Factors that contribute to collective creativity development in organizations

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Abstract

In the 1990s, companies used to concentrate their efforts searching for greater quality in their products and services, and higher productivity in their processes. In the last decade, organizations have been focusing their efforts in the creative development of products, services and business as the basis for innovation. In this approach, this study aims to present the factors that contribute to the development of collective creativity in organizations, given that creativity is a factor that promotes innovation. For this, was made a literature review about collective creativity in database Capes. Before exploratory analysis there were obtained 85 papers. A detailed analysis of the papers shows that there are indications of factors that influence positively the development of collective creativity in organizations such as: management practices based on trust, interaction of culture and mutual inspiration, cooperation capacity in solving tasks, psychological safety, multiculturalism, psychological diversity, multidisciplinarity, specific professionals for organizational creativity's promotion, flexible and efficient sectorial relations and organizational memory. For future researches, it is indicated the use of a quantitative approach in order to verify the real impacts of factors positively associated with collective creativity exposed in this research.

Keywords: Literature Review, Teamwork, Collective Creativity

1 Introduction

Although creativity is commonly approached from an individualized bias, the largest share of creative production is the result of social processes that involve other people and therefore, groups (Amabile et al. 1996; Fischer et al. 2005). In the past, the researches on creativity potential focussed on highly creative people. Curently the researchers launched a look at broader aspects, beyond the individuals, including collective creativity (group), as they realized that individuals considered very creative can not solve all future problems by themselves, reinforcing the idea, according to Sanders (2012), that the understanding of creativity must pass from individual to the collective.

According to Florida (2002), creativity is considered a key factor for society´s economic development. Other researches and reports (Casner-Lotto et al. 2009; National Center on

Education and the Economy, 2008; Wagner, 2008) and companies associated to American Society for Curriculum Development (Dell, Microsoft, Verizon), complement this vision by pointing it as a factor with positive influence on innovation. If in the 1980s and 1990s companies were focused on the search for efficiency and quality, today it is recognized that to join efforts for the development of new products, services and business must become strategic directions in the search for competitiveness (Bukowitz, 1997). Individually or in groups, creativity figures in this task of for opportunities search and solutions as a central skill to be developed in teams.

The theoretical reference on creativity points multidisciplinarity as an important factor for ideas generation (Amabile et al., 1996; Strouse, 2013). However, just a little is discussed or proposed about other factors that influence the creative performance in teams. In this research, creativity is understood from Amabile et al. (1996) which defines it as a result of a process that generates something so new and valuable in any activity of science, arts, education, business or even of everyday´s life. Creativity can occur individually or as the result of collective processes in teams and, at this point, can be activated and expanded through instructions and practices. The creative development of individuals enables them to improve their ability to solve problems, which leads to more innovative solutions on existing issues. This fact contributes to characterize the creativity not as an innate capacity, but as a skill that can be developed (Amabile, 1996). It is with this approach, creativity as a capacity to be developed, that this article presents ten factors that contribute to activate the collective creativity in organizations.

2 Collective creativity

Initially, it is worth noting the difference between creativity and innovation. According to Amabile et al. (1996), creativity refers to ideas, while innovation is the successful translation of ideas into products or services. Not all creative ideas are innovative, but creativity is one of the many critical factors that support innovation. The more complex a problem, the harder it is for a single person to develop solutions by itself. Therefore, the participation and contribution of different individuals, with their abilities and different levels of knowledge, can contribute to solve these challenges. According to Brown & Eisenhardt (1998) collective creativity occurs in these situations when an individual does not have all the knowledge needed for the construction of a response to a particular problem.

2.1 Definitions

This research is supported by a classic definition of collective creativity proposed by Hargadon and Bechky (2006) as a moment when individuals with different perspectives and experiences come together to find, redefine and solve problems coming to new solutions that no one, working alone, could have done so easily. In consonance to this perspective, Parjanen (2012) also focuses on a concept that emphasizes the individual and the group by proposing that the collective creativity is the result of the interaction between individuals that lead to new understandings and interpretations of a given problem or concept. In a broader theoretical framework Csikszentmihalyi (1996) mentions that the collective creativity is not only the sum of creativity, but a product of the organizational environment as proposing that creativity occurs in the interaction between the thoughts of individuals and socio-cultural context.

In collective creativity the focus is not on how the ideas come to one of the individuals, but the creative activity that result from the collaboration and interaction of many people, covering thus the contribution of specific individuals in the generation of ideas. Table 1 presents the related literature definitions of collective creativity. As exposed, the studies

enframe collective creativity sometimes as a process or as a result. It is noteworthy that the listed theoretical perspectives obey a general concept of what the collective creativity that, as it turns out, covers not only the working teams, but also the organizational structure of which these teams belong.

