as idea promotion and idea realization. Moreover, they must not only take this complementary group structure into consideration in selecting their team members. Personalities must fit just as much, as being able to build a good and trustful team climate also emerged as a key factor in the phase of idea generation.

Fifth, also at the team level, 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 who 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.

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 for 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 promote continuous contact, but at the same time structurally offer creative teams the possibility to temporally isolate themselves.

Next to these six emerging countervailing effects on the distinct phases of the creative process, two additional remarks with regard to our findings are worth mentioning. First, the antecedent of intrinsic motivation warrants attention. As previously outlined, research has examined the role of intrinsic motivation with very consistent findings as a result (e.g., Amabile, 1988; Anderson & Gasteiger, 2008; Taggar, 2002; Woodman et al., 1993). As suggested above, this led us to expect that intrinsic motivation would be important in all phases of the creative process and that a process view on creativity would not necessarily advance our knowledge of intrinsic motivation as an antecedent of creativity. However, our findings highlight that intrinsic motivation as an antecedent of creativity does benefit from a process view, as intrinsic motivation was found to manifest itself differently in the phases of idea generation, idea promotion, and idea realization. In the phase of idea generation, the pleasure that the individual derives from creating an idea emerged as the key driver to make a person engage in this phase, whereas in the stage of idea promotion it is the persistent belief that the idea is worth pursuing that acts as the key motivator. Moreover, a third distinct motivator emerged in the phase of idea realization, where it is the prospect of seeing the idea in practice that drives the individual to engage in it. These findings suggest that – as previous research used only one measure for intrinsic motivation throughout the entire creative process – research could gain from using an alternative measure of intrinsic motivation for each phase of the creative process.

A final remark concerns the organic character of creativity. Although the creative process in this research study was conceived as a process consisting of three phases (i.e. idea generation, idea promotion, and idea implementation) for research purposes, it is essential to realize that creativity is in fact not a linear process. Creativity is an iterative process, in which reflection and action alternate (Shalley & Zhou, 2008). This is highlighted by our results, which show that within each phase, both antecedents that highlight the need to take action as factors that underline the need to reflect are identified as facilitative for creativity. In the phase of idea generation, for example, the disposition of a creative mind in combination with the behavioral strategy of communication and feedback-seeking behavior illustrates the alternation of reflection and action. In the phase of idea promotion, the importance of reflection is stressed by the need to carefully build up the idea proposal, whereas action is clearly demonstrated by the need to tap into available resources. Finally, in the phase of idea realization, the importance of iterations between reflection and action is revealed by the emphasis that is placed on flexibility as a critical antecedent of idea implementation.

4.2 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 new 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, in this research we attempted to uncover the creative process and its antecedents 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[3] may compromise the accuracy of the respondents' retrospective accounts and perceptions of the important antecedents of the distinct phases of the creative process. 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 imperfect recall, memory distortion, and response effect biases. We could have used participative observation as a method of data collection in order to avoid these biases. Participative observation refers to a research design in which the researcher is marginally to fully part of the setting he/she observes (Singleton & Straits, 2005). However, if we had used participative observation as a method of data collection to investigate the creative process while it was still unfolding, 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. Though our case study material contained both case studies constituted by knowledge workers and super-creatives and even though we tried to control for some industry effects for knowledge workers and creative fields for super-creatives by selecting our cases from different fields and industries, other relevant effects may not have been controlled for.

Despite these limitations, we believe that this study has extended our understanding of employee creativity by advancing a unifying framework. Nevertheless, this research study is but a small step and much more qualitative and quantitative research is needed to take us toward developing an integrative framework of creativity.

[3] Imperfect recall refers to the fact that respondents might not be able to recall information the researcher is seeking, whereas memory distortion refers to the fact that people do not recall events objectively and memories are distorted in the process of organizing or in an effort to maintain a positive self-image. Attributional bias refers to the amount of error in the response to a question that arises out of people's tendency to attribute effects to different causes (Singleton & Straits, 2005).

ACKNOWLEDGEMENTS

We would like to express our sincerest gratitude towards Flanders District of Creativity for the financial support that has made this research study possible.

We would also like to thank all the respondents and the organizations that participated in this study.

