



ISCTE Business School

Anger and Creative Process Engagement in the Organisational Context

Carla Filipa Gomes da Costa

A Thesis presented in partial fulfilment of the Requirements for the Degree of
Doctor in Human Resources Development and Management

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ABSTRACT

The study of affect related to creativity has been relied on the valence-based approach, considering differences between positive and negative emotions. The valence dimension has been the distinct factor among each group of emotions, instead of analysing discrete emotions with particular characteristics and how they affect creativity (Baas, De Dreu & Nijstad, 2008; George & Zhou, 2002). The goal of this dissertation is to consider the specificity of one discrete emotion – anger – based on the specific emotion approach, which asserts that each emotion has its idiosyncrasies (Lerner & Keltner, 2000; Zeelenberg & Pieters, 2004). It was studied anger relationship with creative process, which is the process leading to creative outcomes and that has been less studied than creative outcomes (Shalley & Gibson, 2004). This relationship included the interaction effects of some relevant moderators. The first article studies individual characteristics influencing creative process engagement, such as state anger and trait anger temperament. Emotion regulation as a moderator of these relationships was considered, as an emotional skill influenced by social norms. The second article discusses the existing differences in the relationship between anger and the three levels of creative process engagement. It is also considered the relevance of contextual factors in this relationship by analysing the moderation role of co-worker support and relationship conflict. The third article attempts to study how anger is caused by emotional exhaustion and competitive psychological climate. The main contributions are discussed from a human resources development and management perspective.

Keywords: anger; creative process engagement; organisational context; daily diary studies

RESUMO

A relação entre afeto e criatividade tem vindo a ser estudada pela abordagem centrada na valência, a qual diferencia a existência de emoções positivas e emoções negativas, (a dimensão valência é o fator distintivo entre estes dois grupos de emoções), em detrimento da análise de emoções particulares cada qual com características próprias (Baas, De Dreu & Nijstad, 2008; George & Zhou, 2002). O objetivo desta dissertação é considerar uma emoção específica – a ira – com base na abordagem emocional específica, a qual defende que cada emoção possui as suas idiossincrasias (Lerner & Keltner, 2000; Zeelenberg & Pieters, 2004). Foi estudada a relação da ira com o envolvimento no processo criativo, o qual consiste no processo que conduz a resultados criativos e o qual tem sido menos estudado comparativamente ao estudo dos resultados inerentes a esse mesmo processo (Shalley & Gibson, 2004). No estudo desta relação foram incluídos os efeitos de interação de algumas variáveis moderadoras relevantes. O primeiro artigo debruça-se sobre as características comuns e as diferenças entre a ira – como estado emocional e como traço disposicional – e o envolvimento no processo criativo, bem como o papel moderador da regulação emocional nestas interações. O segundo artigo discute as diferenças entre os três níveis de envolvimento no processo criativo e o papel moderador do suporte emocional por parte dos colegas de trabalho e o papel do conflito relacional. O terceiro artigo pretende estudar de que modo a ira é explicada pela exaustão emocional e pelo clima psicológico competitivo percebido. As principais contribuições são discutidas numa perspetiva de gestão e desenvolvimento de recursos humanos.

Keywords: ira; envolvimento no processo criativo; contexto organizacional; estudos diários

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INTRODUCTION

Creativity is seen as the key competence to organisations survival in a fast changing and globalised environment, dictating a continuous performance improvement of employees' skills (Baker & Sonnenburg, 2013; Hennesey & Amabile, 2010). Creativity can also be seen as a strategic challenge to human resource development and management to know how to conciliate personal and organisational creative purposes, defining which strategies should be implemented within specific practices (Gibb & Waight, 2005; Waight, 2005).

The conceptual definition of creativity indicates an outcome from new and useful ideas, which could add value to a company in what is produced, or in the way a service is delivered (Amabile, Conti, Coon, Lazenby & Herron, 1996; George, 2007). Despite the fact that creativity can be understood as either a process, or a product (an observable outcome), there is a logical sequence between them. Although scholars recognised the relevance of examining creativity as a process, the creativity-as-outcome approach has received a lot more research interest (Shalley, Zhou & Oldham, 2004; Zhang & Bartol, 2010a). This might be quite surprising because a deep understanding of the creative process may identify factors that foster or hinder creative outcomes. The existing literature on creative process has underlined a complex and non-linear process that has sub-processes (Amabile, 1983; Lubart, 2001). As stated in the componential model of creativity the response generation process results from four stages – problem presentation/problem to be solved; preparation; response generation; and response validation (Amabile, 1983). The components that influence these stages were identified as being: task motivation; domain relevant skills; creativity relevant skills; and social environment.

Studied widely by an outcome-approach, creativity has been mainly focused on answering to the question – “how to improve individual and organisational factors leading to creative outcomes?” (Drazin, Glynn & Kazanjian, 1999). Contrary to this approach, an alternative view has been developed. The latter regards creativity as a process-approach, in which the intra-subjective level plays the main role analysing the psychological engagement in creative tasks based on a time level (Drazin et al., 1999; Zhang & Bartol, 2010a). The employee involvement in creative process was designated by creative process engagement (CPE) including three cognitive processes: problem identification; information searching and encoding; and individual generation of ideas and alternatives (Zhang & Bartol, 2010a; 2010b). CPE improves creativity understanding not only explained by stable individual factors (e.g.

cognitive processes) but also as a process that is prone to be influenced by an interaction of unstable individual conditions (e.g. emotions) and contextual factors (To, Fisher, Ashkanasy, & Rowe, 2012). A multilevel approach to CPE considers the interplay of different but complementary levels of analysis that could be better explained by the interactionist model of creative behaviour (Woodman, Sawyer & Griffin, 1993). Therefore, according to the interactionist model employee engagement in creative tasks is explained as a function of multiple inter-influences between different levels, such as individual, interpersonal and organisational (Woodman et al., 1993). In contrast to an added effect of creativity conceptualisation as a result of individual, cognitive and social factors improvements - as the componential theory asserted (Amabile, 1983) - an interplay perspective between all these factors has been the result of creativity research development (Zhou & Hoever, 2014). Henceforth, the study of creativity in organisational context implies examining mutual influences of personal and contextual factors. Therefore, this thesis will analyse personal and contextual factors related to creativity, as possible moderators that could foster or hinder the employees' engagement in the creative process.

The study of creativity at work has been characterised as an affective event especially by the cognitive effects that influence creative actions (Amabile, Barsade, Muller, & Staw, 2005). Despite having been widely studied the relationship between affect and creativity is characterised by inconclusive data about the role positive and negative moods play with regard to creativity (Bledow, Rosing & Frese, 2013; Hennessey & Amabile, 2010). The inconclusive findings revealed by data contradictions may suggest that the relationship between affect and creativity is vastly more complex than studies have hitherto shown. Firstly, there is a distinction to be made about affective states studied such as emotions and moods (Gross & Thompson, 2006). Emotions reveal a transitory positive (e.g. happiness) or negative (e.g. sadness) affective state activated by specific events and its intensity could alter thought processes related to behavioural response tendencies (Brief & Weiss, 2002). By contrast, moods are longer emotional states not identified with a particular stimulus and their intensity is not sufficient to interrupt thought processes, they are also related to broad action tendencies, such as approach or withdrawal. Thus, studying moods or specific emotions related to creativity could lead to different results. Moreover, the research approach mainly used - valence-based approach - excludes other relevant affective dimensions apart from the hedonic principle (Higgins, 1997; Zeelenberg & Pieters, 2006). This approach relates negative moods to more negative consequences (e.g. dissatisfaction) and positive moods to more positive

consequences (e.g. satisfaction), and predicts that emotions of the same valence would produce similar judgements. The mood-creativity literature (Bass et al., 2008) related to the valence-based approach has been characterised by controversial data because some researchers allege that positive moods could be related to less creativity, due to the use of heuristics, and that, in certain conditions, negative affect leads to more creativity. These studies were based on mood-as-information-perspective that proves an existing positive relationship between negative mood and creativity compared to positive mood (George & Zhou, 2002; 2007; Kaufman, 2003). The controversial results may reveal an oversimplification caused not only by the theoretical perspective but also by the methodological approach used (appraising moods as two groups – positive or negative). The valence based approach studies affect as generalised positive and negative mood groups aggregating affect exclusively on a valence dimension (Lerner & Keltner, 2000).

Conversely, the relationship between affect and creativity could be better understood through the study of particular characteristics of each emotion taking into account the specific emotions approach instead of the valence-based approach. Scholars have generally recognised the importance of studying discrete emotions and their particular relationship with creativity (Lerner & Keltner, 2000; Zeelenberg & Pieters, 2004). Based on the specific emotion approach the study of each discrete emotion must specify its own characteristics, such as antecedents and consequences, which could differ from other emotions of the same valence (Foo, 2011; Lerner & Keltner, 2000). This approach highlights the idiosyncratic elements of each emotion, i.e., each emotion can have different cognitive appraisal tendencies, behavioural tendencies and behavioural consequences (Frijda, 2005; Rosenam, Wiest & Swartz, 1994). Thus, it is strongly based on the appraisal theory of emotions (Lerner & Keltner, 2001; Scherer, Schorr & Johnstone, 2001), which holds that specific cognitive appraisal of a situation is responsible for emotion elicitation and emotion differentiation and also for judgments and choice outcomes.

In an attempt to understand the specificity of negative affect related to creativity this thesis studied one particular emotion – anger – by understanding its impact on employees' CPE. In spite of its idiosyncratic characteristics, anger has not been widely part of the research agenda related to creativity in organisational context (Brief & Weiss, 2002). The few studies conducted about the anger-creativity link have produced inconclusive and even contradictory results (e.g. James, Brodersehn & Eisenberg, 2004; Van Kleef, Anastasopoulou & Nijstad, 2010). As one of the most common and studied emotions with great social impact

anger idiosyncrasies are involved in appraisals of causes related to goal interference by an external agent (Berkowitz & Harmon-Jones, 2004). Even if researchers have classified anger as a negative emotion, there are anger characteristics that do not match common negative emotions (e.g. anger proved to be related to approach motivation inherent to the brain left cortical region attributed to positive emotions and also anger optimism about one's own outcomes) which could predict a different impact on creativity contrary to data related to negative moods in general (Lerner & Tiedens, 2006). Anger is a discrete emotion that could be observed on different organisational levels, such as individual characteristics, interpersonal relationships and in socio-cultural norms, whose double consequences can be considered as dysfunctional or functional effects (Fitness, 2000; Gibson & Callister, 2010, for a review). The study of anger has increased in recent years in organisational context, it is thus characterised by defined conceptual knowledge related to a particular and distinctive construct dealing with a set of antecedent events and consequences (Gibson & Callister, 2010). Therefore, anger is a discrete emotion worth studying as it is present daily in organisational context (Basch & Fisher, 1998) and due to its own characteristics different from other negative emotions, such as specific physiological reactions, specific cognitive appraisals, specific action tendencies and behavioral expressions (Berkowitz & Harmon-Jones, 2004; Frijda, 1986).