Table 1. Concepts of collective creativity

Definitions	Author/Year
Creativity that results from the collective memory of communities of practices, artifacts and technologies around such groups.	Nakakoji et al. (2000)
Result of collaboration, interaction and of ideas exchange.	Paulus & Brown (2003)
The result of a change in the process of problem's solving, as the understanding of a problematic situation and the generation of creative solutions that involve redesigning past experiences of participants, in a way to lead to valuable and new perceptions.	Hargadon & Bechky (2006)
Synergistic integration of the results of the pieces of knowledge of individuals and those within yours network.	Haslet & Molineux (2007)
Intentional set of processes, activities and mechanisms established by individuals within an organization that are part of a larger social and professional network through which a new idea, product or process are generated.	Cirella & Shani (2010)
Creative processes that lead to creative products, as the results of interaction between two or more people.	Parjanen et al. (2010)
Creative synthesis as the result of the integration of the member's perspectives, in a common understanding, and that is unique to the collective.	Harvey (2014)

2.2 Collective creativity in organizations

In the way to make social interactions among individuals and trigger new interpretations and new discoveries Parjanen et al. (2010) emphasizes the importance of creating a common vision, to exchange creative ideas and evaluate themselves depends on the ability of the group to create a shared language, an essential point in the development of a shared understandings. According to Kratzer et al. (2003), the creative nature of the task of developing new products, for example, requires involvement and interaction of various members, and thus the pattern of group's communication is a determinant key of creativity. At a organization level, the creativity in teams can be supported by group facilitators. A facilitator can use different types of methods to stimulate creative potential and avoid creativity reduction factors in the staff. For Paulus (2000) some factors mentioned as a creativity reductors in teams are: mental blocks, social anxiety and misguided criticism.

The collective creativity of a team and individual creativity of its members are strengthened if the organization supports and stimulates the creative process of its employees. According to Andriopoulos (2001) there are five organizational components that can be used in order to influence employee's creativity: first, the organizational climate that strengthens creativity, when viewed as a value to be cultivated in the company; secondly, when creativity is perceived as part of the organizational culture the creative employee performance is enhanced; third, the company's structure also has its influence on creativity in the workplace enviroment. The support, for example, from higher hierarchies, has a positive effect on the

creative potential; the fourth component is the amount of resources provided and the fifth element, the different skills of the employees. According to Hargadon & Becky (2006) there are four sets of interactions that trigger moments of collective creativity. They are: 1. Seek help - when an individual seeks support from other people in a difficult situation; 2. Provide assistance - is the desire to help others; 3. Reflective reframing - at which point individuals in social interaction give new meaning to what they already know; 4. Strengthen - are activities that strengthen individuals to seek and provide help and provide reflective reframing essential to allow moments of collective insights to emerge.

3 Research method

To carry out this research articles were analyzed from a research database called CAPES. Through this database there was hold an advanced and exploratory search using the keyword "Collective Creativity". As a result, 85 articles containing in their title, abstract, keywords or body text the keyword searched were obtained. Later, to filter the items found, in order to meet the objective of this study, there was an analysis of this material following the next criteria: reading of the title, summary, introduction and the final considerations of publications, in order to verify their relevance in respect to the scope and the research proposal, that is, if the article has or not the factors that are positively associated with the development of collective creativity in organizations. Studies that were not aligned to the tasks or did not address the issue of collective creativity in organizations were disregarded (the equivalent of 45 articles), while the relevant material has been fully read - a total of 40 articles. Regarding the scientific approach of this research, it is part of the qualitative field and exploratory nature.

4 Results

From the articles mapping it was possible to list ten factors that contribute to the collective creativity in organizations, as well as their authors cite, as shown in Table 2.

