Developing Organizational Creativity

*Researching contextual factors that enhance or restrict the output of creative potential*

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Abstract

Previous research has shown that enhancing the creative process is vital to remain competitive and to improve the overall innovation of a firm. Therefore, it is important that the creative potential of every employee is utilized to the fullest. When employees perceive themselves as having creative potential, but are not exhibiting this potential then there are probably restricting organizational factors. The aim of this study is to provide empirical evidence of whether and to what degree the relationship between creative potential and practised creativity is moderated by contextual factors. The constructs of creative potential and practised creativity validated by DiLiello and Houghton (2008) has been extended with 8 contextual factors identified by Amabile, Conti, Coon, Lazenby and Herron (1996), i.e. organizational support, supervisor encouragement, freedom, resources, work group support, challenge, workload pressure and organizational impediments. This new extended model was tested with an online questionnaire among 329 employees from a highly innovative Dutch telecom organization. Results showed that organizational support, challenge and workload pressure were important factors in the perceived execution of one’s creative potential. Supervisor encouragement, work group support, resources and organizational impediments were not significant in influencing creative potential and practised creativity. Freedom showed not to have acceptable reliability coefficients to be significant. This study has shed light on the contextual factors that can be altered to enhance the practised creativity throughout the organization and management education is advised on the types of contextual factors and their effects on creativity and performance. This is a first step to extend the dominant creativity model with the creative potential construct. This research ends with a discussion of the theoretical, practical implications and limitations of the results.

Keywords
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Table of contents

Abstract .......................................................................................................................................... 2  
Keywords ........................................................................................................................................ 2  
Acknowledgements ........................................................................................................................ 3  
Table of contents ........................................................................................................................... 4  
1 Introduction .................................................................................................................................. 5  
2 Literature review and hypotheses development .......................................................................... 7  
  2.1 Creative potential & practised creativity .............................................................................. 11  
  2.2 Organizational support ........................................................................................................... 12  
  2.3 Supervisory encouragement .................................................................................................. 13  
  2.4 Freedom .................................................................................................................................. 14  
  2.5 Resources ............................................................................................................................... 15  
  2.6 Work group support .............................................................................................................. 16  
  2.7 Pressure (workload pressure and challenge) ......................................................................... 17  
  2.8 Organizational impediments ................................................................................................. 18  
3 Methodology .................................................................................................................................. 19  
  3.1 Sample and procedure ............................................................................................................ 19  
  3.2 Creative Potential .................................................................................................................... 22  
  3.3 Practised creativity .................................................................................................................. 23  
  3.4 Contextual factors .................................................................................................................... 23  
  3.5 Control variables ...................................................................................................................... 25  
4 Results .......................................................................................................................................... 27  
5 Conclusion, discussion and implications ...................................................................................... 31  
6 Limitations and directions for future research ............................................................................ 35  
References ....................................................................................................................................... 38  
Appendix A: Survey invitation .......................................................................................................... 48  
Appendix B: Results with (backwards calculated) Likert 4 scale .................................................. 50
1 Introduction

“According to Darwin’s Origin of Species, it is not the most intellectual of the species that survives; it is not the strongest that survives; but the species that survives is the one that is able best to adapt and adjust to the changing environment in which it finds itself”. This statement taken from Megginson (1963, p 4) has much in common with the survival of today’s enterprises. Whether the ends for an organization are sustainable competitive advantage or continued existence in a rapidly changing environment, the means remain the same, to adapt or adjust to change by innovation (Amabile, 1988; Csikszentmihalyi, 1997; DiLiello & Houghton, 2008; Woodman, Sawyer, & Griffin, 1993). The spark for innovation can often be found within a single creative idea (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Therefore, enhancements of the creative process from birth to execution, from creative idea into innovation has been suggested as being a vital organizational competence for remaining competitive and for improving the overall innovation of a firm (Amabile, 1988; Cummings, Hinton, & Gobdel, 1975; DiLiello & Houghton, 2006; Kanter, 1988; Shalley, 1991; Shalley, Gilson, & Blum, 2000; Tushman & O’Reilly, 1997; Utterback, 1994; Woodman, Sawyer, & Griffin, 1993).

The importance of creativity has led to a number of empirical studies that have examined individual and organizational (often referred to as contextual) factors that enhance or restrict creativity (Amabile, Schatzel, Moneta, & Kramer, 2004; George & Zhou, 2002; Rodan & Galunic, 2004; Tierney & Farmer, 2002; Shalley, Zhou, & Oldham, 2004; Zhou & George, 2001; Zhou & Shalley, 2008). The key finding of these studies is that a supportive and stimulating work environment is mainly positively associated with creativity, and that a non-supportive or controlling work environment is for the most part negatively associated with creativity.

The seminal creativity models of Amabile et al. (1996) and Woodman et al. (1993) are using contextual factors as antecedents for practised creativity. However, DiLiello and Houghton (2006; 2008) and Hinton (1968) state that contextual factors can be perceived of as having a moderating effect on the relation between creative potential and practised creativity. The distinction between creative potential and practised creativity has been described by DiLiello and Houghton (2008, p 39) by declaring that “if the individual’s creative output is restrained by contextual factors then the individual will not be able to utilize his or her full creative potential”. DiLiello and Houghton (2006; 2008) have tested the construct validity of these two overlooked aspects of creativity, creative potential and practised creativity. Contextual factors do not inhibit practised creativity, but rather impact the degree in which potential creativity is realized and translated into practised creativity. This can be useful for
maximizing creativity within organizations by identifying the creative inhibitors. Since the validation of these constructs (DiLiello & Houghton 2008), no further research has been carried out to investigate the relationship between these constructs of creative potential and practised creativity, nor has there been any investigation on the moderating effects that can enhance or restrict this relationship. Even though this research has been recommended by DiLiello and Houghton (2008).

Understanding these effects that enhance or restrict the link between creative potential and practised creativity is important as they may be useful for identifying untapped creative resources and can give guidance on how to maximize the overall practised creativity throughout the organization. An increase in practised creativity may also lead to enhanced organizational innovation, increased job satisfaction and increased retention (Shalley, Gilson, & Blum, 2000), that can help companies differentiate themselves, with the ultimate goal of securing survival and improving performance (Hansen & Crespell, 2008). Amabile et al. (1996) suggests eight general categories of contextual factors affecting creativity, being organizational support, supervisory encouragement, freedom, resources, work-group support, workload pressure, challenge and organizational impediments. Our research question is:

To what extent is the relationship between creative potential and practised creativity moderated by organizational factors.

Data for this study was collected in an online questionnaire among 1000 employees within a highly innovative Dutch telecom organization, with a response rate of 32.9%. Existing measures of the constructs were adopted and used.

The structure of this study is as follows: First, the theoretical links between the investigated constructs and the current literature are described, identifying the theoretical framework and leading to the hypotheses. Second, the methodology is explained, on how the constructs are measured. Third, the results of this research are presented. Subsequently the conclusions, the theoretical and practical implications are described and this article ends with the limitations of this study and directions for future research.
2 Literature review and hypotheses development

Definitions of creativity have received broad attention in previous literature, most of the definitions include the terms “novel” and “useful” (Amabile, 1983; Barron & Harrington, 1981; Guilford, 1950; Martindale, 1989; Sternberg & Lubart, 1999), few agreement is found in today’s literature that defines creativity beyond these two terms (Hennessey & Amabile, 2010; Klausen, 2010). Following Amabile et al. (1996), Cummings & Oldham, (1997), DiLiello & Houghton (2006), Shalley, Zhou, & Oldham (2004), Woodman et al., (1993) and Zhou & Shalley (2008), we define creativity as the production of novel and useful ideas in any domain. Contributions are novel when they offer something original or unique relative to what is already available. The contribution also needs to be useful. It must be relevant to the strategy of the organization. It must be something from which the firm can expect to extract value in the short or long term (Cummings & Oldham, 1997, p. 22).

Research on organizational creativity is a subarea in the field of organizational behavior (Zhou & Shalley, 2008), which is on the verge of psychology and organizational change. The literature on organizational change is immense; as is the literature focused on individual creativity, but the literature on combined organizational creativity is much smaller (Woodman, 2008). The difference between creativity research in the field of psychology and organizational creativity is that the latter has an exclusive focus on the variables that have direct implications for the workplace, and creativity in a work or organizational context (Zhou & Shalley, 2008).

![Creative process according to Amabile (1983)](image)

Creativity within the domain of organizational creativity can be viewed as the incubation or the idea generation stage, and innovation as the implementation of these creative ideas, often called creative output (Woodman, 2008). Amabile (1983) proposed a model of this creative process, which starts with proper problem-description, and ends with innovation through creative idea generation. This process, displayed in Figure 1, supports the notion that all organizational innovation requires a single creative idea (Amabile et al., 1996; Mumford & Gustafson, 1988; Kanter, 1988; Shalley, 2008). Hennessey & Amabile (2010) argue that the steps in this creativity process can be executed on multiple levels. Figure 2 presents a simplified overview of these different levels, ranging from an individual level to a systems approach (Hennessey & Amabile, 2010). When these different levels are stacked on the creative process described by Amabile (1983), it can be stated that creativity or idea generation
calls for individuals with creative characteristics, while a group of people are primarily responsible for implementing these creative ideas, so they can result in innovation (West, 2002; Houghton & DiLiello, 2010). This statement is in line with a similar process model described by West & Farr (1989) and Kanter (1988), ranging from idea generation or practised creativity to idea realization or innovation. The scope of this research is to investigate the contextual factors that inhibit or support the individual in the creative idea generation stage.