The relationship between anger and employees' engagement in creative process could be explained by the dual pathway model (De Dreu, Baas & Nijstad, 2008) in which the conjugation of negative affect with the higher level of activation of anger increases perseverance. Additionally, Baas, De Dreu & Nijstad (2011; 2012) have identified a specific anger cognitive functioning leading to more idea generation at the beginning of the creative process. In order to contribute to research understanding of anger and employees' engagement on the creative process three studies were conducted. Theoretically, the study of anger was based on a specific emotion approach (Lerner & Keltner, 2000; Lerner & Tiedens, 2006) according to which anger is conceptualised as having particular characteristics. Anger was defined as an approach-tendency emotion (Carver & Harmon-Jones, 2009) that could predict different results related to creativity compared to negative moods in general. Creativity was theoretically considered by a process-approach (Zhang & Bartol, 2010a) and based on an interactionist model of creative behaviour (Woodman et al., 1993), considering individual and social factors as having mutual influences. On the whole, this thesis is drawing on a functionalist perspective of emotions considering individual and social functions of

anger's impact on CPE (Keltner & Gross, 1999; Keltner & Haidt, 1999). Adopting a within-perspective approach studying a discrete emotion impact on individual CPE, a daily methodology design was used (Ohly, Sonnentag, Niessen & Zapt, 2010) in two studies by appraising the emotion variation across a working week.

To understand the differences between anger as a stable condition (trait anger) and as a dynamic state (state anger) and their impact on creativity study 1 was conducted, taking a daily design. In spite of the few studies relating anger to creativity there has not been an interest in studying anger differences based on anger state-trait theory (Deffenbacher et al., 1996; Forgas, Forgas & Spielberger, 1997). How may anger as a state or as a personality trait influence employees' engagement differentially in the creative process? On the other hand, the relationship between different anger conditions – state or trait – could have different emotional expressions due to a conjunction of individual characteristics with contextual factors according to work socio-emotional regulation rules. Therefore, based on the emotion regulation theory (Gross, 1989a; 1989b) two emotional regulation strategies were studied as moderators of state and trait relationships with CPE.

Considering the impact of anger on CPE in study 1, the purpose of conducting study 2 was to test possible differences between anger relationships at each of the three stages of the CPE, taking a cross-sectional design. In line with the attempts to study each sub-process of the CPE (e.g. Yuan & Zhou, 2008) - as each one has proper cognitive and motivational resources – anger is expected to have a different relationship with each creative sub-process. Scholars have shown the relevance of social contextual factors in creativity increase, especially contextual support improving all creative characteristics (Zhou & Hoever, 2014). Thus, co-workers' support (George & Zhou, 2007) was studied as a moderator considering its positive impact on the relationship between anger and each phase of the CPE. By contrast, relational conflict was also considered as a moderator having an opposite influence comparing to social support (West, 2002). Finally, in study 3 the intention was to learn more about anger antecedents based on the work affective events theory (Weiss & Cropanzano, 1996) with a daily design. In spite of the fact that anger is a negative emotion regulated by organisational display rules (Goldberg & Grandey, 2007) there are daily organisational demands as a result of socio-economic challenges that lead to employees' anger feelings (Bolino & Turnley, 2003; Sparks, Faragher, & Cooper, 2001). Therefore, the inner condition

of emotional exhaustion and the interplay between individual and social context revealed by competitive psychological climate were studied as antecedents of anger.

Overview of the thesis

This dissertation aims to know more about the relationship between anger and the CPE in organisational context and is comprised of three articles. The sample used was composed of 98 employees and 422 responses during a working week (five consecutive days), from three multinationals companies in Portugal. The main goal addressed is identifying the influence of specific personal characteristics and social factors as possible moderators of the relationship between anger and CPE in a within-perspective.

The first article (chapter 1) studies the differences between state anger and trait anger temperament effects across time predicting a specific outcome – CPE. The impact of two particular emotion regulation strategies (reappraisal and suppression) as individual characteristics is studied in the relationships state anger-CPE and trait anger-CPE. The second article (chapter 2) considers the relationship between state anger and each stage of CPE (1- problem identification; 2- information searching and encoding; and 3- idea generation) in a cross-sectional setting, studying how anger cognitive process is related to each creative process stages. The moderation effect of contextual factors such as co-worker support and relationship conflict are studied as moderators of the relationship between anger and each stage of the CPE. The third article (chapter 3) analyses on a daily basis emotional exhaustion and competitive psychological climate as antecedents of anger.

At the end a general conclusion is presented by discussing overall contributions and implications, and future research directions.

1. State and Trait Anger predicting Creative Process Engagement - the role of emotion regulation

1.1. Abstract

Drawing on the specific emotion approach and based on the emotional regulation theory and cognitive and activation perspectives on emotions, this study examined the differentiated impact of state and trait anger on creative process engagement (CPE) and the moderating influences of emotion reappraisal and suppression. Data were obtained from daily surveys ($N = 422$) of 98 employees from three consultancy companies in Portugal. Hierarchical linear modelling analysis revealed that trait anger has a stronger impact on CPE than state anger does. Furthermore, the relationship between state anger and CPE is stronger when emotion reappraisal is weaker, rather than stronger, and the relationship between trait anger and CPE also is stronger when emotion suppression is weaker, rather than stronger.

Keywords: state anger; trait anger temperament; creative process engagement; emotion regulation

1.2. Introduction

Currently, organisations' survival is deeply connected to the creative competencies of their human resources (Baker & Sonnenburg, 2013; Hennessey & Amabile, 2010). Being creative is one of the most significant employee skills required for the construction of new and adequate solutions that sustain competitive advantages among competitors (Zhou & Pan, 2015). Affect plays a significant role in work contexts given its power to foster or hinder creativity (Amabile, Barsade, Mueller, & Staw, 2005; Zhou & Hoever, 2014). Despite extensive research, the relationship between negative affect and creativity has unexpectedly generated multiple and even contradictory conclusions (Amabile et al., 2005; Hennessey & Amabile, 2010; Shalley, Zhou, & Oldham, 2004). Valence-based approach has been the dominant research perspective, in which researchers study two generalised groups of affect, such as positive and negative moods (Baas, De Dreu, & Nijstad, 2008). As a result, generalised conclusions have been reached about positive and negative affect (i.e., moods) related to creativity, instead of the specific impact of individual emotions. Based on this approach, the relationship between negative affect and creativity has proven to be weaker

when compared to positive affect, and this relationship is mainly context dependent due to the role of moderators (Baas et al., 2008; George & Zhou, 2002). Therefore, studying other dimensions of affective states - especially specific emotions related to creativity - may contribute to a clearer understanding of these mixed findings (Amabile et al., 2005; Gibson & Callister, 2010).

In the case of creativity studies, the approach to creativity as an outcome has been the dominant research interest (Shalley et al., 2004; Zhang & Bartol, 2010a), focusing on a final result that can be identified as a new product or service. However, a deeper understanding of creative processes may improve empirical knowledge about enhancing creative results. Thus, the present study focused on creative process engagement (CPE), which is related to how employees engage in problem identification, information search and solution generation activities as antecedent processes leading to creative outcomes (Gilson & Shalley, 2004; Zhang & Bartol, 2010a). CPE studies also have considered individuals' unstable emotional conditions as moods related to creativity (To, Fisher, Askanasy, & Rowe, 2012).

In answer to these research challenges and to broaden the understanding of the role of negative emotions with regard to creativity, this study sought to examine a particular negative emotion, in this case anger. Since anger has particular characteristics that make it different from other negative emotions, such as persistence and promotion focus (De Dreu, Baas, & Nijstad, 2008), and that lead to performance enhancement (Hanin, 2004; Lazarus, 2000), it is worthwhile studying anger in relation to creativity.

Although anger has mostly been studied as part of an all-inclusive negative affect group, some attempts have been made to study anger as a discrete emotion related to creativity (Baas et al., 2008). However, thus far, the findings are inconclusive about anger's positive or detrimental impacts on creativity (e.g., James, Brodersen, & Eisenberg, 2004; Van Kleef, Anastasopoulou, & Nijstad, 2010), and little research has been done in organisational settings (Brief & Weiss, 2002). In the specific case of a positive impact of anger on creativity, Baas et al. (2011) identified a significant influence on the first stages of creative processes, in an experimental setting. This positive impact is due to the cognitively unstructured processing of information caused by anger (Baas, De Dreu, & Nijstad, 2012).

Differences have been noted between state and trait anger, according to state-trait anger theory (Deffenbacher et al., 1996; Forgas, Forgas, & Spielberger, 1997), as state anger is a transitory emotional condition and trait anger is a personality trait. However, to the best of our knowledge, little evidence has been found for the different contributions of state and trait

anger to organisational outcomes such as creativity. The existing literature emphasizes the role of trait anger in negative (e.g., Ilie, Penney, Ispas, & Iliescu, 2012) or positive (e.g., Pietroska & Armony, 2013) outcomes but neglects the role of state anger. As anger influences cognitive processes leading to creativity (Baas et al., 2011), the impact of state anger - including variations of intensity and duration - or as a trait (i.e., a stable characteristic) might have different consequences in creative processes. Therefore, the present study sought to analyse the impact of both state and trait anger on CPE.

The relationship between specific negative emotions, such as anger, and creativity also entails a complex interactive process that associates personal characteristics with contextual factors (George & Zhou, 2002; Zenasni & Lubart, 2008; Zhou & Hoever, 2014). In organisational settings, anger expression is socially regulated, including sanctions for those who do not respect these rules (Geddes & Callister, 2007). Anger regulation in organisations has been widely examined in customer service (i.e., emotional labor), in which anger expression needs to be suppressed (Grandey, 2000; Grandey & Gabriel, 2015; Hochschild, 1983).

Based on emotional regulation theory (Gross, 2014), this study examined the role played by two emotion regulation strategies (i.e., reappraisal and suppression) as moderators of the relationship between anger and CPE. Reappraisal is a strategy that occurs before the impact of an emotion starts. In contrast, suppression is a strategy activated when an emotion is occurring, having little impact on its reduction. Thus, this study constitutes a first attempt to understand how different emotion regulation strategies affect the strength and/or direction of the relationship between state and trait anger and employees' CPE.