Table 2. Factors contributing to the collective creativity in organizations

Facto (rs)	Autho (rs)
MANAGEMENT PRACTICES BASED ON TRUST	Bissola & Imperatori (2011); Kazem & Cripps (2007); Hargadon & Bechky (2006); Cirella et al., (2012); Parjanen et al., (2012); Parjanen (2012); Boënne (2014); Sener & Stockman (2004); Nakakoji et al., (2000); Hester (2012), Amabile et al., (2004); Byrne et al. (2009); Castro et al. (2012); De Jong & Den Hartog, (2007); Gemünden et al. (2007); Hemlin & Olsson, (2011); Hülsheger et al. (2009); Isaksen & Ekvall, (2010); Wang & Casimir, (2007); Williams (2001)
INTERACTION OF CULTURE AND MUTUAL INSPIRATION	Neumann (2007), Edmondson (1999), Zahavy & Somech (2001), Kratzer et al. (2003), Paulus (2000), Bukowitz (1997), Paterson (2010), Epstein et al. (2013), Sarmiento & Stahl (2008), Paloniemi & Collin (2012), Sanders & Stappers (2008), Chaharbaghi & Cripps, (2007), Cirella et al. (2012), Parjanen (2012), Woodman et al. (1993), Tadmor et al. (2012), Parjanen (2012a), Boënne (2014), Sener & Stockman (2004)
COOPERATION CAPACITY IN SOLVING TASKS	Paloniemi & Collin (2012), Aanes et al., (2013), Slavich (2009), Parjanen (2012a), Luoma-aho & Halonen (2007), Andriopoulos (2001)

PSYCHOLOGICAL SAFETY	Paterson (2010), Edmondson (1999), Oortmerssen et al. (2015)
MULTICULTURALISM	Tadmor et al. (2012), Hoever (2012), Paulus & Brown (2003)
PSYCHOLOGICAL DIVERSITY	Puccio et al. (2011), West (1997), Oortmerssen et al. (2015), Hoever (2012), Cirella et al. (2012), Sweetman (2010)
MULTIDISCIPLINARITY	Amabile et al. (1996), Strouse (2013), Aanes et al. (2013), Sweetman (2010)
SPECIFIC PROFESSIONALS FOR ORGANIZATIONAL CREATIVITY PROMOTION	Family (2003)
FLEXIBLE AND EFICIENT SECTORIAL RELATIONS	Parjanen (2012a)
ORGANIZATIONAL MEMORY	Walsh & Ungson (1991)

The **management practices based on trust**, refer to the support for individual skills and creative behaviors, in addition to stimulating motivation in employees. According to Bissola & Imperatori (2011) to foster collective creativity you must format working systems that preserve and increase creative expression of employees, so as to allow them to feel free to behave in a "creative way" - different from the traditional way. This kind of management, based on trust, is important for creativity, because it is related to the generation of new ideas that can achieve business value - this thought is supported by several authors who researched the management and its influence on inhibition issueor facilitation of creativity among them (Amabile et al. 2004; Byrne et al. 2009; De Jong & Den Hartog, 2007).

Companies like Google exercises this factor while enabling their employees free time to work on their own, in their ideas and also by the culture of failure tolerance. According Boisot (1998) and Uzzi (1997), the best ideas, at any working enviroment, arise from casual contacts between different groups within the same organization, which reinforces the importance of this policy as a strategy to encourage collective creativity. It is from this culture of mutual trust, that the construction of the **interaction of culture and mutual inspiration** is enabled. According to Neumann (2007) and Edmondson (1999) this kind of culture allows to motivate and inspire through the other, providing freedom to propose and expose new ideas. Other researchers such as (Drach-Zahavy & Somech, 2001 and Paulus, 2000) who work with the theme of creativity and innovation in teams, reinforce the importance of communication and interaction to stimulate the creativity of the group. The interaction and inspiration, however, should be materialize into **cooperation capacity in solving tasks**, what, in consonance with Andriopolous (2001), refers to the collaborative effort in which members generate new ideas, sharing their knowledge with each other. This effort is reflected in the ability of individuals, in heterogeneous groups, to produce ideas openly and to use the thoughts and knowledge of others to build their own.

In addition to Andriopoulos (2001), the concept of **psychological safety** (employee's perception that he can freely express himself in the company) proposed by Edmondson (1999) provides theoretical support for the importance of building a porous working environment where there is free circulation of ideas and freedom of expression. To Oortmerssen et al. (2015), genuine creativity usually occurs in environments that have a trust atmosphere, in

which individuals and teams realize they will not be harassed for their ideas and personal characteristics. From Paulus & Brown (2003) it was certified that the fact of being a **multiculturalism** (companies with people of many cultures, races and creeds) is also related to the enhancement of collective creativity in teams. This factor, is related to multicultural experiences that expand the conceptual space, from which the categories of ideas can be generated; individuals with high levels of multiculturalism must have freedom in the organization to generate new ideas together with other members of the group. In complement to the multiple cultural perspectives, **psychological diversity** (multiple cognitive styles and personalities) is one more factor when dealing with this kind of creativity, as shown by Puccio et al. (2011) this diversity of cognitive styles and personalities, generates differences in the way people organize, process information and how they express themselves. In this sense, formming teams with very similar psychological characteristics among its participants may affect adversely the creative process. This assumption is reinforced by West (1997) when he states: "conflict of perspectives generated by the heterogeneity is the necessary ingredient for innovation, it is through the management of this conflict that creativity and innovation are generated "(p. 95).