Not all employees use their creative potential to the fullest, it is for most easier to stick to tried-and-true methods than to invest time and risk failure to experiment and attempt to come up with alternative approaches. This is primarily caused by a few main factors. Creativity takes a great deal of hard work (Amabile, 1996), claims a lot of time (Gruber & Davis, 1988) and can be very risky (Tesluk, Farr, & Klein, 1997). Therefore, an employee is likely to be creative when they expect that creative activity will lead to personal consequences that are more desirable relative to those expected for familiar behavior (Ford, 1996, p. 1116).

There are individual differences that may cause one employee, in general, to be more creative than others. Researchers (Amabile, 1983; Shalley, 2008; Woodman et al., 1993) have theorized that individual creativity is a function of (1) personality factors, (2) creativity-relevant skills, (3) domain-specific knowledge and (4) intrinsic motivation.

(1) The personal factors affecting creativity are reasonable stable across fields (e.g., Barron & Harrington, 1981; Gough, 1979), they include broad interests, independence of judgment, autonomy, a firm sense of self as creative (self-efficacy), willingness to take risk and fail at times (Zhou & Shalley, 2008, p 150).

(2) Creativity-relevant skills are explicit or tacit knowledge concerning strategies for producing creative ideas, appropriate cognitive styles, and work styles for creative idea production (Zhou & Shalley, 2008, p 12).

(3) Domain-specific knowledge includes factual knowledge and expertise in a given domain (Zhou & Shalley, 2008, p 12). It generally reflects an individual’s level of education, training, experience and knowledge within a particular context (Gardner, 1993).

DiLiello and Houghton (2008) have specified and validated the creative potential construct which is a simplified representation of the personality factors, creativity-
relevant skills and domain-specific knowledge, it measures the personal feelings regarding the ability to be creative, having the expertise to do well in one's work and possessing the ability to take risks by trying out new ideas. This simplified construct is used in this research to measure creative potential.

(4) Motivation is also an important factor, because individuals have to be inherently interested in the issue or problem and have to be motivated to find a solution (Amabile, 1983; Barron, 1965; Runca & Chand, 1995; Zhou & Shalley, 2008).

The two distinct forms of motivation, intrinsic and extrinsic motivation, have been used frequently in previous literature (e.g. Andriopoulos, 2001; Zhang & Bartol, 2010). Intrinsic motivation is described by Shalley et al. (2004, p. 935) as the extent to which an individual is excited about a work activity and engages in it for the sake of the activity itself, while extrinsic motivation comes from outside an individual, like a reward, that provides satisfaction that the activity itself may not provide.

Intrinsic motivation is expected to lead to higher practised creativity than extrinsic motivation (Utman, 1997). According to the motivation principle of creativity, intrinsic motivation ought to enhance the creative ability, while extrinsic motivators would be detrimental for creativity (Amabile, 1983; 1985; 1988; 1993; 1997). However, more recent research has found that some extrinsic motivators can also be conducive to creativity (e.g., Shalley, Zhou, & Oldham, 2004; Zhou & George, 2001), suggesting that there may be synergy between intrinsic and extrinsic motivation in promoting creativity.

Personality factors, creativity relevant skills and domain-specific knowledge are all components within the individual, while motivation is influenced by contextual factors outside the individual. Thus organizations can select individuals who have high creative potential and can then structure their environment to impact the level of motivation at work over time (Shalley, 2008). Making motivation a key factor that organizations can influence. Although it is agreed that contextual factors influence practised creativity by their effects on intrinsic motivation, only a few studies have directly tested it (Shalley et al., 2004).

The contextual factors that affect motivation can be broadly defined as “Dimensions of the work environment that potentially influence employee’s creativity but that are not part of the individual” (Shalley et al., p 935). According to the cognitive evaluation theory (Deci & Ryan, 1985) the effect of a contextual factor on an employee’s motivation can be predicted by their nature. If the contextual factor is perceived as controlling, the impact of the contextual factor is expected to decrease an employee’s intrinsic motivation, while if the contextual factor is perceived as informational it will increase an employee’s intrinsic motivation. Furthermore, contextual factors that are more proximal to employees' work life are suggested to have a stronger effect day to
developing organizational creativity

day than those that are more distant (Shalley, Gilson, & Blum, 2000; Unsworth, Wall, & Carter, 2005). Amabile’s (1998) research identified eight general categories of contextual factors that have an effect on creativity. These are supervisory encouragement, organizational support, challenge, freedom, resources, work-group support, workload pressure and organizational impediments. These eight categories will be described within the next section in more detail. Creativity is in summary a function of the employee’s personal characteristics and the characteristics of the context in which he or she works.

Amabile et al. (1996) and Woodman (1993) both described a theoretical framework of the direct influence contextual factors have on practised creativity. DiLiello and Houghton (2008) criticizes these two dominant models, because personal skills determine what a person is capable of, but motivation determines what that individual actually will do, claiming that contextual factors do not have a direct influence on practised creativity, but have a direct influence on an individual’s creative potential. The contextual factors are expected to restrain or enhance the creative potential which could result in a higher or lower degree of practised creativity for creative idea generation. In contrary to the usage of the unitary construct of practised creativity in the frameworks of Amabile et al. (1996) and Woodman (1993). DiLiello and Houghton’s (2006; 2008) theory is based on two distinct parts of creativity: creative potential and practised creativity. Creative potential refers to an individual’s personality factors, creativity-relevant skills and domain-specific knowledge. Creative behavior (Hinton, 1970) and practised creativity on the other hand, are synonyms for the measured result of creative ideas, i.e. the output of the creative potential. DiLiello and Houghton (2008) provided initial evidence supporting the construct validity of creative potential and practised creativity and suggests that future research should try to identify the relationship between creative potential, practised creativity and contextual factors.

This paper extends the framework of Amabile et al. (1996) with the concept of DiLiello and Houghton (2008). The extended theoretical model is presented in Figure 3. Research findings of these relationships among creative potential, practised creativity and contextual factors could be significant, because when employees do not perceive the opportunity to practise their potential, they are less likely to be creative. Understanding the influence of contextual factors on the gap of unpractised potential will provide guidelines on how an organization can structure their employees’ environment. Which allows organizations to maximize their creative potential to secure survival and improve performance (Hansen & Crespell, 2008).
2.1 Creative potential & practised creativity

A careful distinction must be made between practised creativity, that which is actually measured, and creative potential which might have been demonstrated if no inhibiting factors would have been operating (Hinton, 1968). Evidence exists that the predictors of creative potential and practised creativity are different (Hinton, 1970). Little attention has been paid to this distinction, since the work of Hinton (1968, 1970) and the validated constructs of DiLiello and Houghton (2008).

Creative potential can be defined as the personality factors, creativity-relevant skills and domain-specific knowledge an employee possesses (Hinton, 1968, 1970; Shalley, 2008). DiLiello & Houghton (2008) have created and validated a construct to measure creative potential. This construct entails what Tierney and Farmer (2002) call creative self-efficacy, i.e. seeing oneself as being good in being creative, but also incorporates other aspects of creative potential such as having the knowledge to perform well in one’s work and perceiving the ability to take risks by trying out new creative ideas.

Practised creativity can be defined as the perceived opportunity to use these creative skills and abilities (DiLiello & Houghton, 2008). Creative potential is what a person can do and practised creativity is what this person will do, in terms of generating novel and useful ideas.

Houghton and DiLiello (2010) provided evidence that the greater the creative self-efficacy possessed by an individual, the more likely the individual will be to perceive opportunities to actually apply their creative potential in the form of practised creativity. In this study we theorize that the relationship between creative potential

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**Figure 3 - Conceptual model**

- Creative Potential (DiLiello & Houghton, 2008)
- Practised creativity (DiLiello & Houghton, 2008)
  - Motivation (Amabile et al., 1996)
  - (H1) Organizational Support
  - (H2) Supervisor Encouragement
  - (H3) Freedom
  - (H4) Resources
  - (H5) Work Group Support
  - (H6) Challenge
  - (H7) Workload Pressure
  - (H8) Organizational Impediments
and practised creativity could be attenuated or enhanced by factors influencing an individual’s motivation, like the contextual factors described by Amabile et al. (1998), being organizational support, supervisory encouragement, freedom, resources, work-group support, workload pressure, challenge and organizational impediments. These factors are described in the next paragraphs.

Many of the studies reviewed provide results consistent with the argument that contextual factors affect practised creativity by their effects on individuals’ intrinsic motivation, yet few studies actually measured intrinsic motivation and tested whether it empirically mediates the context-creativity relation (Zhou & Shalley, 2003). Moreover, the studies that have examined the mediating role of intrinsic motivation provide results that are rather inconsistent (e.g., Amabile, 1979; Amabile, Goldfrab & Brackfield, 1990). An explanation could be that contextual characteristics do not affect creativity via intrinsic motivation but rather via alternative mediating conditions (Shalley et al., 2004), such as the influence of motivation in practicing someone’s creative potential, which is investigated in this research.

### 2.2 Organizational support

Practicing potential creativity can be very risky and can claim a lot of time and effort of employees (Gruber & Davis, 1988; Tesluk, Farr, & Klein, 1997). Organizational support is expected to minimize these threats (Amabile et al., 1996), because the concept entails the encouragement of risk taking and idea generation (Cummings, 1965; Delbecq & Mills, 1985; Ettlie, 1983; Hage & Dewar, 1973; Kanter, 1983), supportive evaluation of new ideas for employees who perceive that their ideas are not appreciated (Cummings, 1965; Kanter, 1983), cross-functional work group initiatives to stimulate the active idea flow (Allen, Lee, & Tushman, 1980; Kanter, 1983; Kimberley & Evanisko, 1981; Monge, Cozzens, & Contractor, 1992) and reward and recognition of creative efforts (Abbey & Dickson, 1983; Cummings, 1965; Paolillo & Brown, 1978). Studies (Amabile, Hennessey, & Grossman, 1986, Hennessey, Amabile, & Martinage, 1989) have found different effects of reward and recognition of creative efforts on motivation. When an employee is only to work on a certain task because of the reward then the employee is extrinsically motivated, while employees who perceive the reward as a bonus will be intrinsically motivated, they will feel valued and capable and thus be more likely to express their creative potential in the future (Amabile et al., 1996).