In social domains, regulating anger expression could have a beneficial effect, preventing aggression, interpersonal revenge, and a harmful organisational climate (see Gibson and Callister [2010] for a review). Taking into consideration individual emotional variations from a within-person perspective and anger in cognitive functioning (Baas et al., 2011) as these relate to idea generation processes, a relevant question may be to what extent emotion regulation can increase or decrease the impact of state and trait anger on creativity - and specifically on CPE (see Figure 1.1).

Anger and Creative Process Engagement

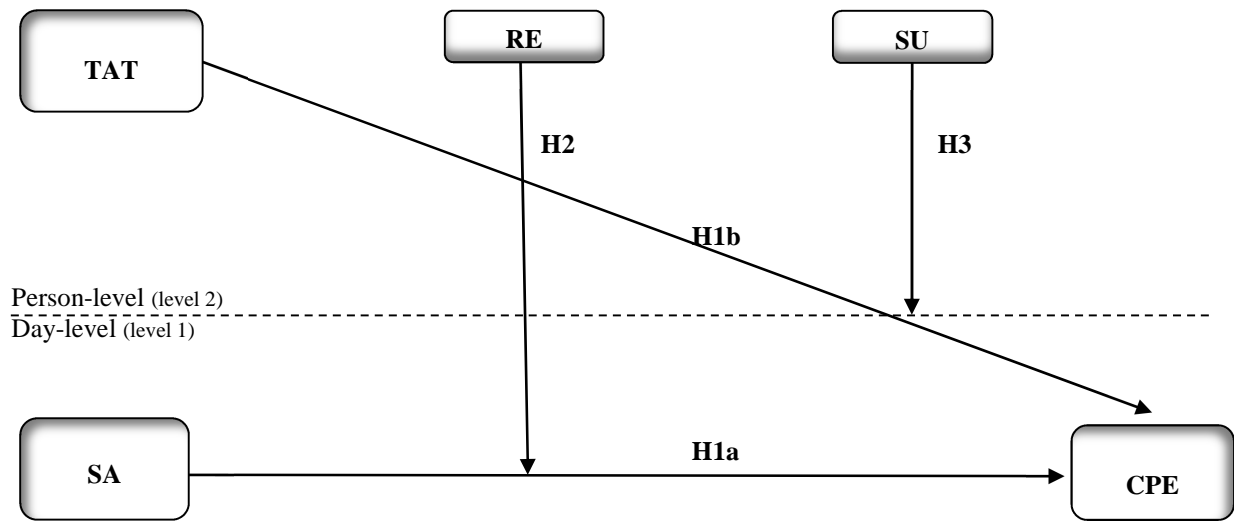


Figure 1.1. The Hypotheses Model – trait anger temperament (TAT), state anger (SA), reappraisal (RE), suppression (SU), creative process engagement (CPE).

The goal of the present study was to understand the impact of anger on CPE, in the organisational context, by studying the differences between state anger and trait anger temperament. Emotion regulation strategies or, more specifically, suppression and reappraisal were studied as moderators of these relationships. The within-person approach using a daily design is appropriate for studying dynamic constructs such as affect and creativity - until now seldom researched (Binnewies & Wörnlein, 2011; Fisher & Noble, 2004; Ohly, Sonnentag, Niessen, & Zapt, 2010). By studying state and trait anger's impact on creativity, it might be possible to understand the differences between a dynamic state and a stable trait, as opposed to examining individual factors' impacts on creativity as separate elements from psychological states or personality traits (Anderson, Potočnik, & Zhou, 2014).

The present study thus contributes to the existing literature in several ways. It appears to be the first attempt to examine the differences between state anger and trait anger temperament in predicting CPE, in the organisational context using a within-person approach. Moreover, this study of the role of emotion regulation in the relationship between anger and CPE answers the need for more research on affect processes' impact on performance (Brief & Weiss, 2002). In addition, CPE is worthwhile studying as it is related to a new understanding of creativity (To et al., 2012), contrary to a more traditional concept depending on stable individual characteristics, such as cognitive strategies and motivation (Amabile, 1983).

Therefore, this study's approach contributes to understanding creative processes as an unstable condition that might vary depending on individuals' emotional states and traits and contextual factors.

1.3. Theoretical Background and Hypotheses

Creativity is defined as the product or the outcome of bringing up new and useful ideas through work procedures, which could add value to products, services delivered, or employee performance (Amabile, 1983; George, 2007; Zhou & Hoever, 2014). The dominant research focus has been an approach to creativity as an outcome, while there is much less research interest in studying the process responsible for creative outcomes, in spite of the wide recognition of the worth of this approach among scholars (Shalley et al., 2004; Zhang & Bartol, 2010a). CPE comprises employee engagement with problem identification, information search and encoding processes, as well as idea generation (Zhang & Bartol, 2010a, 2010b).

The research on CPE has highlighted, on the one hand, contextual factors such as leadership and its organisational influence (Zhang & Bartol, 2010b) and, on the other hand, individual characteristics such as activating and deactivating positive and negative moods as antecedents of CPE (To et al., 2012). Most notably, the focus of CPE studies has been on individual characteristics such as moods (To et al., 2012), discussing affective states as individuals' unstable emotional conditions. This extends previous research based exclusively on individuals' stable conditions leading to creativity (Amabile, 1983). Moreover, studying discrete emotions such as anger and the differences between state and trait anger becomes quite important since this research may reveal how a specific emotion behaves by comparing unstable and stable individual characteristics.

According to differential emotions theory (Izard, 2007), anger is one of the basic emotions able to regulate and motivate cognition and action, assuming a specific role with regard to person-environment relationships. Anger is an emotion frequently experienced in daily life and the workplace (Averill, 1983; Basch & Fisher, 1998), and it is conceptually defined as a discrete emotion and different from other negative emotions (e.g., aggression and annoyance).

Anger has a set of characteristics as a cognitive component connected to the attribution of responsibility through specific event antecedents, such as individuals' illegitimate interference in other individuals' achievement of goals, perceptions of unfairness and injustice, and interpersonal conflict (Fitness, 2000). Anger also provides a sense of control over a target situation, and it also is a physiological mechanism and a social component expressed through behaviour (Averill, 1983; Berkowitz & Harmon-Jones, 2004; Gibson & Callister, 2010). Although anger has some characteristics in common with positive emotions (e.g., optimism about personal outcomes and a relationship to the brain's left frontal cortical area), individuals identify this feeling as negative and unpleasant. They believe related outcomes, such as aggressiveness, might be negative (Lerner & Tiedens, 2006), especially when the person involved has a strong disposition to anger (Wilkowski & Robinson, 2010).

Anger has been found in research as having positive consequences for creativity from two perspectives: a motivational perspective stressing persistence and activating greater focus (De Dreu et al., 2008) and a cognitive process perspective leading to an unstructured information search that encourages more widespread information processing (Baas et al., 2011, 2012).

To understand the specific relationship between anger and CPE, the distinction between state and trait anger needs to be clarified, an approach that has been neglected as a research topic (Brief & Weiss, 2002). According to state-trait anger theory (Forgays et al., 1997), the differences between state and trait anger should be taken into consideration. State anger means feeling anger at a specific moment in time, whereas trait anger is related to a disposition to experience anger more frequently and intensely. The cited authors also distinguish between two factors in trait anger - temperament and reaction - with an angry temperament seen as a disposition to feel both anger without provocation and angry reactions provoked by others. Trait anger is a disposition to feel anger differently compared to individuals who do not have this disposition, such as feeling anger more intensely, more often, and for longer periods of time, as well as exhibiting aggressive behaviour only when provoked (Bettencourt et al., 2006; Parrot, Zeichner, & Evces, 2005).

Many positive outcomes arise from anger expression on several levels (Gibson & Callister, 2010). However, the positive impact of anger on creativity has been rarely studied on an individual level (e.g., Baas et al., 2011; De Dreu et al., 2008; Russ & Kaugars, 2001) and on an interpersonal level in conflicts and negotiations (e.g., Van Kleef et al., 2010).

1.3.1. State anger and CPE.

The anger-creativity relationship has been characterised through some specific explanations that have tried to improve the empirical understanding of this link, such as the hedonic tone, activation, and regulatory focus hypotheses (Baas et al., 2008). The level of activation created by anger has been related to positive affect and the level of deactivation to negative affect. De Dreu et al. (2008) propose a dual-pathway model highlighting the importance of both hedonic tone and the level of activation to explaining creativity. Thus, in the case of anger as a negative activating emotion, this emotion's relationship with creativity is due to perseverance, whereas activating positive emotions leads to creativity through higher levels of cognitive flexibility. Several studies have showed (Carver, 2006; Carver & Harmon-Jones, 2009) that anger is related to the systems approach, traditionally connected with positive affect.

In addition to these hypotheses that seek to understand the relationship between negative affect and creativity, Baas et al. (2008) concluded through meta-analysis that it is relevant to take into account that specific types of affect can influence some facets of creativity in different ways. Therefore, the specific emotion approach (Lerner & Keltner, 2000; Lerner & Tiedens, 2006) could bring some additional and conclusive information to previous research explanations about the relationship between affect and creativity. From this perspective, the idiosyncratic characteristics of anger are considered as having an impact on creativity. According to Baas et al. (2011, 2012), the relationship between anger and creativity can be explained as a particular cognitive functioning related to the unstructured information processing responsible for generating more ideas at the beginning of creative processes. That is to say, anger reduces analytic processing but activates wider associated networks, thus promoting access to more semantic categories in idea generation. This impact of anger on cognitive information processing in creativity can lead anger to achieve a special role in promoting creativity, as opposed to regarding negative affect as exclusively context dependent (George & Zhou, 2002, 2007). However, this does not invalidate the fact that context is always important to explaining how emotions are regulated and expressed.

Based on the understanding provided by these recent studies of anger and information processing, state anger is expected to have a positive impact on CPE. Testing this hypothesis

may be a way to elaborate on the role anger can play with regard to employees' creative processes in the organisational context.

Hypothesis 1a. State anger is positively related to CPE.

1.3.2. Trait anger and CPE.

Researchers have tended to study personality traits, such as the big five, related to contextual factors instead of personality traits' main impacts on creativity (Anderson et al., 2014). The study of trait anger's impact on creative processes needs to consider the particular characteristics of anger as a stable disposition. State anger and trait anger differ in their frequency, intensity, duration of cognitive information processing, and emotion regulation process (Deffenbacher et al., 1996; Forgas et al. 1997). Dispositional emotions have a greater impact on judgment and choices than momentary state emotions do, as the former function as emotional biases - influenced by biological and socialisation processes - present in individuals' information processing and behaviour (Malatesta, 1990). The anger-related cognitive functioning identified by Baas et al. (2011, 2012) is expected to be present more frequently in individuals with trait anger.