As for the 'creative professionals' in our sample, we wish to thank the following people or groups, and their key informants:
Lieve Blancquaert
André Bruylandt
Els de Schepper
Sofie De Ville
Kristien Dieltiens
MartHa!tentatief
Neveneffecten
Wim Opbrouck
Scala & Kolacny Brothers
S.M.A.K.
Marnick Smessaert

As for the 'knowledge workers', we wish to thank the following organizations, the participating employees, and their key informants:
Ablynx
Barco
Genzyme
IBM
IMEC België
IMEC Nederland
Philips
RCA Group
S&V Management Consultants
Verdickt & Verdickt
VRT – MNM

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. (1988). A model of creativity and innovation in organizations. In B. M. Staw, & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 10, pp. 123-168). Greenwich, CT: JAI Press.

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. (1998). How to kill creativity. *Harvard Business Review*, 77-87.

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., & Gryskiewicz, N. D. (1989). The Creative Environment Scales: Work Environment Inventory. *Creativity Research Journal*, 2, 231-253.

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.

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

Basadur, M., & Hausdorf, P. A. (1996). Measuring Divergent Thinking Attitudes Related to Creative Problem Solving and Innovation Management. *Creativity Research Journal*, 9(1), 21-32.

Binnewies, C., Ohly, S., & Sonnentag, S. (2007). Taking personal initiative and communicating about ideas: What is important for the creative process and for idea creativity? *European Journal of Work and Organizational Psychology*, 16(4), 432-455.

Cameron, K. S., & Quinn, R. E. (2005). Diagnosing and changing organizational culture: Based on the competing values framework: Jossey Bass.

Curral, L. A., Forrester, R. H., Dawson, J. F., & West, M. A. (2001). It's what you do and the way you do it: Team task, team size, and innovation-related group processes. *European Journal of Work and Organizational Psychology*, 10, 187-204.

Deci, E. L., Connell, J. P., & Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology,* 74, 580-590.

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

De Stobbeleir, K. E. M., Ashford, S. J., & Buyens, D. 2008. Feedback-seeking behavior as a self-regulation strategy for creative performance. *Working Paper Series Universiteit Gent*, 7012.

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

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.

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

Ekvall, G. (1996). Organizational climate for creativity and innovation. *European Journal of Work and Organizational Psychology*, 5(1), 105-123.

Ekvall, G., & Ryhammar, L. (1999). The creative climate: Its determinants and effects at a swedish university. *Creativity Research Journal*, 12(4), 303-310.

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.

Frese, M. (2000). The changing nature of work. In N. Chmiel (Ed.), *Introduction to Work and Organizational Psychology* (pp. 424-439). Oxford: Blackwell Publishers.

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.

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.

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. (2008). Creating Roles: What Managers can Do to Establish Expectations for Creative Performance. In J. Zhou & C. E. Shalley (Eds.), *Handbook of Organizational Creativity* (pp. 147-164). New York: Lawrence Erlbaum Associates.

Shalley, C. E., & Liu, Y. (2007). The Effects of Creativity Goals, Verbal and Monetary Rewards on Creativity. *Working Paper.*

Shalley, C. E., Gilson, L. L., & Blum, T. C. (2000). Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave. *Academy of Management Journal,* 43(2), 215-223.

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.

Sharman, D., & Johnson, A. (1997). Innovation in all things! Developing creativity in the workplace. *Industrial and Commercial Training*, 29(3), 85-87.

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

Slappendel, C. (1996). Perspectives on innovation in organizations. *Organization Studies,* 17, 107-124.

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.

Utman, C. H. (1997). Performance effects of motivational state: A meta-analysis. *Personality and Social Psychology Review*, 1, 170-182.

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

Van Dyne, L., & LePine, J. A. (1998). Helping and voice extra-role behaviors: Evidence of construct and predictive validity. *Academy of Management Journal*, 41, 108-119.

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., & Anderson, N. R. (1996). Innovation in Top Management Teams. *Journal of Applied Psychology*, 81(6), 680-693.

West, M. A., & Altink, W. M. M. (1996). Innovation at work: Individual, group, organizational, and socio-historical perspectives. *European Journal of Work and Organizational Psychology*, 5(1), 3-11.

West, M. A., Borrill, C. S., Dawson, J. F., Brodbeck, F., Shapiro, D. A., & Haward, B. (2003). Leadership Clarity and Team Innovation in Health Care. *Leadership Quarterly*, 14, 393-410.

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.

FLANDERS DC
INSPIRING CREATIVITY

Knowledge partner

Vlerick Leuven Gent Management School

the Autonomous Management School of
Ghent University and Katholieke Universiteit Leuven

ISBN-NUMMER : 9789078858331
D/2009/11.885.06