We argue that organizational support for creativity minimizes the risks for an employees’ creative activities, and increases employees’ motivation to practise their creative potential, because of the former mentioned inherent factors of organizational
support. Studies have shown that each of these aspects of organizational support is empirically related to practised creativity. However, it has never been empirically analyzed whether organizational support enhances or restricts the translation of creative potential into practised creativity (DiLello & Houghton, 2008). It is reasonable to assume that employees will feel more motivated to practise their creative potential when the organization encourages risk-taking and idea generation. In contrast, if an organization does not encourage, or even worse, discourages risk-taking and idea generation, individuals are expected to be less likely to practise their potential creativity. This is in line with what is to be expected from the cognitive evaluation theory (Deci & Ryan, 1985), which poses that intrinsic motivation is enhanced by external forces that are informational in nature, instead of controlling. Hence we pose the following hypotheses:

Hypothesis 1: The relationship between creative potential and practised creativity is moderated by organizational support, in such a way that (a) high organizational support strengthens and (b) low organizational support weakens the relationship between creative potential and practised creativity.

2.3 Supervisory encouragement

Although a few studies have failed to show significant relations (e.g., George & Zhou, 2001; Zhou, 2003), a vast majority of earlier studies provide substantial support for the expected relation between supportive leadership styles and practised creativity (e.g., Amabile & Conti, 1999; Amabile et al., 1996, 2004; Madjar et al., 2002; Oldham & Cummings, 1996; Shalley & Gilson, 2004; Tierney & Farmer, 2002, 2004; Zhou & George, 2003). In these studies supervisor encouragement enhances practised creativity by goal clarity (Bailyn, 1985), support for open interactions (Kimberley & Evanisko, 1981; Kimberley, Managerial innovation, 1981) and non-destructive criticism of work and ideas (Delbecq & Mills, 1985; Orpen, 1990). Reversely, non-supportive supervisors might be detrimental for practised creativity, because their actions can be perceived as controlling (George & Zhou, 2001; Zhou, 2003; Stahl & Koser, 1978).

Following the cognitive evaluation theory (Deci & Ryan, 1985; Shalley, Zhou, & Oldham, 2004), we expect that supervisor encouragement will enhance intrinsic motivation and thus will allow employees to express their creative potential, whereas controlling supervisors are expected to decrease intrinsic motivation and the development of creative potential into practised creativity. When supervisors are supportive they provide constructive feedback and ensure that everyone’s ideas are heard and valued (Deci, Connell & Ryan, 1989). In contrast, controlling supervisors will
impede the active flow of ideas, enforce strict rules and guidelines which hinders thinking outside the box (Deci et al., 1989). Therefore, we pose that the output of creative potential will be enhanced by supervisor encouragement and expect that controlling supervisors will restrict the output of creative potential. Hence, the we formulate the following hypotheses:

Hypothesis 2: The relationship between creative potential and practised creativity is moderated by supervisor encouragement, in such a way that (a) high supervisor encouragement strengthens and (b) low supervisor encouragement weakens the relationship between creative potential and practised creativity.

2.4 Freedom

Freedom in an organizational context can be defined as being in control of someone’s own work, in control of what to do and how to do it (Amabile & Gitomer, 1984). Several researchers have concluded that freedom is a key feature that may be important for ultimately realizing creativity in the workplace, because practised creativity may be enhanced when employees have a sense of ownership over their own work (Amabile & Gitomer, 1984; Bailyn, 1985; Cohen, Meitar, Carmeli & Walmman, 2009; King & West, 1985; Paolillo & Brown, 1978; West, 1986). This ownership empowers employees to contribute innovative ideas, which makes freedom a desirable state in organizations (Paul, Niehoff, & Turnley, 2000). Employees in organizations supporting this kind of freedom are given time and support to explore alternative approaches. The opposite climate would empower employees to stay within their functional bounds and traditions (Eksvall, 1996). The key for practised creativity according to Amabile et al. (1996) is to give employees the freedom concerning the means, but not necessarily the ends. Clearly specified strategic goals often enhance people’s creativity. Therefore, managers are advised to spend the majority of their time on setting clear goals and let the team decide how to get there.

Studies on organizational creativity have revealed the important aspects of freedom at work as a grounds for creativity, yet no research has been conducted that studies the influence the contextual factor freedom has on practicing an employee’s creative potential. Investigating if and to what degree freedom impacts an employee’s creative potential will provide organizations with information about arranging one’s work environment in order to maximize creativity. As discussed earlier, the link between creative potential and practised creativity can be influenced by someone’s motivation, which can be influenced by contextual factors. The influence of the contextual factor freedom on motivation has already been investigated and flagged as significant (Nix,
Ryan, Manly, & Deci, 1999; Hackman & Oldham, 1980). As freedom in an organizational context can be defined by the control of one’s work, we expect that individuals who receive high levels of freedom in daily work will be more likely to practise their creative potential because they will be more motivated and thus exert greater effort to try new approaches and ideas, even if they involve risk of failure. On the contrary, we expect that weak levels of freedom will restrict someone’s creative potential and motivation because employees might feel that their actions are forced on them from the outside. Thus we expect that it is likely to expect that people with creative potential will be more likely to express their creativity when they receive high levels of freedom in contrary to when they receive weak levels of freedom. Hence, we hypothesize:

Hypothesis 3: The relationship between creative potential and practised creativity is moderated by freedom, in such a way that (a) high levels of freedom strengthens and (b) low levels of freedom weakens the relationship between creative potential and practised creativity.

2.5 Resources

It can be debated that the construct of organizational resources overlaps with the construct of organizational support. In this research we make a clear distinction. Organizational support is about the influence of organizational culture on motivation, while resources represent the allocation of funds, materials, facilities, knowledge and money that can enhance motivation. A number of researchers have concluded that the allocation of resources is directly related to the level of practised creativity (Amabile et al, 1996; Cohen & Levinthal, 1990; Damanpour, 1991; Delbecq & Mills, 1985; Farr & Ford, 1990; Kanter, 1983; Payne, 1990; Tushman & Nelson, 1990). Job resources offer employees more opportunities and the possibility to learn about the task and gain task-related knowledge, which promotes an individual’s motivation to generate creative ideas (Amabile, 1988; Holman and Wall, 2002; Leach et al., 2003; Oldham and Cummings, 1996). Too much or too little resources will discourage practicing creativity, because it will not support the individual in developing the needed intrinsic motivation to be creative (Amabile et al., 1996).

Literature on organizational creativity has paid much attention to the significant impact of resources on practised creativity and its effect on motivation, however the influence of resources on the link between creative potential and practised creativity has never been investigated. We expect that individuals who perceive sufficient resources will be more likely to practise creative potential, because too tight budgets
and other resource impediments impinge on possibilities for creative potential to flower. Therefore, we think it is plausible that if an individual with creative potential receives sufficient resources, they will be more likely to output creativity, but when they receive inadequate resources they will be less likely to engage in creative behavior. Therefore, we formulate the following hypotheses:

Hypothesis 4: The relationship between creative potential and practised creativity is moderated by resources, in such a way that (a) high levels of resources strengthens and (b) low levels of resources weakens the relationship between creative potential and practised creativity.

2.6 Work group support
The only difference between supportive supervisors and supportive co-workers is the perceived encouragement of differently ranked people. Hence we expect that supportive co-workers will have similar effects as encouraging supervisors on creativity. Previous research has confirmed that practised creativity is enhanced when co-workers are nurturing and supportive, while non-supportive or controlling co-workers restrict practising creativity (Amabile & Gryskiewicz, 1989; Amabile et al., 1996; Cummings & Oldham, 1997; Madjar et al., 2002; Zhou, & George 2001). The reason for the enhanced creative output by supportive work group members is because of its effects on intrinsic motivation (Amabile et al., 1996), particularly work group member diversity and openness to ideas have a positive effect (Albrecht & Hall, 1991; Andrews, 1979; Monge, Cozzens, & Contractor, 1992; Payne, 1990). Constructive challenging of ideas and shared commitment also yield increases in intrinsic motivation, because two of the primary features of intrinsic motivation are a positive sense of challenge in the work and a focus on the work itself (Parnes & Noller 1972; Amabile, Hill, Hennessey, & Tighe, 1994; Harter, 1978; White, 1959).

As the link between creative potential and practised creativity has never been investigated in the light of work group support, we expect with regards to the cognitive evaluation theory (Deci & Ryan, 1985) that supportive, encouraging co-workers who give informational feedback, will strengthen the link. Reversely, controlling and non-supportive coworkers are expected to restrict someone’s creative potential. Because of the significant connection work group support has on intrinsic motivation it is expected that individuals who can be creative will output their creativity when they perceive strong work group support, and individuals with weak work group support will be less likely to practise creativity. Hence the following hypotheses are posed:
Hypothesis 5: The relationship between creative potential and practised creativity is moderated by work group support, in such a way that (a) high work group support strengthens and (b) low work group support weakens the relationship between creative potential and practised creativity.