As explained by Wilkowski and Robinson (2010), trait anger has three cognitive-based processes, namely, automatic cognitive interpretations characterised by hostile situation interpretations, selective attention processes related to ruminative attention, and effortful emotion regulation, expected to be present more often in individuals with low levels of trait anger. Therefore, the cognitive functioning of individuals with trait anger is expected to be most likely related to more creative ideas, as compared to state anger, which individuals might feel in specific situations. Individuals with trait anger are more prone to automatic negative information interpretation, and, consequently, they feel anger more frequently and intensely (Bauer & Spector, 2015). More frequent anger feelings, thus, are related to the more frequently unstructured information processing responsible for generating creative ideas.

It, therefore, is relevant to study the different contributions provided by a trait anger temperament to creative processes as compared to state anger, considering that trait anger individuals are expected to show cognitive biases about anger elicitation more frequently.

***Hypothesis 1b.** The relationship between trait anger temperament and CPE is stronger than is the relationship between state anger and CPE.*

1.3.3. Relevance of emotion regulation as a moderator of anger-CPE relationship.

Emotions have been conceptualised by the social sciences as a multidimensional phenomenon that reflects the interplay of biological, interpersonal, and sociocultural dimensions (Averill, 2012; Izard, 2007; Williams, 2001). Despite the existence of biologically-based emotions comprising innate expressions, according to Ekman (2004), a sociocultural dimension designated as “display rules” imposes socially acquired cultural rules about the management of public expression of emotions. Therefore, emotions comprise a repertoire of cognitions and behaviours learned in specific social environments as social syndromes (Averill, 2005).

Organisational affect research done from the late 80s onward (see Ashkanasy, Härtel, and Daus [2002] for a review) was responsible for generalising ideas about the relationship between positive moods and positive outcomes such as performance, as compared to the impact of negative affect. Cultivating positive emotions is seen as a way of promoting psychological growth and well-being (Fredrickson, 2004). This view of positive organisational behaviour was also responsible for the development of a positive human resources management strategy based on the idea that employees’ psychological capacities and behaviours lead to performance improvement (Bakker & Schaufeli, 2008; Luthans, 2002; Youssef & Luthans, 2007).

As a result of all these influences, a generalised idea has developed, among both top management and employees, that negative emotions are correlated with bad outcomes and that these emotions, therefore, need to be prevented and regulated (Dienfendorf & Gossenrand, 2003). Emotion regulation is generally considered to have positive consequences as an ability related to a better quality of social relationships. At the same time, the individuals who possess this ability are viewed more favourably by peers (Lopes, Salovey, Côte, & Beers, 2005). Controlling anger is relevant to individual effectiveness (Gross, 1998), group cohesiveness and productivity (Kelly & Barsade, 2001), and organisational harmony

(Stearns & Stearns, 1986). There are even organisational display rules about what can and cannot be accepted as an expression or suppression of anger (Geddes & Callister, 2007; Harelli & Rafaeli, 2008).

Emotion regulation as a moderator of the relationship between anger and creativity relies on individuals' socially determined and controlled ability to inhibit anger feelings in the organisational context. The role of emotion regulation in the organisational context has been extensively studied in emotional labour studies (Grandey & Gabriel, 2015). Therefore, expanding the empirical knowledge about emotion regulation in broader contexts could lead to a broader understanding of this affect process and its presence in general work activities - as opposed to focusing exclusively on customer service - and, in particular, emotion regulation's influence in creative processes. Moreover, as indicated by Gibson and Callister (2010), the literature reveals a need to study the consequences of regulating anger in the organisational context.

Emotion regulation theory asserts a process model of emotion regulation during which particular strategies have idiosyncratic impacts on emotional processes. This competence is responsible for increasing, maintaining, or decreasing positive or negative emotions either consciously or unconsciously. There are two forms of emotion regulation (Gross, 1998; Gross & Thompson, 2007): 'antecedent-focused regulation' relates to what can be done before emotions appear and 'response-focused regulation' employs strategies to intensify, diminish, prolong, or curtail emotional experiences that are already occurring.

An instrumental approach to emotion regulation (Ford & Tamir, 2012) asserts that experiencing positive or negative emotions, depending on specific situations, might be useful and related to emotional intelligence. However, anger regulation in the organisational context is still widely expected, as discussed below.

1.3.4. The moderating role of emotion regulation – reappraisal strategy.

Bearing in mind that a particular emotion, such as anger, in the organisational context is seen as having negative consequences - mainly in relationships - employees are expected to know how to regulate themselves so as not to show anger (Averill, 1983, 2005). Emotions have a social function of indicating to individuals how to behave in a group (Keltner & Haidt, 1999). The existing positive display rules in the organisational context facilitate emotional

contagion and highlight the values that are to be transmitted in customer service. There is also social functioning guidelines related to job roles, status, and goals (Elfenbein, 2007) and reciprocal influences among individuals in groups connected with mutual emotion inferences and their consequences in interactions (Harelli & Rafaeli, 2008; Van Kleef, 2009). Therefore, emotion attributions have a direct impact on social interactions, including expressing anger, reducing employee credibility, and showing positive emotions such as pride and happiness connected to success (Harelli, Rafaeli, & Parkinson, 2008). Social status has been shown to be negatively related to anger expression (Park et al., 2013).

The above studies highlight how employees influence each other through emotion display rules related to organisational culture. Furthermore, display rules develop according to the expectations of specific occupations, such as warmth from nurses, enthusiasm in salespeople and affective neutrality from physicians (see Barsade and Gibson [2007] and Elfenbein [2007] for reviews). Regarding consultants, not only social norms but also role expectations according to emotional competence - involving awareness and regulation of individuals' own and others' emotion - are expected to be associated with employees' positive affect and consequently positive evaluations of service encounters, thus leading to greater customer satisfaction (Giardini & Frese, 2008). Generally speaking, since feeling negative emotions, especially anger, can be seen as a handicap, employees are expected to have reappraisal strategies as an emotional competence, not allowing anger to surface. The kind of workers focused on in the present study (i.e., consultants) are mainly expected to show autonomy, make decisions, manage deadlines, engage in team-based work, and manage meetings with clients.

Anger expression in the organisational context has social consequences, and it is, therefore, related to behavioural sanctions imposed on those showing poor self-regulation abilities. In the case of consultants, given their specific professional characteristics, they are expected to use reappraisal strategies. Studies have shown that reappraisal strategies lead to a decrease in experiential, behavioural, and physiological responses to emotions (Gross, 1998; Gross & John, 2003). Reappraisal occurring early in emotion-related processes implies a cognitive revaluation of what responses are elicited by situations, decreasing their emotional impact.

Taking into account the cognitive processes involving anger and this emotion's eventual positive impact on CPE, as confirmed by Baas et al. (2011), it can be inferred that a

reappraisal strategy used to regulate anger could have a detrimental impact as a moderator of the anger-creativity processes relationship. As a result, when reappraisal is stronger, the relationship between state anger and CPE will likely be weaker because people who tend to employ reappraisal strategies do not experience negative emotions in the way that those who do not have this ability do. An ability to reappraise implies information processing about responses elicited by situations, leading to changes in internal and external environments, specifically altering their emotional significance. Thus, in order to examine rules regulating anger display in creative processes and to measure the expected adverse effect on the relationship between anger and creative processes, the following hypothesis was developed:

***Hypothesis 2.** A reappraisal strategy moderates the relationship between state anger and CPE so that the positive impact state anger has on CPE will be weaker when reappraisal is high rather than low.*

1.3.5. The moderating role of emotion regulation – suppression strategy.

Employees with a trait anger temperament are expected not to use reappraisal strategies due to dispositional tendencies to hostile interpretations of social situations (Wilkowski & Robinson, 2010). Trait anger individuals are more prone to use suppression strategies compared to other types of emotion-regulation strategies (Deffenbacher et al., 1996). As shown by Gross and Levenson (1993), suppressing emotions can have a mixture of impacts on individuals' arousal system. According to previous studies, although suppression diminishes expressive behaviour, it has no impact on subjective experiences and leads to an increased activation of the sympathetic nervous system (Gross, 1998; Gross & John, 2003).

Nonetheless, the intensity of emotion determines creative outcomes, which means that low or extremely high intensity of emotions has a negative impact on creativity (James et al., 2004). Therefore, suppression strategies that regulate anger could appear as adapting the level of emotions to what is needed in particular tasks and to what is socially accepted (Diefendorff & Richard, 2003). While trait anger individuals have more difficulty in engaging in emotion regulation strategies, these individuals are used to experiencing anger feelings most of the time and expected to suppress anger expression - especially in work contexts. Individuals with stronger trait anger also have been found to have more cognitive biases related to the

need for anger appraisals as compared to individuals with lower trait anger (Hazebroek, Howells, & Day, 2001).

From the above findings, suppression strategies are expected to hinder positive impacts of trait anger on CPE. Therefore, it is most likely that the relationship between trait anger temperament and CPE is stronger when employees' use of suppression strategy is weaker. In order to examine the impact of suppression on the anger-creativity relationship, the following hypothesis was developed:

***Hypothesis 3.** Suppression moderates the impact of trait anger temperament on CPE so that the impact of this temperament will be weaker on CPE when suppression is high rather than low.*

1.4. Method

1.4.1. Participants and procedure.

The participants in this study worked at three multinational consultancy companies belonging to the list of Great Place to Work[®] in Portugal in order to avoid inconsistencies between companies' human resources practices. All three were financially healthy in spite of the extended economic and financial crisis in Portugal at the time of the study. These companies provided consultancy services in the areas of information technology, finance and human resource management, respectively.

Managers from the three companies were informed of the study's objective and asked to encourage their employees to participate. Prior to data collection, participants were informed of the study's purpose, confidentiality, and methodology. Before distribution, the questionnaires were translated from English into Portuguese and then back translated into English (Brislin, 1980). The study used Qualtrics, a web survey tool in which participants answer two questionnaires. A general online questionnaire that appraised personal variables such as emotion regulation (i.e., reappraisal and suppression), trait anger temperament, and demographics was sent first, on a Friday. Two days later, on Monday, participants began filling out a daily questionnaire to assess the perceived impact that state anger has on CPE.

The daily questionnaire was sent at the end of every work day for a work week - from Monday until the following Friday.