Another factor is **multidisciplinarity** (different levels and types of expertise) proposed by Amabile et al. (1996) in its componential model of creativity and reaffirmed by Strouse (2013) as positively correlated with collective creativity. This factor deals with the various expertise levels and types of knowledge of individuals as enablers of the creative process in teams. Additionally, to this factor and according to Family (2003), **specific professionals for organizational creativity promotion** is another element to be considered and suggests the presence of psychologists or other professionals acting as group guiders in an attempt to converge the individual creativity of each person into collective creativity. In this perspective, the specific professionals in promoting creativity act as conductors, leading the multiplicity of factors positively correlated to collective creativity. Finally, two other factors worth being highligted, the first is the **flexible and efficient sectorial relations** proposed by Parjanen (2012), which relates to promoting a relationship that allows sectoral exchanges of information and practices in an assertively and coordinated way. According to Walsh & Ungson (1991) this interaction should be linked to an **organizational memory** (ability to perpetuate ideas and good practices in projects) as organizational support for the transfer of ideas, working practices through time and between projects.

5 Discussion

Many creative activities in business and industries involve individuals working together to solve a problem they can not solve alone. So, the creative performance flourishes in the relationship between an individual and his work, and the links between individuals. To Hargadon & Bechky (2006) the locus of creativity moves into the collective level when the contributions of each individual are not only useful to the subsequent contributions of others, but give new meanings to them. To Bandura (1997) creativity in social settings can be divided into creativity at work and interpersonal relationships. In both of them, the riskier and radical idea, the more organizational resistance and obstacles exist to an open interaction. At the network level, the great difficulty is getting heterogeneous groups formed in a way to work together, share ideas openly and generate radical ideas - in some research units and collaboration between companies, partners overvalue the capabilities of the other, what can easily cause frets and misunderstanding between them. According to Hakansson & Snehota (1995) the cooperation among individuals demmands flexibility and the range of success depends on the functionality of relationships developed by the parties.

In this way, people tend to be attracted to set up with groups of similar members to them, what makes the formation of heterogeneous groups more difficult, as the constitution of the group reduces the diversity of the members. Although homogeneous groups often reach solutions faster and with less friction, at the same time they do less to spark creative thinking. All the members show themselves with similar mental configurations and run in the same configuration (Amabile, 1996). Further, behavior and opinions are usually more homogeneous within the group than between groups, so, persons inserted into several distinct groups are more familiar with alternative ways of thinking and behaving (Burt, 2004). Given these considerations, a challenge to the collective creativity is to get members from different organizational cultures interacting with each other (Parjanen et al. 2010). Leaders can support the creativity of their employees by providing them the necessary resources and adequate time for the execution of each activity in the organization (Mumford & Gustafson, 1988) and also human support through the enhancement of small victories along the progress of activities (Amabile, 2011).

Flexible working environments and decentralized decision-making are also favorable to creativity. The ability of employees to interact with people from different departments contributes to information's circulation and it is a profitable point for idea's generation and, in particular, for the training of employees with more diverse experience, offering connections to more remote facts and perspectives. On the other hand, some degree of stability is needed, clarity and coordination of such exchanges of information in the corporate envirement, as the organizational climate is also an important variable for collective creativity's promotion in companies. Therefore, the concept of climate is used to refer to specific aspects of organizational culture as psychological security, which refers according to Edmondson, (1999) to a shared belief that an organization is a safe environment in which it's possible to run interpersonal risks without fearing negative consequences.

6 Final considerations

From the systematic literature review in this study, there were identified concepts of what the collective creativity is and which factors contribute to their activation in organizations. From the definitions presented it is proposed that the collective creativity can be defined as the result of cooperation, coordinated or not, between individuals to get into the resolution of a task. In addition to the mapped concepts, it was also possible to explain factors that contribute to the collective creativity in organizations, which provides theoretical basis for building strategies to promote creativity in companies. Although creativity is considered one of the most difficult scientific constructs, in the human sciences (Sawyer, 2012) it is an important skill to be considered, with respect to its contribution to inovation. Sanders & Stappers (2008) indicate the rise of new areas of collective creativity that will demand new tools and research methods that can overcome the methodological theoretical barriers intrinsic in the study of creativity. For future researches, the use of a quantitative approach is indicated in order to verify the impact of factors positively associated with collective creativity exposed here. Finally, as Amabile (2011) reminds us, supporting people is supporting progress and the time has come to realize the importance of people and teams in innovation.

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