2.7 Pressure (workload pressure and challenge)

Research has found mixed results for the influence of pressure on creativity (Amabile, 1988; Amabile & Gryskiewicz, 1987). The meta-analysis of 76 studies by Byron et al. (2010) on the effects of pressure on creativity reveals that the effect of pressure depends on how stress-inducing the pressure actually is. Evaluative or high stress inducing pressure will restrict practised creativity, while pressure perceived as arising from the urgent, intellectually challenging nature of the problem itself will increase practised creativity (Andriopoulos, 2001, p 837). This has led to the conceptualization of two distinct forms of pressure: challenge and excessive workload pressure.

When an activity is perceived as a challenge by the employee, then it is expected that this activity increases the intrinsic motivation, especially if the challenge matches their skill level (Csikszentmihalyi & Csikszentmihalyi, 1988; Hackman & Oldham, 1980; Hall, 1990). A challenging activity helps her or him to invest more effort to successfully fulfill the demands entailed by the job. People will practise more creative ideas when they are primarily intrinsically motivated by the challenge of the work itself (Amabile, 1983, 1988, 1993; Amabile et al., 1996). The importance of job challenge has been recognized by Cohen et al. (2009, p 364) as a source of psychological influence on the individual to exert effort at work and improve performance, as it gives an employee a sense of pride and self-worth.

Therefore, we expect that the link between creative potential and practised creativity will be positively influenced by challenge, because when employees perceive their work as challenging, they feel valued and capable. These feelings may give them the motivation to succeed in an organization that sends them positive messages of belief in their abilities by giving them challenging tasks. Employees will try to justify this belief by investing in their work (Cohen-Meitar, Carmeli & Walman 2009). Since challenge in the work positively correlates with intrinsic motivation (Amabile, 1988), it is expected that individuals with creative potential will practise more creativity if they receive more challenging work as opposed to individuals with creative potential whom receive less challenge. Hence, we hypothesize:
Hypothesis 6: The relationship between creative potential and practised creativity is moderated by challenge, in such a way that (a) high challenge strengthens and (b) low challenge weakens the relationship between creative potential and practised creativity.

Excessive workload pressure, has received elaborate attention in studies on creativity (Amabile et al., 1996; Andrews & Smith, 1996; Baer & Oldham, 2006; Byron, Khazanchi, & Nazarian, 2010; Kelly & McGrath, 1985). The general finding for this type of pressure is that it does not allow time for exploration or the identification of alternative possibilities (Conti, Coon, & Amabile, 1993; Gruber & Davis, 1988; Parnes, 1961; Whitney, Ruscio, Castle, & Amabile, 1995), while employees need time to engage in creative cognitive processes (Amabile, 1983). Employees who perceive high levels of workload pressure will solve problems less creatively and employ simple strategies in response to situations (Mumford, Waples, Antes, Brown, Connelly, Murphy, et al. 2010).

Thus, we expect excessive workload pressure to undermine the creative potential, especially if workload pressure is perceived as imposed externally as a means of control (Amabile, 1993). Workload pressure makes thinking outside the box less likely to generate novel and useful ideas (Ekvall 1996). Hence we expect that individuals with creative potential will be less likely to engage in creative behavior when they receive excessive workload pressure and when an individual receives low workload pressure we expect that individuals practise more creativity. Therefore, we pose the following hypotheses:

Hypothesis 7: The relationship between creative potential and practised creativity is moderated by workload pressure, in such a way that (a) high workload pressure weakens and (b) low workload pressure strengthens the relationship between creative potential and practised creativity.

2.8 Organizational impediments

In contrast with the other contextual factors, organizational impediments did not receive much attention in previous research, and there is little evidence of the negative effects on practised creativity (Amabile, 1988; Amabile et al., 1996; Amabile & Gryskiewicz, 1987). Yet these studies suggests that internal strife, conservatism, and rigid, formal management structures within organizations will inhibit practising creativity (Kimberley, 1981; Kimberley & Evanisko, 1981). We expect that the link between creative potential and practised creativity will be influenced by the restraining factors of organizational impediments, because individuals are likely to
perceive these factors as controlling. Therefore, they may lead to increases in an individuals’ extrinsic motivation, and corresponding decrease in the intrinsic motivation that is necessary for creative ideas (Amabile, 1988; Deci & Ryan, 1985). It is expected that individuals with creative potential will be less likely to practise creativity when they perceive higher amounts of organizational impediments and will be more likely to practise creativity when they perceive lower amounts of organizational impediments. Therefore, we hypothesize:

Hypothesis 8: The relationship between creative potential and practised creativity is moderated by organizational impediments, in such a way that (a) high organizational impediments weakens and (b) low organizational impediments strengthens the relationship between creative potential and practised creativity.

Except for two critical-incidents studies (Amabile & Gryskiewicz, 1987; Amabile et al., 1996) and two other studies that have highlighted creativity obstacles (Kimberley, 1981; Kimberley & Evanisko, 1981). There is comparatively little research evidence on organizational impediments, i.e. work environment factors that may undermine practised creativity.

3 Methodology

3.1 Sample and procedure

A creative idea, as defined earlier, is the start of innovation and can be originating by any employee in any job, at any level of the organization (Madjar, Oldham & Pratt, 2002), not discriminating age, gender or tenure. To measure the hypotheses it is important to convey this research within an organization that tries to differentiate through innovation and grants access to all layers of the organization. We solicited the support of a large Dutch mobile communications company which mediated access to all employees from every layer of the organization. The company is one of the largest mobile communications companies in the Netherlands and is part of an international group, which is the world’s leading international mobile telecommunications group with approximately 333 million customers worldwide, it tries to positively differentiate not only in cost, but also in quality as a leverage for customer acquisition and retention. The fierce competition in the Dutch saturated market, the ever ascending customer demands and the continual pressure on lower tariffs due to government regulations make it hard to be successful within the telecom industry in the Dutch market. Therefore, more than ever, it is important to be innovative, not only for introducing new services as a means for differentiation, but also to reinvent existing
services into more cost/quality effective services, for sustainable competitive advantage. In the press release of the financial results for fiscal year 2010, the CEO acknowledges the need to be innovative: “The challenging economic climate forced us to make various efficiency adjustments in our organization to be able to compete better in a changing market. I am happy to see that our efficiency measures generated the desired effect and that continued efforts in offering customers innovative products and services resulted in strong financial results”.

Employee creativity is one of the most important components to measure a company’s human capital, particularly in knowledge-intensive companies. In line with most of the field studies on organizational creativity (Zhou & Shalley, 2008), survey data is used to assess employees’ perceptions of their work context, because a survey is most suited when measuring factors that are not directly observable (Boyer & Swink, 2008). However, the complexity of the creativity concept means that the measurement of employee creativity has become difficult (Chen & Kaufmann, 2008). Well-known difficulties with these perceptual measures are the potential for measurement errors stemming from subjectivity and bias. In order to avoid response bias, some items were worded positively, some were worded negatively and the 80 questions where organized randomly. This also addresses difficulties with respondents’ interpretations of measures, potential lack of knowledge, and representations of the unit of analysis (Boyer & Swink, 2008). The respondents’ anonymity was protected, they were assured that there are no right or wrong answers and they were urged to answer questions as honestly as possible in order to reduce method biases (Podsakoff et al, 2003).

An online questionnaire was used to convey this research and a personal invitation was sent via email to 1000 employees. These 1000 employees were chosen randomly out of the total list of approximately 2500 employees, with the only criteria that employees who received a survey invitation in the past 6 months were excluded. The personal invitation contained the purpose of the study, the approval, management support and sponsorship of the study, the confidentiality and anonymity statement and a link to the online survey. Prior to the distribution of the questionnaire, a random test group was asked to provide comments and suggestions on the clarity and readability of the questionnaire and the questionnaire’s items. Based on their feedback, the content of the cover letter and the design of the questionnaire were adapted to improve clarity and readability. The survey was accessible online from the beginning of Friday 17 September 2010 until Thursday 15 October 2010 via an internal online survey tool. After two weeks the initial invitation was summarized in a reminder email for employees that did not respond to the first invitation. Both the initial mail
invitation and the reminder have been added in appendix A. The responses per day are presented in Figure 4.

![Survey Responses By Day](image)

**Figure 4 – Survey responses per day.**

Although Dutch is the native language in the Netherlands, English is a widely adopted foreign language, especially within this global company. Therefore, the English questions in the survey were not translated into Dutch, which enhances benchmarking with previous studies and ensures validity of the prior defined questions of DiLiello and Houghton (2006) and Amabile et al. (1996). At the end of the survey a control question was added to validate the understanding of the English language used in the survey. The answers yielded a +98% response rate on the answers often (10%), very often (26%) and always (62%) concerning the English language used in the questionnaire. Employees measuring less than often were deleted from the database, in order to reduce bias by misinterpretation of questions.

The total response to the web-based survey was 603 out of 1000; yielding a response rate of 60,3%. List-wise deletion of missing data resulted in a final sample size of 329 (32,9%). Analysis of the respondents has shown that 274 respondents have ended the questionnaire before completion. Interviews from random samples have revealed that reasons for abandoning the questionnaire were “too complex English questions used” and “discouragement by the length of the questionnaire”. A response rate check indicated a fairly representative percentage response from each of the ten departments within the company. The final sample rate was above average compared to similar research (Binnewies, Ohly, Niessen, 2008; Cohen-Meitar, Carmeli & Walman, 2009; Cummings et al., 1975; Ensor, Pirrie & Band, 2006; George & Zhou, 2007) and response rates for e-mail surveys in general (Sheehan, 2001).
In the final sample of 329 employees, approximately 45% of the respondents had a Bachelor’s degree, 28% a Master’s degree and 27% started working after secondary school. Respondents were on average 37 years old (sd = 7.1) and worked for approximate 6.5 years (sd = 4.1) with the company, as can be seen on Figure 5. 31% of the respondents were female, which is representative of the actual population for the company.