The total number of participants who filled in the general questionnaire was 188, corresponding to a response rate of 48.2%, a percentage above the expected average rate for online surveys (Nulty, 2008). Participants were full-time workers whose functions involved creativity and who, therefore, had been appraised as being creative. From this total number of participants at the beginning of the study, the final sample included 98 participants who were selected based on the criteria of inclusion. To be part of the final sample, participants had to complete the daily questionnaire for at least three days, which is the completion average for daily diary studies (Ohly et al., 2010), out of the five work days. The final sample (i.e., 98 participants) included a total of 422 daily responses, with a mean of 4.3 days per person. The sociodemographic characteristics considered were gender (71.4% were males), age (the average age was 31.3 years old, ranging from 23 to 53 years old, with a standard deviation of 5.9), tenure (the mean was 4.2 years, with a standard deviation of 2.7 years), and education (92.9% had a university degree).

1.4.2. Measures.

State anger. State anger was measured using 10 items from the state anger subscale of the state-trait anger expression inventory (STAXI) (Forgays et al., 1997). The lead statement was "Please indicate your feelings today." Response options were 1 = "Not at all," 2 = "Somewhat," 3 = "Moderately so," and 4 = "Very much so." Examples of items were "I was furious" and "I felt irritated." This subscale measures the intensity of angry feelings at a selected time. The alpha coefficient was 0.95.

Trait anger temperament. Four items measuring trait anger temperament were used from the trait anger subscale of the STAXI (Forgays et al., 1997). The lead statement was "Please indicate how you generally feel or react." Response options were 1 = "Almost never," 2 = "Sometimes," 3 = "Often," and 4 = "Almost always." Examples of items were "I am quick tempered" and "I have a fiery temper." The alpha coefficient was 0.66.

Emotion regulation strategies. Two scales - reappraisal and suppression - were used from the emotion regulation questionnaire developed by Gross and John (2003). The lead

question was “What do you generally do?” Response options were 1 = “Not at all,” 2 = “Very little,” 3 = “Somewhat,” 4 = “Much,” and 5 = “Very much.”

Examples of items from the reappraisal subscale with six items were “I control my emotions by changing the way I think about the situation I’m in” and “When I want to feel fewer negative emotions, I change the way I’m thinking about the situation.” The alpha coefficient was 0.76.

Examples of items from the suppression subscale with four items were “I control my emotions by not expressing them” and “When I’m feeling negative emotions, I make sure I don’t express them.” The alpha coefficient was 0.83.

CPE. This was measured using the 11-item scale developed by Zhang and Bartol (2010a). The lead question was “Today, in your job, to what extent did you engage in the follow actions when seeking to accomplish an assignment or solve a problem?” Response options were 1 = “Not at all”, 2 = “Somewhat”, 3 = “Moderately so”, and 4 = “Very much so.” Examples of items were “I have spent considerable time trying to understand the nature of the problem” and “I have thought about the problem from multiple perspectives.” The alpha coefficient was 0.95.

1.4.3. Scale validities.

It was applied a confirmatory factor analysis (CFA) to test the convergent and discriminant validity of the variables considered in the study. Two models were tested: model 1 (within) which comprises two factors (state anger and CPE) and model 2 (between) containing three factors (trait anger temperament, suppression and reappraisal). The CFA was done to test the model fit by AMOS software.

Model 1 and model 2 indicated good model fits to the data [$\chi^2_{(422)} = 562.85, p < 0.001, df = 174, CFI = 0.96, RMSEA = 0.07, SRMR = 0.04$], [$\chi^2_{(98)} = 106.85, p < 0.001, df = 70, CFI = 0.93, RMSEA = 0.07, SRMR = 0.08$], respectively.

Since this study used a self-reported data, by applying questionnaires, and this method of data collection is related to common method variance, it was used the Harman’s single factor test (Podsakoff, MacKenzie, Lee and Podsakoff, 2003). The common method variance indicates that the variance is associated with measurement method instead of the constructs themselves. Therefore, common method variance would affect the results leading to faulty conclusions related to problems with the method rather than the quality of the constructs

studied. Thus the Harman's single factor test indicates the existence of common method variance revealing better fit indexes for the model by a single-factor in CFA.

Compared to the previous results of Model 1(within) and Model 2 (between) for CFA a single-factor model did not show better fit results ($\Delta\chi^2_{(422)} = 2289.24$, $\Delta df = 1$; $\Delta\chi^2_{(422)} = 189.59$, $\Delta df = 22$, respectively).

1.4.4. Analytic strategy

Hypotheses were tested using a multilevel model, more specifically, a hierarchical linear regression model (Aguinis, Gottfredson, & Culpepper, 2013; Bryk & Raudenbush, 1992; Hofmann, 1997). In this study, two levels were considered, including days (Level 1) nested in persons (Level 2). Level 1 (the day level) included state anger and CPE. Level 2 (the person level) included variables that varied among participants, including trait anger temperament, suppression, and reappraisal. Full maximum likelihood was considered to estimate the parameters.

According to the nature of the hypothesis, a centring strategy was employed (Hofmann & Gavin, 1998). State anger and trait anger in Hypotheses 1a and 1b were grand-mean centred to test their most significant impacts on CPE. For cross-level interaction (i.e., Hypotheses 2 and 3), the method of group-mean centring was used on Level 1, eliminating between-individual variance in the predictor variable and thus estimating only within-individual associations. On Level 2, grand-mean centring was used with the predictor variable to reduce any nonessential multicollinearity (Raudenbush & Bryk, 2002).

1.5. Results

1.5.1. Descriptive statistics and correlations.

The results from the descriptive statistics and correlations among variables studied on the two levels - day and person - are shown in Table 1.1.. On the person level (Level 2), trait anger temperament is positively correlated with CPE ($r = 0.27$, $p < 0.01$) and with state anger ($r = 0.23$, $p < 0.05$). Reappraisal is positively correlated with CPE ($r = 0.20$, $p < 0.05$).

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Table 1.1. Means, Standard Deviations and Correlations among Variables considered at level 1 and level 2

	Mean	SD	1 (CPE)	2 (SA)	3 (TAT)	4 (SU)	5 (RE)
Level 1 variables – Day-level (N = 422)							
1. CPE	3.01	0.87	(0.95)				
2. SA	1.23	0.51	0.06	(0.95)			
Level 2 variables – Person-level (N = 98)							
3. TAT	1.73	0.70	0.27**	0.23*	(0.66)		
4. SU	2.88	0.78	-0.18	0.04	-0.03	(0.83)	
5. RE	3.24	0.73	0.20*	0.07	0.01	0.12	(0.76)

Notes: The Internal Consistency Reliabilities (Cronbach's Alphas) are in bold italic and on the diagonal parentheses; CPE – creative process engagement, SA – state anger, TAT- trait anger temperament, SU – suppression, RE – reappraisal.

* p < 0.05 ** p < 0.01

1.5.2. Test of hypotheses.

The main effects and cross-level moderation effects on the day and person levels are shown in Table 1.2.. To test the hypotheses and resulting model, a first step was done by estimating a one-way analysis of variance to confirm the outcome variable's variability and, more specifically, if the day level variance over five days of CPE was significant (i.e., the null model), thereby justifying hierarchical linear modelling analysis. The variance on Level 1 was 0.43 and, on Level 2, 0.34, with an intraclass correlation coefficient of 0.56. This suggests that 56% of the variance is due to the person level and 44% of the variance is due to the day level, which indicates the pertinence of hierarchical linear modelling analysis.

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Table 1.2. *Multilevel Modelling Analysis Predicting CPE*

	Null Model	Model 1	Model 2	Model 3
Intercept	2.99** (0.07)	3.01** (0.07)	2.99** (0.06)	2.98** (0.06)
Day-level (N = 422)				
SA		0.13 [†] (0.07)		0.00(0.14)
Person-level (N = 98)				
TAT			0.26** (0.07)	0.45** (0.11)
RE				0.09* (0.08)
SU				-0.14 [†] (0.08)
Interactions				
RE X SA				-0.34 [†] (0.20)
SU X TAT				-0.13* (0.05)
Variance Components				
L1 (withim team variance)	0.43	0.43	0.43	0.27
L2 (Intercept variance)	0.34	0.32	0.30	0.43
Additional Information				
ICC	0.56	—	—	—
Deviance	987.584	986.689	984.838	978.795
Number of estimated parameters	2	4	2	2
Pseudo R ²	0	0.03	0.05	0.09

Note: L1 N = 422, L2 N = 98; CPE – creative process engagement, SA – state anger, TAT – trait anger temperament, SU – suppression, RE – reappraisal.

[†] p< 0.10 * p< 0.05 **p< 0.01

Main effects (H1a and H1b).

Regarding Hypothesis 1a - state anger is expected to be positively related to CPE - and Hypothesis 1b - the relationship between trait anger temperament and CPE is expected to be stronger than the relationship between state anger and CPE. Accordingly, state anger was entered in Model 1 and trait anger temperament in Model 2 in order to test the direct effect of state anger and trait anger temperament on CPE. Our results suggested a favourable statistical trend in the relationship between state anger and CPE ($b = 0.13$, $p < 0.10$). Moreover, as expected, trait anger temperament reveals a more positive significant effect on CPE ($b = 0.26$, $p < 0.01$) as compared to state anger's effect on CPE ($b = 0.13$, $p < 0.10$). Therefore, the results provide support for Hypothesis 1b. According to the threshold of 0.10 for significances we found a possible trend to accept Hypothesis 1a.

Moderation effects (H2 and H3).

To test Hypotheses 2 and 3, which refer to two emotion regulation strategies - reappraisal and suppression - the two-way interaction terms were entered in Model 3. According to Hypothesis 2 (A reappraisal strategy moderates the relationship between state anger and CPE so that the positive relationship between state anger and CPE will be weaker when reappraisal is higher rather than lower), the moderating effect revealed a statistical trend toward significance ($b = -0.34, p < 0.10$). Figure 1.2. shows that the effect of high state anger on CPE is stronger for those individuals who are lower in reappraisal than for those who are higher in reappraisal.