3.2 Creative Potential

Six survey items were used to measure creative potential. The six survey questions were adopted from DiLielo & Houghton (2008). They provided evidence of its factor loadings, coefficient alphas, construct validity and found no significant cross loading of any items.

Four items consist of creative self-efficacy (Tierney & Farmer, 2002) “feeling good at generating novel ideas”, “having confidence in one’s ability to solve problems creatively”, “having talent for developing others’ ideas”, and “finding creative ways to solve problems”. The remaining two questionnaire items considered the talent or expertise to do well in one’s work and possessing the ability to take risks by trying out new ideas. These six questionnaire items of Dilielo & Houghton (2008) only measure partially the elements in the creative potential theory described earlier. However, this validated construct provides a sound starting point in describing individual creative potential. All items were measured using a five-point Likert (1932) scale ranging from Strongly Agree to Strongly Disagree.

Figure 5 - Control variable tenure and age.
3.3 Practised creativity

Five survey items that measure practised creativity are based on the distinctions identified by Hinton (1968, 1970) and the tested construct validity of Dilielo & Houghton (2008). These five items capture the employees perception of the perceived opportunities to use their creative potential, for example: “My creative abilities are used to my full potential at work”. All items were measured using a five-point Likert (1932) scale ranging from Strongly Agree to Strongly Disagree.

3.4 Contextual factors

To assess the contextual factors that affect motivation, the KEYS questionnaire (Amabile et al., 1996) has been chosen as the most appropriate instrument, because it is based on one of the leading theoretical models within organizational creativity (Zhou & Shalley, 2008). It focuses on the organizational environment for creativity and is particularly designed for: “...scholars interested in understanding contextual influences on creative behavior in work organizations” (Amabile et al., 1996, p 1162). The KEYS scales have acceptable factor structures, internal consistencies, high test-retest reliabilities, tested construct validity, preliminary convergent and discriminant validity (Amabile, et al., 1996). In contrast to previous creativity research (e.g. Woodman, 1993) that uncovered aspects of the work environment at different levels of the organization, KEYS focuses on the individual level. Amabile et al. (1996, p 1157) describe KEYS as having a focus on individuals’ perceptions and the influence of those perceptions on individual creativity. The underlying assumption is that self-report responses on a work environment questionnaire reveal the respondents’ perceptions. KEYS has been developed from a review of previous literature and by an interview study among 120 R&D scientists and technicians (Amabile & Gryskiewicz, 1987).

Even response Likert (1932) scales, without a mid-point, are used, conform the methodology adopted in other creativity research (e.g., Amabile et al., 1986). Even response Likert scales force respondents to make a choice between either side of the scale, and make it impossible to misuse the middle option as representing the alternative of “no opinion” (Kulas, Stachowski, & Haynes, 2008). This research extends the default four-point Likert (1932) scale to include distinct, separate ratings for never and always. Making the scale wider, enabling more options and thus making the instrument more sensitive. Keeping in mind that the six-point Likert (1932) scale is backwards-compatible with the four-point Likert (1932) scale, by combining “Always and almost always” and combining “Never and almost never”. This research will use the six-point scale for its calculus (never, rarely, sometimes, often, very often and always), but for full transparency and comparison with prior research, the results of the (backwards calculated) four-point Likert (1932) scale are added in Appendix B.
66 items on the current version of KEYS (Amabile et al., 1986) describe the work environment. All items on KEYS are written as simple descriptive statements of the work environment. The instructions define “current work environment” as “the day-to-day social and physical environment in which you currently do most or all of your work”.

There are 15 items measuring “Organizational support”, i.e. 8, 14, 18, 22, 28, 35, 40, 42, 45, 49, 50, 56, 61, 62 and 64. “Organizational support can best be described as an organizational culture that encourages creativity through the fair, constructive judgment of ideas, reward and recognition for creative work, mechanisms for developing new ideas, an active flow of ideas, and a shared vision of what the organization is trying to do” (Amabile et al., 1986, p 1166).

For “Supervisor encouragement” 11 items are used, i.e. 9, 21*, 27, 33*, 37*, 51, 59*, 60, 68, 72 and 73. “A supervisor who serves as a good work model, sets goals appropriately, supports the work group, values individual contributions, and shows confidence in the work group” (Amabile et al., 1986, p 1166).

“Work group support” is represented by 8 items, i.e. 6, 15, 19, 25, 29, 41, 58 and 67. “A diversely skilled work group in which people communicate well, are open to new ideas, constructively challenge each other’s work, trust and help each other, and feel committed to the work they are doing” (Amabile et al., 1986, p 1166).

Freedom is calculated by 4 items, i.e. 1, 12*, 23* and 44. “Freedom in deciding what work to do or how to do it; a sense of control over one’s work” (Amabile et al., 1986, p 1166).

The construct “Resources” is measured by 6 items, i.e. 26, 32, 46, 57, 63* and 75. “Access to appropriate resources, including funds, materials, facilities, and information” (Amabile et al., 1986, p 1166).

“Challenging work” is measured by 5 items, i.e. 2, 7, 36, 38 and 53. “A sense of having to work hard on challenging tasks and important project” (Amabile et al., 1986, p 1166).

“Organizational impediments” is calculated by 12 items, i.e. 4, 10, 16, 20, 24, 30, 34, 39, 43, 66, 77 and 78. “An organizational culture that impedes creativity through internal political problems, harsh criticism of new ideas, destructive internal competition, an avoidance of risk, and an overemphasis on the status quo” (Amabile et al., 1986, p 1166).

Finally “Workload pressure” is measured by 5 items, i.e. 3, 11*, 17, 31 and 70. “Workload pressure measures extreme time pressures, unrealistic expectations for productivity, and distractions from creative work” (Amabile et al., 1986, p 1166). Items marked with an * are reversed score items.
3.5 Control variables

Consistent with previous research (George & Zhou, 2007; Madjar, Oldham, & Pratt, 2002) we controlled for gender, year of birth, job tenure, education and department. A dichotomous variable was created for gender (1 = “female”, 2 = “male”) and age was calculated by year of birth. Research suggests that the role of age has neglected within the literature of organizational creativity (Binnewies, Ohly, & Niessen, 2008) and that age and gender may account for differences in practised creativity (Amabile et al., 2005; Carmeli & Schaubroeck, 2007; Janssen, 2001). Job tenure was measured in number of years and was controlled for because previous literature suggests that creative potential consists of domain specific knowledge which could be measured by job tenure (Oldham & Cummings, 1996; Tierney & Farmer, 2002). The ordinal variable education was measured with the educational scale used by Van der Heijden, Boon, Van der Klink, & Meijs (2009), ranging from middle to academic educational qualification. The educational level was controlled for because previous research (Baer & Oldham, 2006; Tierney & Farmer, 2004) indicates that people who hold different educational experience may develop different work attitudes and behaviors, such as creativity. Department was measured by a nominal variable to ensure a consistent spread of respondents throughout the organization.
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<th>F</th>
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N = 329, * Cronbach Alpha of DiLiello and Houghton (2008), ** Cronbach Alpha of Amabile et al. (1996)
* Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed).
4 Results

Table 1 presents the reliability coefficient (Cronbach, 1951), mean, standard deviation and correlations among the research variables. There are no significant correlations found above 0.7 among the variables. All variables showed acceptable reliability coefficients ($\alpha > 0.7$) indicating sufficient internal consistency and reliability of the variables, with the exception of variable freedom ($\alpha = 0.508$). Question 17 was removed from the construct workload pressure, which improved the Cronbach’s alpha from $\alpha = 0.717$ to $\alpha = 0.751$. Multicollinearity was examined by calculating the variance inflation factors (VIFs) for each of the regression equations. The maximum VIF value found was 2.596. Which is below the 10 rule of thumb used for maximum value (O’Brien 2007).

Multiple regression analyses were used to test our hypotheses. As recommended by Cohen, Cohen, West and Aiken (2003) we centered continuous predictor variables. The control variables are entered with the first step into the regression model. The independent and moderator variables are entered in the second step and the interaction terms are entered in the third step. This step sequence is recommended by Feldman (2004) to improve readability. Table 2 displays the results of the hierarchical regression analysis predicting practised creativity.

Results of the first step of the regression analysis showed that some control variables were significant in predicting practised creativity, i.e. tenure ($\beta = 0.087$, $p < 0.1$), department ($\beta = -0.098$, $p < 0.1$) and education ($\beta = 0.120$, $p < 0.1$). 3.7% (Adjusted $R^2$; $p < 0.001$) of practised creativity was determined by age, tenure, department, gender and education.

Results of Step 2 of the regression analysis showed that only 3 of the 8 moderators were significant ($p < 0.001$) to predict practised creativity, i.e. organizational support ($\beta = 0.161$), freedom ($\beta = 0.124$), challenging work ($\beta = 0.350$) and dependent variable creative potential ($\beta = 0.123$). All the control variables dropped below the significant level ($p > 0.1$). This model explains a variance of 58.6% (Adjusted $R^2$; $p < 0.001$) of practised creativity.
### Table 2: Hierarchical regression analysis predicting practised creativity

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<tr>
<th>Results of regression analysis (centralized)</th>
<th>Step 1 B (unstandardized)</th>
<th>Step 2 B (unstandardized)</th>
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<td>Organizational Support (OS)</td>
<td>0,161 *** (0,000)</td>
<td>0,186 *** (0,000)</td>
<td></td>
<td>0,224 *** (0,000)</td>
</tr>
<tr>
<td>Supervisor Encouragement (SE)</td>
<td>0,052 (0,231)</td>
<td>0,043 (0,321)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Group Support (WG)</td>
<td>0,008 (0,855)</td>
<td>0,023 (0,600)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freedom (F)</td>
<td>0,124 *** (0,001)</td>
<td>0,136 *** (0,000)</td>
<td>0,142 *** (0,000)</td>
<td></td>
</tr>
<tr>
<td>Resources (R)</td>
<td>0,001 (0,974)</td>
<td>-0,020 (0,595)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenging Work (CW)</td>
<td>0,350 *** (0,000)</td>
<td>0,310 *** (0,000)</td>
<td></td>
<td>0,335 *** (0,000)</td>
</tr>
<tr>
<td>Organizational Impediments (OI)</td>
<td>-0,053 (0,152)</td>
<td>-0,048 (0,213)</td>
<td>-0,056 (0,087)</td>
<td></td>
</tr>
<tr>
<td>Workload Pressure (WP)</td>
<td>-0,043 (0,244)</td>
<td>-0,038 (0,304)</td>
<td></td>
<td>-0,067 (0,053)</td>
</tr>
<tr>
<td>Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CP x OS</td>
<td>-0,100 * (0,022)</td>
<td>-0,067 * (0,060)</td>
<td>H2 not supported</td>
<td></td>
</tr>
<tr>
<td>CP x SE</td>
<td>-0,008 (0,846)</td>
<td>H3 not supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CP x WG</td>
<td>-0,020 (0,603)</td>
<td>H4 not supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CP x F</td>
<td>-0,037 (0,285)</td>
<td>H5 not supported</td>
<td></td>
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<tr>
<td>CP x R</td>
<td>0,046 (0,236)</td>
<td></td>
<td>H6 not supported</td>
<td></td>
</tr>
<tr>
<td>CP x CW</td>
<td>0,137 *** (0,000)</td>
<td></td>
<td>0,107 *** (0,001)</td>
<td></td>
</tr>
<tr>
<td>CP x OI</td>
<td>-0,043 (0,231)</td>
<td>H7 not supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CP x WP</td>
<td>-0,077 * (0,028)</td>
<td>H8 not supported</td>
<td></td>
<td>-0,082 ** (0,007)</td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Age</td>
<td>-0,024 (0,618)</td>
<td>0,035 (0,273)</td>
<td>0,035 (0,274)</td>
<td></td>
</tr>
<tr>
<td>Tenure</td>
<td>0,087 § (0,073)</td>
<td>0,035 (0,301)</td>
<td>0,042 (0,205)</td>
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<tr>
<td>Department</td>
<td>-0,098 * (0,036)</td>
<td>0,000 (0,980)</td>
<td>-0,011 (0,727)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0,005 (0,915)</td>
<td>0,007 (0,802)</td>
<td>0,006 (0,829)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>0,120 * (0,011)</td>
<td>0,015 (0,637)</td>
<td>0,012 (0,723)</td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0,037</td>
<td>0,586</td>
<td>0,601</td>
<td>0,604</td>
</tr>
<tr>
<td>Δ R²</td>
<td>0,552 *** (0,00)</td>
<td>0,024 ** (0,01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-value (Anova)</td>
<td>3,544 ***</td>
<td>34,162 ***</td>
<td>23,478 ***</td>
<td>63,590 ***</td>
</tr>
<tr>
<td>N (Sample Size)</td>
<td>329</td>
<td>329</td>
<td>329</td>
<td>329</td>
</tr>
</tbody>
</table>

Notes. p-values are reported between brackets

- * Correlation is significant at the 0.05 level (2-tailed).
- ** Correlation is significant at the 0.01 level (2-tailed).
- *** Correlation is significant at the 0.001 level (2-tailed)
In Step 3 of the regression analysis the interaction terms were entered into the regression. Results of Step 3 showed that the interaction terms explained an additional 1.5% of variance (Adjusted R²; p < 0.001) for practised creativity. The same moderator variables as previous step are significant (p < 0.001), organizational support (β = 0.186), freedom (β = 0.136), challenging work (β = 0.310) and creative potential (β = 0.138). Interaction terms creative potential X organizational support (β = -0.100; p < 0.1), creative potential X challenging work (β = 0.137; p < 0.001) and creative potential X workload pressure (β = -0.077; p < 0.1) turned out to be significant interactions for practised creativity. Therefore, we did not find significant support (p > 0.1) for the assumed moderating relationships and interactions for supervisor encouragement (hypotheses 2a and 2b not supported), work group support (hypotheses 3a and 3b not supported), resources (hypotheses 4a and 4b not supported) and organizational impediments (hypotheses 8a and 8b not supported). In order to avoid including impotent variables (Becker, 2005) and reduce the power of our analyses unnecessarily, we excluded all non-significant (p > 0.1) control, moderator variables and interactions from our study. Resulting in step 4, this final model shows a variance fit of 60.1% (Adjusted R²; p<0.001) for practised creativity including moderator variables organizational support (β = 0.224; p < 0.001), freedom (β = 0.142; p < 0.001) challenging work (β = 0.335; p < 0.001), creative potential (β = 0.118; p < 0.001) and workload pressure (β = -0.056; p < 0.1) and interactions of creative potential X organizational support (β = -0.067 p < 0.1), creative potential X challenging work (β = 0.107; p < 0.001) and creative potential X workload pressure (β = -0.082; p < 0.01). To examine the nature of the significant interactions, additional simple slope tests were executed. The plot was made for one standard deviation above and below the mean. The above-mean value was taken as high creative potential and the below-mean value was treated as a low level of creative potential. The pattern of the interaction effects can be seen in Figure 6. Examining the interaction between creative potential and organizational support on practised creativity showed that individuals were more likely to practise creativity when they perceive high organizational support (β = 0.188; p < 0.001), then when they received low organizational support (β = 0.217; p < 0.001), therefore, accepting hypotheses 1a and 1b. The interaction between creative potential and challenging work revealed that were less likely to practise creativity when they have weak work challenge (β = 0.160; p < 0.001), in contrary, strong work challenge wasn’t significant (β = 0.067; p > 0.1), thus rejecting hypotheses 6a and accepting 6b. The interaction of workload pressure showed that individuals are more likely to practise creativity when they perceive low workload pressure (β=0.252; p < 0.001), than if they perceived high workload pressure (β = 0.319; p < 0.001), hence accepting hypotheses 7a and 7b.
Developing Organizational Creativity

Figure 6 - Simple slope analysis of the moderators in the relationship between practised creativity and creative potential
5 Conclusion, discussion and implications

In this study the dominant creativity model of Amabile et al. (1996) has been extended with the findings of DiLiello and Houghton (2008). First the results about each of the contextual factors are discussed, followed by their managerial implications, this section ends with a statement of the empirical contributions.

The results highlight the significant moderating effect of organizational support (hypothesis 1) on the relationship between creative potential and practised creativity. This significant interaction provides evidence that employees are more motivated to practise their creative potential when an organization encourages risk-taking and supports idea generation. The contextual factor of organizational support can be influenced by the leaders of an organization by clearly demonstrating a strong orientation toward creativity and innovation throughout every layer of the organization. Furthermore organizational support can be enhanced by an orientation toward the generation, communication, careful consideration, and development of new ideas. This can be done by enhancing the active flow of ideas and embracing the potential power of every idea by fair, supportive and constructive judgment (Kanter, 1983).

The results show that supervisor encouragement (hypothesis 2) has no significant effect in motivating an individual in using its creative potential. Suggesting that creative potential - i.e. the individuals who perceive themselves as having the ability to be creative, the expertise to do well in one’s work and the ability to try out new ideas - are not negatively nor positively affected by goal clarity, open interaction or supervisor support for creative ideas. This study does not necessarily negate the importance of supervisor support for enhancing creativity, that was suggested by previous research. It is likely that the construct of supervisor support is more complex in its effect on encouraging creativity than is measured in our study. Some contributions (e.g. Zhou, 2003) have suggested that supervisor support correlates with creativity only under certain conditions, e.g. mood.

Although freedom (hypothesis 3) was found to be significant and positively related with practised creativity, it could not be stated that the autonomy in deciding what work to do or how to do it effects the link between creative potential and practised creativity, because the reliability of the freedom construct was too low ($\alpha < 0.7$) to validate empirical confirmation.

The construct resources (hypothesis 4) has also shown not to be significant in motivating an individual in using its creative potential. Therefore, the allocation of resources, e.g. funds, materials, facilities, knowledge and money does not significantly affect the motivation of an individual in practicing his/her creative potential. Many
studies suggest that high availability of resources enhances creative idea generation (e.g. Amabile et al, 1996; Cohen & Levinthal, 1990; Farr & Ford, 1990; Kanter, 1983), while other contributions contrast this statement by arguing that creativity thrives when having to deal with constraints. For example, a tight budget induces creative ways to make the most out of it (Mayer, 2006, p. 102). For some employees creativity is highest when working in an environment where resources are infinite, while others are more creative when working toward defined challenges and under limited availability of means. These contrasting reactions of employees to resource constraints suggest that organizations must try to find a proper balance for the allocation of resources for enhancing the creative process.

Also work group support (hypothesis 5) showed not to be significant in motivating creative potential and practised creativity, hence the output of an individual’s creative potential is not influenced by the encouragement of co-workers. This unexpected result is in line with previous findings of a growing number of studies (e.g. George & Zhou, 2001; Shalley & Oldham, 1997; Van Dyne, Jen & Cummings, 2002). These studies verify that there are also other factors, including contrasting factors from a work group that can be conducive for creativity, such as internal competition. Therefore, the dimension of work group support cannot be fully grasped by claiming that supportive co-workers are positively linked to creativity.