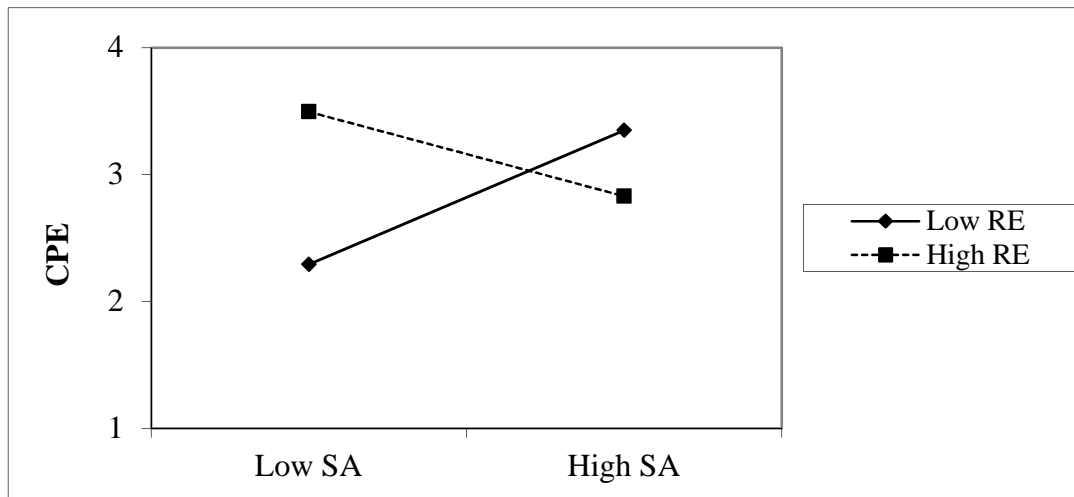


Figure 1.2. The Moderating Effect of Reappraisal Strategy on the Relationship between State Anger and CPE

For the last hypothesis considered - Hypothesis 3 (Suppression moderates the impact of trait anger temperament on CPE so that the relationship between trait anger temperament and CPE will be weaker when suppression is higher rather than when it is lower) - the moderating effect is significantly negative ($b = -0.13, p < 0.05$). Figure 1.3. shows that the effect of trait anger temperament on CPE is stronger for those who are lower in suppression than for those with higher suppression. Therefore, Hypothesis 3 is confirmed, as expected.

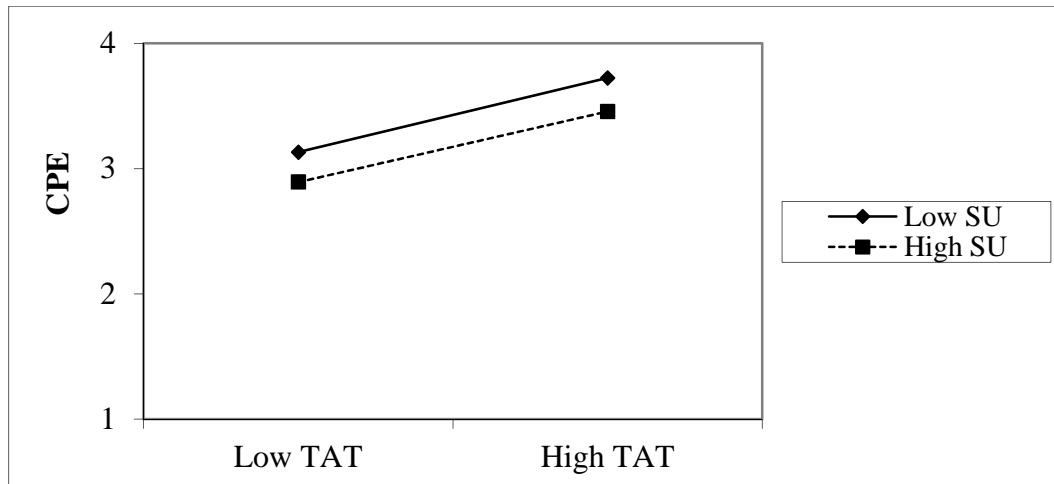


Figure 1.3. The Moderating Effect of Suppression Strategy on the Relationship between Trait Anger and CPE

1.6. Discussion

Affect has been considered one of the most relevant factors when seeking to increase employees' creativity (Amabile et al., 2005; Hennessey & Amabile, 2010; Shalley et al., 2004). Although often contradictory, previous findings have helped to characterise this relationship, in general, and, more specifically, the role of negative affect (Baas et al., 2008) and the influence of anger on creativity (James et al., 2004; Van Kleef et al., 2010). To contribute to meeting this research challenge, this study sought to add to the literature about the role played by one discrete emotion, anger, related to creativity in the organisational context.

Furthermore, most studies on the relationship between anger and creativity neglect the role of state anger daily fluctuations. Therefore, this study addressed this gap in the literature and employed a daily survey methodology. Through this methodology, the current study overcame the limitations of previous studies, which impacted the interpretation of results due to common method variance (i.e., cross-sectional studies) and the possibility of inferring cause-effect relationships (Podsakoff, MacKenzie, Lee, & Podsakoff, 2013). In addition, the current study extends previous findings (e.g., James et al., 2004; Van Kleef et al., 2010) and reinforces the findings on the role of emotion regulation strategies, suggesting that reappraisal and suppression strategies moderate the relationship between trait and state anger and CPE.

1.6.1. Theoretical implications.

Several theoretical implications can be understood from the results of this study, including its contribution to several research areas, such as creativity, emotions, and personality. First, contrary to the majority of previous studies that considered negative affect as a generalised group (Baas et al., 2008; Bauer & Spector, 2015), one discrete emotion – anger – was studied for its idiosyncratic characteristics as an individualised and sociocultural phenomenon. Moreover, specific types of anger were considered in this study based on the specific emotion approach. The latter approach revealed that anger has a positive impact on creative processes, confirming previous research that explains the creative processes that emerge from particular anger-related cognitive information processing (Baas et al., 2011, 2012).

The differences found between state anger and trait anger temperament (i.e. stronger impact of trait anger on creativity), made it necessary to consider both unstable and stable conditions to explain creativity (Amabile, 1983; To et al., 2012). Although research has tested the relationship between anger and creativity in experimental settings (Baas et al., 2011), the present study found a statistical tendency for state anger and a statistical significance trait anger to be related to CPE ($p < 0.10$ and $p < 0.01$, respectively). This fact could be explained by the generalised idea that negative emotions (specially anger) bring negative outcomes, therefore, anger needs to be prevented and regulated (Dienfendorf & Grossenrand, 2003). Accordingly, it is difficult for an employee to admit feeling angry in the organisational context due to anger display rules (Geddes & Callister, 2007). Henceforth, a more specific approach to understanding negative emotions' relationship to creativity should be considered, as opposed to the idea that the relationship between negative emotions and creativity needs to be context dependent (George & Zhou, 2002, 2007). The relevance of this specific impact of anger on creativity does not imply neglecting the significant influence of context on negative emotions and even on positive emotions in creative processes, rather it questions the validity of an exclusively context dependent view.

Given that anger expression is a critical issue in organisation contexts, in which anger is limited by strict social norms (Geddes & Callister, 2007), the anger regulation process studied in the present research revealed that reappraisal and suppression strategies have a negative influence as moderators of the positive impacts of both state anger and trait anger on creative

processes. These results, although in line with organisations' expectations that employees regulate their anger to avoid expressing negative emotions (Averill, 1983, 2005), reveal the need to discuss the limits of emotion regulation when positive outcomes such as creativity need to be improved.

1.6.2. Practical implications.

Apart from the significance of positive emotions, managers need to be informed about the positive impact of state and trait anger on positive outcomes such as CPE. A broad emotional competence, including the ability to be aware of negative emotions and, in particular, the impact of anger on creative processes, becomes a significant skill to improve in employees. Therefore, it is quite important to develop more specific emotional human resources management (EHRM), promoting a deeper awareness of each emotion and its connection with organisational outcomes. This would allow employees, in the case of anger, to make decisions about anger expression rather than regulate anger through conventional display rules. This approach, thus, implies that employees understand about when and how to regulate anger, enhancing or decreasing this emotion to an optimal level that could enhance positive creative outcomes.

EHRM should promote the understanding of negative emotions - particularly anger - as complex and specific entities, as an alternative to a limited view of negative emotions as valence groups with expected negative outcomes. This broader understanding of the positive impact of anger on creativity could stimulate discussion about current practices in human resources development and management. Employee training needs to consider a wider understanding of emotion intelligence through an instrumental approach of emotional regulation (Ford & Tamir, 2012), which can develop an ability to adapt the level of anger to a useful level. Moreover, focusing on the negative consequences of trait anger in organisations (Gibson & Callister, 2010) may prevent the understanding of its positive impacts on creativity and, therefore, hinder the development of a new perspective on employee selection and career management related to current organisational demands for creativity.

In summary, the main practical contribution for managers is that they can develop employees' emotion regulation strategies. The literature shows that emotion regulation strategies can be developed in the workplace through training or coaching (Richards & Gross,

2000). Thus, according to the present study's findings, managers should monitor their employees' state anger. In this way, managers can develop specific programs to help employees with weak state anger to develop further their emotional reactions and resources, helping these employees to learn how to reappraise situations in the workplace (Matta, Erol-Korkmaz, Johnson, & Biçaksiz, 2014). The present study also reinforces the need to increase CPE by training employees to avoid emotional suppression and the resulting negative implications for creative processes, particularly those employees manifesting high levels of trait anger.

1.6.3. Limitations and future research.

In spite of its contributions, this study is not without limitations. Studying only one specific emotion, no matter how relevant, does not allow for comparisons with other specific emotions. Therefore, to understand anger-related CPE specificities more broadly, it would be interesting to compare anger with other positive and negative discrete emotions (e.g., happiness and sadness [Lerner & Tiedens, 2006]). Controlling for anger more than once a day could be significant to determining accurately the direction of causality. Based on the findings of previous longitudinal studies (e.g., Amabile et al., 2005; To et al., 2012) and experimental studies (e.g., Baas et al., 2011; De Dreu et al., 2008), moods and/or emotions can explain creativity, rather than the opposite causality. Moreover, the 98 participants considered for Hypothesis 3 (interaction between trait anger and suppression) is a small sample for testing a level 2 interaction. Future studies should use larger samples for this type of interaction.

As this study analysed differences in state and trait anger as predictors of CPE in a sample of consultants, it may be interesting for future research to test the present results with different samples. It also could be interesting in future research to analyse trait anger related to other individual differences (e.g., stability versus neuroticism) when predicting creativity.

Moreover, future research needs to include other types of strategies related to antecedent-focused and response-focused regulation (Gross, 1998) as moderators of the anger-CPE relationship. To examine the moderating role of emotion regulation's impact on creativity, the way in which some strategies have little effect on anger reduction should be considered, including distraction and rumination (Denson, Moulds, & Grisham, 2012).

In addition to regarding only the positive impacts of anger on CPE, it may be relevant to compare process implications in organisational creative outcomes. In fact, including comparisons of subjective versus objective measures of creativity is a challenge that has already been mentioned by Shalley et al. (2004). Future studies might also consider comparisons of employees' perception of what their creativity level is and supervisors' appraisal of what their creativity level should be. Studying state and trait anger differences in each phase of CPE and creative outcomes could also be a future line of research.

1.7. Conclusion

Anger is a singular case among negative emotions (e.g., Bauer & Spector, 2015). In the organisational context, anger is worth studying when it leads to positive outcomes, such as CPE. The positive relationship found in the present study between state and trait anger and CPE reveals the need to consider unstable and stable conditions when attempting to explain creativity. Therefore, anger display regulation rules need to be questioned in the organisational context, since anger might lead to positive outcomes. Otherwise, companies could find themselves failing to reap the full benefits of their employees' performance.

2. The impact of Anger on Creative Process Engagement – the role of social contexts

2.1. Abstract

Drawing on the cognitive activation perspective, this paper hypothesised and tested the relationships between anger and three sub-processes of creative process (i.e. problem identification, information search and encoding and idea generation) and the moderating influence of two contrasting social context (namely, co-worker support versus relationship conflict) on those relationships. The hypothesised model was tested with daily survey data obtained from a sample of 98 employees (422 days) from three consultancy companies in Portugal. Results of hierarchical linear modeling analysis revealed that anger was positively related to problem identification but unrelated to informational searching and encoding and idea generation. However, anger was negatively related to information searching and encoding and idea generation when co-worker support was low or relational conflict was high but positively related to information searching and encoding when co-worker support was high rather than low.

Keywords: Anger; creative process engagement; co-worker support; relationship conflict

2.2. Introduction

Creativity, the generation of new and useful ideas to improve products and services and to solve problems at work (George & Zhou, 2001) has long been linked to organisational survival and success in the turbulent business environment (Axtell, Holman, Unsworth, Wall, & Waterson, 2000). Increasingly researchers are keen to go beyond the examination of the antecedents of creative outcomes and investigate individual and organisational factors that may influence the process that leads to creativity (To, Fisher, Ashkanasy, & Rowe, 2012; Zhang & Bartol, 2010a). Accordingly, this study is focused on creative process engagement (CPE), the extent to which employees engage in problem-identification, information searching and ideas/solution generation activities (Gilson & Shalley, 2004; Zhang & Bartol, 2010a). So far, literature has shown that the impact of negative affect on creativity has been relatively inconclusive as opposed to that of positive affect (Baas, De Dreu, & Nijstad, 2008; Davis, 2009). While some researchers have reported a negative (Kaufmann & Vosburg, 1997) or non-significant (Isen, Daubman, & Nowicki, 1987; Madjar et al., 2002) relationship

between negative affect and creativity, others have shown that negative affect may have a positive effect on creativity contingent on some contextual factors (e.g. the presence of supervisory support) (George & Zhou, 2002, 2007; Zhou & George, 2001). Against this background, the primary goal of this study was to investigate when negative affect such as anger may have a positive or negative effect on creativity.

Scholars have emphasised that specific discrete emotions (e.g. joy, calm, anger, sadness, fear) should not be conveniently subsumed by global constructs such as positive versus negative affect and called for studies on discrete emotions to gain a better understanding of the impact of affect in the workplace (Brief & Weiss, 2002). Perhaps due to its omnipresence in the work environment, anger has stood out being one of the most researched discrete emotions in the creativity literature (e.g. Akinola & Mendes, 2008; Amabile et al., 2005; Baas, De Dreu, & Nijstad, 2011; De Dreu, Baas, & Nijstad, 2008; Kaufmann, 2003). Interestingly, the impact of anger on creativity has not been found to be clearer than when it was examined as a sub-component of negative affect. Some have suggested that anger may be beneficial to creative performance (Akinola & Mendes, 2008; Baas et al., 2011) whereas others have reported a detrimental effect of anger on creativity (Amabile et al., 2005).

Nevertheless, the anger-creativity research has provided a greater understanding of anger that has not been offered by the negative affect-creativity research. Most notably, Baas et al. (2011) observed in an experimental setting that anger promoted creativity at the early stage of creative activities but creative performance deteriorated at the later stages. They (Baas et al., 2011) explained this phenomenon by suggesting that anger leads to unstructured information processing which might be beneficial for creativity but at the same time might soon deplete cognitive resources. Consequently, anger leads individuals to peak in creativity early on but decreases over time. These findings showed that the potential positive impact of anger on creativity but at the same time revealed the dynamic processes linking anger to creativity. It is therefore necessary to further investigate how anger may influence the process by which individuals come to creative ideas.

The literature on creative process has suggested that the creative process is a complex and non-linear process and consists of multiple sub-processes and factors that are critical for one sub-process may not necessarily be influential for other sub-processes (Amabile, 1983; Binnewies, Ohly & Sonnentag, 2007; Caniëls, De Stobbeleir & De Clippeleer, 2014; Lubart, 2001). It is plausible that the impact of anger may differ at different sub-processes of the

creative process. Consequently, this study aims to examine the relationship between anger and the three sub-processes of the creative process: problem identification, information search and encoding, and idea generation.

On the other hand, although much research has shown that emotions does not act alone to influence creativity (e.g. Madjar et al., 2002; Zhou & George, 2001) and the importance of taking account of social-contextual factors to fully understand the influence (Woodman & Schoenfeldt, 1990), research has yet to identify social-context conditions that may attenuate the link between anger and creativity. Drawing on Carnevale and Probst's (1998) work on the relationship between social context and creativity, this study investigates whether the impact of anger on the creative process may vary in a cooperation social context featured by co-worker support and a conflict social context characterised by relationship conflict. Figure 2.1. presents the hypothesised model.

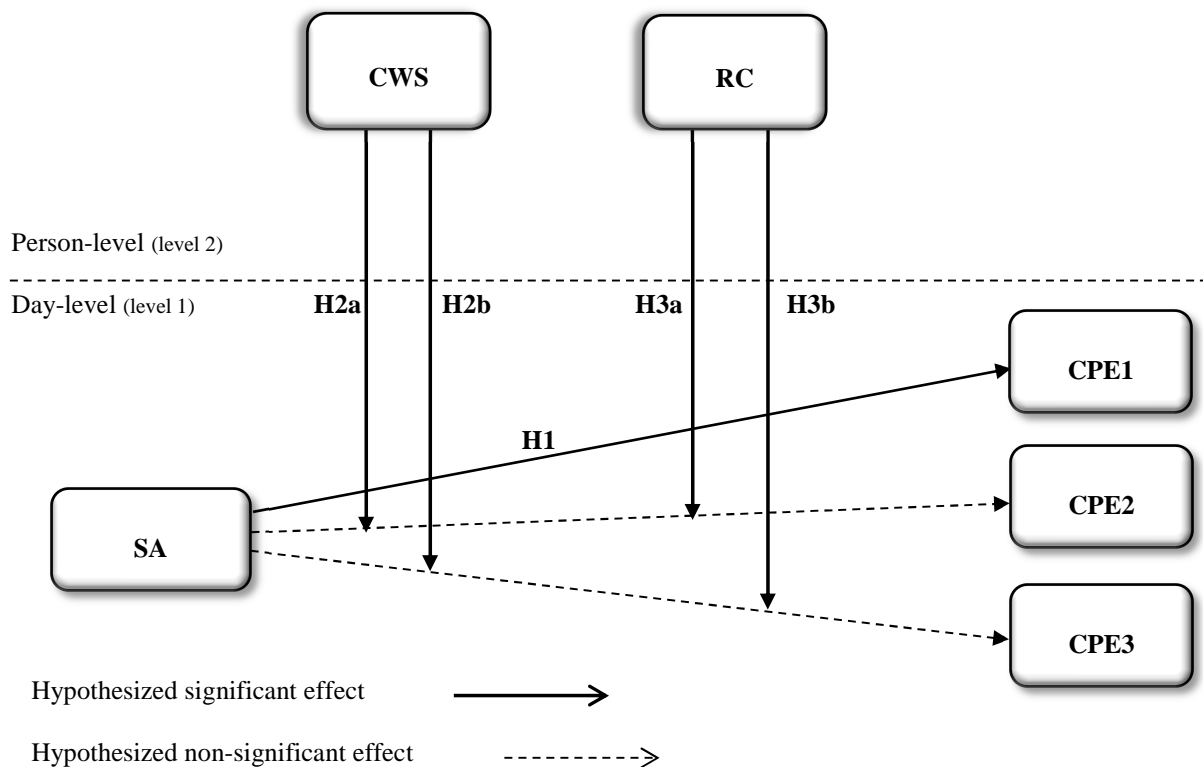


Figure 2.1. The Hypotheses Model – state anger (SA), co-worker support (CWS), relational conflict (RC), problem identification (CPE1), information searching and encoding (CPE2), idea generation (CPE3)

This study aims to make several important contributions to extant literature. First, literature has been inconclusive regarding the relationship between anger and creativity. By examining the impact of anger on multiple sub-processes of the creative process, this study contributes to shed light on when anger matters most during the creative process. Furthermore, by examining the boundary conditions of the link between anger and creativity, this study augments the efforts to identify the social-contextual factors that may attenuate the impact of emotions on creativity (e.g. George & Zhou, 2007; Madjar et al., 2002) and gain a better understanding on how anger influences creativity in the work environment. Finally, so far, with the exception of Amabile et al. (2005), the relationship between anger and creativity has been examined mostly in the experimental settings. By examining the impact of anger on creativity in organisations, the study answers the call for more empirical research to understand how discrete emotions such as anger play out in the workplace to influence employee outcomes (Brief & Weiss, 2002; Fitness, 2000; Geddes & Callister, 2007). The findings of this study will help managers and organisation be better informed about how to channel anger this seemingly negative emotion to creative energy in the workplace.

2.3. Theoretical Background and Hypotheses

Creativity can be seen as an outcome or as a process (Runco, 2004). Although, the creativity literature has been dominated by the creativity-as-outcome approach, many scholars have increasingly recognised the importance of examining creativity as a process (Drazin, Glynn, & Kazanjian, 1999; Gilson & Shalley, 2004; Lubart, 2001; Shalley, Zhou, & Oldham, 2004; Zhang & Bartol, 2010a). CPE is conceptually related to but distinct from creativity (as an outcome). It is a proximal precursor to creativity (Amabile, 1983) but emphasises on ‘the journey toward possibly producing creative outcomes’ (Gilson & Shalley, 2004: 454).

According to De Dreu et al. (2008), creativity is a result of two cognitive processes: flexibility, i.e. drawing on different cognitive categories and perspectives, and persistence, i.e. involving deliberate effort and systematic approaches to explore solutions in a few categories and perspectives. De Dreu et al. (2008) further posited negative affect such as anger is likely to influence creativity via the route of persistence as anger activates individuals’ cognitive process and mobilises their energy to focus on the problem at hand. Baas et al. (2011) later qualified that the cognitive process and energy activated by anger are unlikely to be sustained all the time as anger taxes heavily on cognitive resources. Thus, angry people’s creative performance peak early on but decreases over time. If indeed one’s cognitive resources are

the critical in one's creative endeavour, it is arguable that the relationship between anger on CPE may be contingent on whether the cognitive process and energy mobilised by anger can be sustained or undermined by social contexts. Co-worker support for creativity and relationship conflict were identified as two relevant contextual factors, which may moderate the impact of anger on CPE, due to their potential influences on employees' attention to their tasks and ability to be persistent in their creative endeavours.