Challenge (hypothesis 6) was found to be negatively associated in moderating creative potential and practised creativity. Low challenge showed to be significant in restricting creative potential into practised creativity. In contrast, high amounts of work challenge did not prove to be significant. Therefore, management should be cautious about the negative effect of too little challenge on practised creativity, because it will decrease intrinsic motivation. Too low challenge can be avoided by matching the right person with the right job, in terms of creative potential (Carmeli, Cohen-Meitar & Elizur, 2007). When an employee perceives the job as unchallenging, he or she will not enjoy an enhanced sense of self-worth and will experience a decrease in practised creativity. This is in line with the findings of Orpen (1994).

Workload pressure (hypothesis 7) has a significant moderating effect on the motivation for creative potential and practised creativity. Results show that individuals with creative potential are more likely to practise creativity when they perceive low workload pressure and that they are less likely to practise creativity when they perceive high workload pressure. These results imply that it is important for an organization to provide an environment in which low workload pressure is fostered, so employees receive support for exploring alternative possibilities and generating new ideas, which are determinants for creativity. Inversely, high time pressures are perceived as controlling and thus have a negative effect on intrinsic motivation.
Organizational impediments (hypothesis 8) did not show to be significant for motivating the output of creative potential. Thus, an organizational culture that impedes creativity through conservatism, internal strife, rigid and formal management structures are not significant in inhibiting someone’s creative potential. This finding contrasts the few studies (Amabile & Gryskiewicz, 1987; Amabile et al., 1996) that have found a significant interaction of organizational impediments. This difference can be explained by looking at the exact content of the items of the KEYS questionnaire. They probe whether the organizational culture is perceived as impeding creativity. The non-significant link we found for organizational impediments as measured by KEYS might indicate that the employees do not perceive the organization as impeding, or that the organization does not have an impeding culture. Both explanations offer some plausibility. First, there might be a cultural difference in perceiving organizational impediments between Dutch employees and American ones who were addressed in previous research. Second, since the study was conducted within one organization, it could be the case that we just found little variance on this variable. This is also attested by the mean of this variable (Table 1) which is just above the midpoint of the scale, as well as the small standard deviation. Overall, the results suggest that employees do not perceive organizational impediments restricting creativity within their host organization. The final model with significant moderators and the values of their impact are presented in Figure 7.

The findings with respect to the constructs supervisor encouragement, work group support, resources and organizational impediments were not expected. Previous research (e.g., Amabile et al, 1996) provided empirical verification of the effects they have on practised creativity, while they are not significant in this study. One explanation can be found in the different constructs used to measure creativity, the
34 Developing Organizational Creativity

The construct of Amabile et al. (1996) used in past studies, and practised creativity of DiLiello and Houghton (2008) used in this study. Amabile et al. (1996)’s creativity construct is defined as “A creative organization or unit, where a great deal of creativity is called for” (Amabile et al., 1996, p 1166), while DiLiello and Houghton’s (2008) practised creativity concerns the perceived opportunities to use one’s creative potential. Being in a job position that does not require being creative does not mean an individual cannot be creative. Being an office clerk who perceives opportunities to practise his/her creative potential would result in a low score on the creativity construct of Amabile et al. (1996), while generating a high score on the practised creativity construct of DiLiello and Houghton (2008). This could be an explanation for the difference in result of this study and findings in previous empirical literature based on Amabile et al. (1996). When assessing the idea generation stage of individual employees, it is important to measure creative output by looking at the perceived opportunities to be creative as well as the creative potential that is present. Only then can we investigate whether and to what degree the contextual factors influence creativity, that is, the creative process in which creative potential is transformed into creative output. Therefore, we argue that the construct of DiLiello and Houghton (2008) is better suited for our research then the constructs defined by Amabile et al. (1996). This difference in the interpretations of the results means that the constructs of supervisor encouragement, work group support, resources and organizational impediments are not significant in influencing the perceived opportunities in utilizing creative potential.

The conclusions of this study have important managerial implications. In contrast to previous research, this study provides evidence that an organization must first hire people with creative potential and then must try to structure their employees’ environment in order to enhance the intrinsic motivation and thus practised creativity, so employees are more inherently motivated to find creative solutions. This study provides an initial investigation into the contextual factors, i.e. organizational support, challenge and workload pressure, that can be rehabilitated to enhance the practised creativity throughout the organization. Supporting the notion of the right people in the right place so an individual’s intrinsic motivation can be maximized. Finding the right people can be done by searching for employees with high creative potential that matches the job in areas of domain-specific knowledge, creative thinking skills and personality factors such as broad interests, autonomy and high creative self-efficacy. Nurturing the intrinsic motivation by the right place is a matter of finding a work environment that allows the retention of intrinsic motivation by promoting organizational support for creativity, providing adequate challenge and minimizing excessive workload pressure, which supports the exploration of new ideas and
encouragement of taking risks. These implications have an impact on several areas of the organization. They have an impact on the recruitment process, as it is vital to be able to identify candidates that already have the needed creative potential, which could be assessed by the questionnaire designed by DiLiello and Houghton (2008). This creative potential can be further enhanced by education and training of domain and creativity relevant skills. This study also has an effect on managers and supervisors as they have to nurture the intrinsic motivation by minimizing the creative obstacles which are presented by the environment, to allow the creative potential to bloom. Management in general can provide organizational support by encouraging an organizational climate that values creativity and innovation. This climate should entail motivating employees for creative behavior, knowing that exerting this kind of behavior requires much effort, time and could result in failure. Successfully applying these principles could result in an increase of practised creativity, which is the spark for innovation which can help companies differentiate themselves, with the ultimate goal of securing survival and improving performance (Hansen & Crespell, 2008).

This thesis adds to the current literature on organizational creativity in several ways. First, this research extends the model of Amabile et al. (1996) with the constructs of DiLiello and Houghton (2008). The results show that contextual factors influence motivation differently when the model is extended with the construct of creative potential, suggesting that creative potential is a significant added value to the current dominant creativity model. Second, this study answers the research question raised by DiLiello and Houghton (2008, p 44): “individuals with strong creative potential are more likely to practise creativity when they perceive strong support from the organization”. By positively answering this question the current literature on organizational creativity has been extended. Finally, this study is the first to focus on the effects that enhance or restrict the link between creative potential and practised creativity. This focus is important because it can help identify untapped creative resources and can give guidance on how the overall practised creativity throughout the organization can be maximized. With this study we hope to stimulate other research to focus on these important, yet undervalued, aspects of organizational creativity.

6 Limitations and directions for future research

Even though this research suggests interesting implications, it is nevertheless subject to certain limitations. First, the freedom scale used in this study is not reliable ($\alpha < 0.7$), although the scale was adopted from Amabile et al. (1996). Two of the four items where reversed and one question was flagged by the respondents as tough to comprehend: “I feel considerable pressure to meet someone else’s specifications in how I do my work”. Therefore, no empirical conclusions can be deduced from the
Developing Organizational Creativity

freedom construct, even though it has been flagged as significant in the hierarchical multiple regression. Further research should be directed toward improvement of the reliability of the freedom scale, perhaps by further refining the items, by the addition of items and the collection of additional convergent and discriminant validity data, like the freedom scale used by Cohen-Meitar, Carmeli & Walman (2009).

A second limitation could be the limited view used in this study on the organizational creativity dimension. In current literature, many other aspects of motivation have been researched that influence creativity, like trust (Madjar & Ortiz-Walters, 2009), mood (Madjar, 2002), job dissatisfaction (Zhou & George, 2001), creative self-efficacy (Houghton & DiLiello, 2010), job complexity (Hatcher, Ross & Collins, 1989), evaluation (Zhou, 1998), time deadlines, goals (Amabile, Hadley & Kramer, 2002), spatial configuration of work settings (Soriano de Alencar & Bruno-Faria, 1997), dimensions of the bureaucratic organization (Cummings et al., 1975), idea time, risk taking, conflicts, debates, humor, playfulness (Ekval,1996), self-determination (Deco & Ryan, 1985), competence (Bandura, 1997), task involvement (Csikszentmuhalyi, 1997), interest (Bandura, 1997), coaction, expected evaluation, goal setting (Shalley, 1995), restricted choice (Amabile & Gitomer, 1984) or even time of day (Wang, Peck & Chern, 2010). Shalley et al. (2004) argues that it is necessary to consider the interactions between this non-exhaustive list of personal and contextual characteristics on creativity and interactions among these different characteristics to fully understand creativity. Future research should try to achieve a more comprehensive picture of the complex organizational creativity model, with the aim to improve the variance of the organizational creativity model and to combine the current literature into a single dominant model.

A third limitation is the homogenous sample used in this study. As the sample population consisted entirely of members of a single Dutch telecommunications organization, it is uncertain as to whether the results reported here would generalize to other samples of interest. Therefore, future study should try to replicate this study in other settings to see if these findings apply to a more broad population.

A fourth limitation is one of bias and causality, because this research has been conducted using a single survey at a single point in time. Thus measuring the independent and dependent variables at the same time. Therefore, one cannot conclude that one factor caused another factor, just that they may be associated with each other. Given this potential problem, our findings should be viewed with some degree of caution. Future study should survey on multiple points in time to confirm causality and investigate whether changes in policy could have an impact on the results.
A fifth limitation is caused by self-assessment. An employee could be categorized one way on a self-assessment instrument, but perceived quite differently by a supervisor, a customer or a colleague. It could be helpful if future studies attempted to include multiple evaluations of employees’ creativity, in order to see whether there is good interrater reliability, with the aim to improve objectivity in creativity measurements or if particular evaluators are more appropriate under certain circumstances.

Finally, our study uses a restricted measurement for creative potential. As defined in the componential theory of creativity (Amabile et al., 1996), creative potential refers to an individual’s personality factors, creativity-relevant skills and domain-specific knowledge. Yet the creative potential construct defined and validated by DiLiello and Houghton (2008) only focuses on creative self-efficacy, risk-taking and the talent to do well in one’s work. Future study should try to enhance the creative potential construct by adding dimensions of an individual’s personality factors, creativity-relevant skills and domain-specific knowledge. Individual personality factors could be measured with the creative personality scale (CPS) defined by Gough (1979). Measurement for creativity-relevant skills and domain-specific knowledge described in the componential theory of creativity are presented in Table 3. Future research could integrate some of these aspects into the creative potential construct. This would lead to a better assessment of the hypotheses: “Creativity is highest when an intrinsically motivated person with high domain expertise and high skill in creative thinking works in an environment high in support for creativity”. Such research could help to provide a framework that would aid organizations in assessing and reducing the gap between creative potential and practised creativity, that could lead to enhanced organizational innovation.

Table 3 - Methods of assessing the elements of creativity

<table>
<thead>
<tr>
<th>Creativity-relevant skills</th>
<th>a) Intelligence tests</th>
<th>b) Skill/Achievement tests</th>
<th>c) Education level reports/experience level reports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) IQ tests; Scholastic Aptitude Tests</td>
<td>b) Academic examinations</td>
<td>c) The Biographical inventory: Creativity (Schaefer, 1969).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>c) Reports of tenure within a field or an organization.</td>
</tr>
<tr>
<td>Domain-specific knowledge</td>
<td>a) Creative-thinking ability tests (fluency, flexibility, originality, and/or elaboration)</td>
<td>b) Cognitive style assessments</td>
<td>c) Personality inventories</td>
</tr>
<tr>
<td></td>
<td>a) Torrance tests of creative thinking (Torrance, 1966)</td>
<td>a) Remote associates test (Mednick &amp; Mednick, 1967)</td>
<td>a) Unusual uses test (Guilford, 1967)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Kirton Adaption-Innovation Inventory (Kirton, 1976)</td>
<td>b) Jabri, 1991</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) Adjective check list (Gough &amp; Heilbrun, 1983)</td>
<td>c) Barron-Welsh Art Scale (Welsch &amp; Barron, 1963)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Kirton Adaption-Innovation Inventory (Kirton, 1976)</td>
<td>c) Myers-Briggs Type Indicator (Myers, 1962)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Kirton Adaption-Innovation Inventory (Kirton, 1976)</td>
<td>c) Neo Personality Inventory (Costa &amp; McCrae, 1985)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b) Jabri, 1991</td>
<td>d) Creativity Styles Questionnaire (Kumar, Kemmler, &amp; Holman, 1997)</td>
</tr>
</tbody>
</table>

References


Carmeli, A., & Schaubroeck, J. (2007). The influence of leaders’ and other referents’ normative expectations on individual involvement in creative work. Leadership Quarterly, 18, 35–


Appendix A: Survey invitation

Survey invitation:

Date: Friday 17 September 2010
From Mail: STUDENT
From Name: SPONSOR (COMPANY Survey)
Subject: Creativity within COMPANY

Dear,

You have been selected for a confidential online survey to obtain an impression of your current work environment within COMPANY. The 80 English multiple-choice questions will take less than 15 minutes of your time.

This invitation is an opportunity to anonymously show COMPANY’s management how you perceive workplace pressures. Your input will be used in STUDENT’s study for the UNIVERSITY, sponsored by SPONSOR.

To thank you for your participation, you will receive a free copy of the survey report.

To participate, please click on the survey link below. Your individual responses will remain strictly confidential.

HTTP://INTERNALSURVEYLINK

For more information you can contact STUDENT.

Your opinion is highly appreciated.

SPONSOR
Survey reminder:

Date: Thursday 1 October 2010  
From Mail: STUDENT  
From Name: SPONSOR (COMPANY Survey)  
Subject: Creativity within COMPANY (reminder)  

Dear,

Two weeks ago, you received an invitation for a confidential online questionnaire to obtain a picture of your current work environment within COMPANY. The 80 English multiple-choice questions will take less than 15 minutes of your time.

This reminder is an opportunity to show the management of COMPANY, how you perceive workplace pressures. Your input will be used in an empirical master study for UNIVERSITY.

To thank you for your effort, you will receive a free copy of the survey report.

To participate, please click on the survey link below. Your individual responses will remain strictly confidential.

HTTP://INTERNALSURVEYLINK

For more information you can contact STUDENT.

Your response is greatly appreciated.

SPONSOR
## Appendix B: Results with (backwards calculated) Likert 4 scale

Table 4 Means, standard deviations, cronbach alpha and correlations

<table>
<thead>
<tr>
<th>Items</th>
<th>CA</th>
<th>Mean</th>
<th>St. Dev.</th>
<th>PC</th>
<th>CP</th>
<th>OS</th>
<th>SE</th>
<th>WG</th>
<th>R</th>
<th>F</th>
<th>OI</th>
<th>WP</th>
<th>CW</th>
<th>Age</th>
<th>Tenure</th>
<th>Dept</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practised creativity (PC)</td>
<td>6</td>
<td>0.793</td>
<td>2.813095</td>
<td>0.7155884</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Potential (CP)</td>
<td>5</td>
<td>0.777</td>
<td>3.3135</td>
<td>0.48247</td>
<td>0.333**</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Organizational support (OS)</td>
<td>15</td>
<td>0.897</td>
<td>2.3450</td>
<td>0.58845</td>
<td>0.590***</td>
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<td>0.382**</td>
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<td>0.053</td>
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<td>0.024</td>
<td>-0.110**</td>
<td>-0.015</td>
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<td>0.144**</td>
<td>0.083</td>
<td>0.008</td>
<td>0.026</td>
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<td>0.192**</td>
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<td>0.076</td>
<td>0.183**</td>
<td>-0.048</td>
<td>-0.183**</td>
<td>-0.299**</td>
<td>0.107</td>
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</tbody>
</table>

N = 329, *Cronbach’s Alpha of DiLiello and Houghton (2008), **Cronbach’s Alpha of Amabile et al. (1996)

* Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed).
### Table 5: Hierarchical regression analysis predicting practised creativity

<table>
<thead>
<tr>
<th>Regression (centralized)</th>
<th>Step 1 B (unstandardized)</th>
<th>Step 2 B (unstandardized)</th>
<th>Step 3 B (unstandardized)</th>
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<tbody>
<tr>
<td><strong>Constant</strong></td>
<td>2,812 *** (0,000)</td>
<td>2,812*** (0,000)</td>
<td>2,815*** (0,000)</td>
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<tr>
<td><strong>Independent Variable</strong></td>
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<tr>
<td>Creative Potential (CP)</td>
<td>0,112 *** (0,000)</td>
<td>0,116 *** (0,000)</td>
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<tr>
<td><strong>Moderator variables</strong></td>
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<td></td>
</tr>
<tr>
<td>Organizational support (OS)</td>
<td>0,136 *** (0,001)</td>
<td>0,147 *** (0,000)</td>
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<tr>
<td>Supervisor Encouragement (SE)</td>
<td>0,051 (0,170)</td>
<td>0,051 (0,180)</td>
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<tr>
<td>Work Group Support (WG)</td>
<td>0,004 (0,922)</td>
<td>0,016 (0,695)</td>
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</tr>
<tr>
<td>Freedom (F)</td>
<td>0,127 *** (0,000)</td>
<td>0,128 *** (0,000)</td>
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<tr>
<td>Resources (R)</td>
<td>-0,004 (0,905)</td>
<td>-0,013 (0,704)</td>
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<tr>
<td>Challenging Work (CW)</td>
<td>0,319 *** (0,000)</td>
<td>0,299 *** (0,000)</td>
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<tr>
<td>Organizational impediments (OI)</td>
<td>-0,047 (0,145)</td>
<td>-0,035 (0,286)</td>
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<tr>
<td>Workload Pressure (WP)</td>
<td>-0,026 (0,430)</td>
<td>-0,025 (0,443)</td>
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<tr>
<td><strong>Interactions</strong></td>
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<tr>
<td>CP x OS</td>
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<tr>
<td>CP x SE</td>
<td>-0,009 (0,811)</td>
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<td>CP x WG</td>
<td>-0,016 (0,668)</td>
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<tr>
<td>CP x F</td>
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<tr>
<td>CP x R</td>
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<tr>
<td>CP x CW</td>
<td>0,087 ‡ (0,027)</td>
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<tr>
<td>CP x OI</td>
<td>-0,040 (0,233)</td>
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<tr>
<td>CP x WP</td>
<td>-0,028 (0,386)</td>
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<td><strong>Dummy Variables</strong></td>
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<td>0,031 (0,282)</td>
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<tr>
<td>Tenure</td>
<td>0,083 ‡ (0,057)</td>
<td>0,039 (0,186)</td>
<td>0,043 (0,148)</td>
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<td>Department</td>
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<td>0,004 (0,884)</td>
<td>-0,004 (0,898)</td>
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<tr>
<td>Gender</td>
<td>0,005 (0,897)</td>
<td>0,010 (0,704)</td>
<td>0,009 (0,729)</td>
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<tr>
<td>Education</td>
<td>0,104 ‡ (0,013)</td>
<td>0,004 (0,878)</td>
<td>0,005 (0,871)</td>
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<td>Adjusted R&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>0,593</td>
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<td>F-value (Anova)</td>
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<td>35,092 ***</td>
<td>22,676 ***</td>
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<td>N (Sample Size)</td>
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</table>

Notes. p-values are reported between brackets, ‡ Correlation is significant at the 0.1 level (2-tailed), ** correlation is significant at the 0.01 level (2-tailed), *** Correlation is significant at the 0.001 level (2-tailed)