2.3.1. Anger and CPE.

In line with the social psychology of creativity literature (Amabile, 1996), research examining CPE has largely focused on social contextual factors, such as leadership that may have impact on CPE (Zhang & Bartol, 2010a), or cognitive training (Basadur, Graen, & Green, 1982; Scott, Leritz, & Mumford, 2004). Despite these efforts, few studies have examined the sub-processes of the creative process. This is surprising as researchers have noted that each sub-process of the creative process may involve different motivational and cognitive resources and need to be examined separately. Consistent with the classic four-stage model of the creative process (Wallas, 1926), Amabile's (1983) componential model of creativity depicted the creative process in four stages: problem identification, information seeking and coding, idea generation and verification. Amabile (1983) further proposed that task motivation, domain-relevant knowledge and creativity-relevant skills have varied impact on the sub-processes of the creative process. While task motivation is critical for problem-identification and idea generation, creativity-relevant skills are important for idea generation and domain-relevant knowledge forms the basis for information searching and encoding. Empirical research examining the creative process as a multistage process has in general provided supporting evidence (Binnewies et al., 2007; Caniëls et al., 2014; Yuan & Zhou, 2008). Consequently, this study proposes that anger may have varied impacts on the three sub-processes of the creative process: problem identification, information seeking/encoding, and idea generation.

Researchers examining the links between emotions and creativity have adopted different perspectives. For example, from a mood-as-information perspective, Schwarz and Clore (1983; 2003) posit that individuals assess how they feel to form their judgement. While positive moods such as happiness, content imply the environment is problem-free, negative moods such as anger, sadness signal that the current situation is problematic and encourage

people to engage in problem-finding and problem-solving activities (Schwarz & Skurnik, 2003). From a cognitive activation theory perspective, researchers further distinguish activating and deactivating negative emotions in terms of their impact on creativity (e.g. De Dreu et al., 2008; To et al., 2012). Specifically, it is suggested that activating negative emotions such as anger as opposed to deactivating negative emotions such as sadness are more likely to increase individuals' cognitive activation therefore engage their motivation and energy to focus on the problem at hand (De Dreu et al., 2008; To et al. 2011; 2012). Thus angry individuals are more likely to be alert to the problems that exist in the work environment and be motivated to invest time and cognitive resources to diagnose the problem, conduct in-depth exploration and construct the problem from different perspectives (Basadur, Pringle, Speranzini, & Bacoc, 2000; Mumford, Mobley, Uhlman, Reiter-Palmon, & Doares, 1991; Reiter-Palmon & Illies, 2004). Furthermore, anger enhances one's persistence (De Dreu et al., 2008) to engage in learning relevant knowledge and to go through as many response pathways as possible, leading to enhanced CPE. Although empirical research in the laboratory settings has reported a positive link between anger and creative outcomes rather than CPE (Baas et al., 2011; De Dreu et al., 2008), it is plausible that anger leads to creative outcomes via its proximal impact on CPE.

The same beneficial effects of problem-identification process are however unlikely to appear when individuals continue to search and encode information and to generate possible solutions, which involve much deliberate and structured information processing. While information searching and encoding is concerned with building up a substantial repertoire of relevant information and response algorithms, idea generation involves exploring various response pathways for consideration (Amabile, 1983). Although anger may heighten arousal and enhance one's motivation to engage in learning relevant knowledge and to go through as many response pathways as possible, these potential positive effects may be cancelled out at these two sub-processes. First, anger has been noted for its interference of cognitive process especially where complex information processing is involved (Clore, Schwarz, & Conway, 1994; Lerner & Tiedens, 2006). More importantly, anger leads to unstructured and inconsistent information processing and such unstructured cognitive style cause fast depletion of energy and cognitive resources (Baas et al., 2011). This, in turn will reduce one's perseverance in information searching and idea generation. This is in line with the resource conservation perspective (Hobföll, 1989) which suggests that individuals tend to preserve their resources when they experience stressful situation. When experiencing anger,

individuals are likely to reduce their involvement in the in-depth and systematic information processing such as information searching and encoding and idea generation. Taken together, although anger may motivate individuals to engage in activities that are related to information searching and encoding and idea generation, this motivational and cognitive efforts may be hampered due to resource exhaustion or preservation resulting in non-significant effects. Thus,

Hypothesis 1. *Anger is positively related to problem identification but unrelated to information searching and encoding and idea generation.*

2.3.2. The moderating influence of social context.

The social aspects (e.g. peer support, relationship with supervisors) in the work environment have long been underscored to have a significant impact on employee creativity (Amabile, 1983, 1996; Shalley et al., 2004). Going beyond the examining the main effects of the social context on employee creativity (Amabile, 1996; Amabile, Conti, Coon, Lazenby, & Herron, 1996), and in line with the interactionist perspective (Woodman, Sawyer, & Griffin, 1993; Woodman & Schoenfeldt, 1990), many researchers have investigated how individual factors, including moods (e.g. George & Zhou, 2007; Madjar et al., 2002) interact with the social context to influence creativity (see George, 2007; Shalley et al., 2004 for reviews) moods. For example, using a sample of 149 employees, Zhou and George (2001) reported that supportive work environment featured by co-worker support, help and feedback enhanced the relationship between negative mood (job dissatisfaction) and creative performance. In a more recent study, George and Zhou (2007) further highlighted the importance of supportive context in managing the relationship between employees' emotions and creativity. So far research has yet to examine when anger may be a positive force for the creative process and when anger may work in the opposite direct, i.e. negatively affect the creative process. Consequently, this study proposed to examine the moderating influence of two contrasting social contexts (co-worker support and relationship conflict) on the relationship between anger and the creative process. More specifically, the study focus on two sub-processes: informational seeking and encoding, and idea generation to investigate whether anger may have a positive or negative impact on the latter stages of the creative process given certain circumstances.

As noted above, although anger may heighten cognitive process and motivate one to engage the creative process, being angry may wear out one's cognitive resources over time (Baas et al., 2011). This, in turn, will be detrimental to the information seeking and encoding and idea generation stages of creative process. We argue that a cooperation social context however may reduce the above-mentioned negative effect and help sustain the cognitive and motivational benefits of anger. On the one hand, a cooperation social context facilitates a flexible cognitive process and a broad range of attention (Carnevale & Probst, 1998), enhancing one's ability to retrieve information from memory and to perceive relationships between different subjects. On the other hand, a cooperation social context may also act as a 'buffering mechanism' (Cohen & Wills, 1985) reducing one's negative reaction to anger. Specifically, co-worker support may intervene in several ways. First, supportive co-workers may provide helpful feedback and information which can be used in solving the problems, helping structuring the information processing triggered by anger. Second, supportive co-workers may reduce, if not eliminate one's anger and related emotional strain. Thus, their creative efforts may be sustained throughout the creative process. Finally, employees may be more engaged in their creative efforts in order to reciprocate those supportive behaviour demonstrated by their supported colleagues (Butt, Choi, & Jaeger, 2005). Thus,

***Hypothesis 2.** The relationship between anger and creative process will be moderated by co-worker support in such that the relationship between anger and (a) informational seeking and encoding; (b) idea generation will be positively related when co-worker support is high rather than low.*

Prior research has suggested that a conflict social context may hinder individual creativity as it triggers a conflict mental set leading to cognitive rigidity and narrow-minded thinking (Carnevale & Probst, 1998; Golec & Federico, 2004). De Dreu and Nijstad (2008) however refined the argument and suggested that cognitive rigidity and motivation to engage in information processing will only be affected when the conflicts are unrelated to the task at hand. When there is a high level of relational conflict in the work environment, not only will the potential positive impact of anger on the creative process be cancelled out, anger will lead to decreased motivation and cognitive effort to engage in the creative process. This is because a negative social environment gives rise to high levels of stress (Bliese & Halverson, 1998; Cole & Bedeian, 2007). As a result, individual will not be able to maintain their ability to

engage in cognitive information processes (LePine, Lapine, & Jackson, 2004; LePine, Podsakoff, & Lapine, 2005) that are important to the creative process.

***Hypothesis 3.** The relationship between anger and the creative process will be moderated by relational conflict in such that the relationship between anger and (a) informational seeking and coding; (b) idea generation will be negatively related when relational conflict is high rather than low.*

2.4. Method

2.4.1. Participants and procedure.

The participants of this study were recruited from three multinational management consultancy companies in Portugal, whose services are offered in the field of IT, financial management and human resource management respectively. Creativity is required on their daily work. It was used a web-based survey tool (Qualtrics) to send out questionnaires. Prior to data collection, participants were informed of the purpose of the study, its confidentiality and study methodology. First, participants filled out a general online questionnaire at the beginning of the study - answering questions on co-worker support, relationship conflict, high effort task, trait anger-temperament, and demographics variables. Two days later, at the end of every working day (for a working week) participants were invited to fill out an online questionnaire which included state anger and CPE.

A total of 188 workers agreed to participate in the study by completing the general questionnaire representing a response rate of 48.2%, which was above the average response rate for online surveys (Nulty, 2008). The final sample consisted of 98 participants due to the established criteria of participant's inclusion – participants should complete at least the daily questionnaire for three out of the five days. There were a total of 422 responses for the final sample (98 participants) by a mean of 4.3 days per person. The majority of the participants (71.4%) were male with an average age of 31.3 years ($SD = 5.9$) and an average tenure of 4.2 years ($SD = 2.7$). Almost all of the participants have a university degree (92.9%). The questionnaires was originally developed in English but then translated into Portuguese. We followed the translation and back translation procedure suggested by (Brislin, 1980) to insure the accuracy of the translated questionnaires.

2.4.2. Measures.

CPE. An 11 item scale developed by Zhang and Bartol (2010a) was used to measure three dimensions of CPE: problem identification (3 items), informational searching and encoding (3 items) and idea generation (5 items). The lead question for this scale was: 'Today, in your job, to what extent did you engage in the follow actions when seeking to accomplish an assignment or solve a problem?' (1 = 'Never', 2 = 'Rarely', 3 = 'Occasionally', 4 = 'Frequently', 5 = 'Very frequently'). Sample items are '*I have spent considerable time trying to understand the nature of the problem*' for problem identification, 'I consult a wide variety of information' for information searching and encoding; and 'I consider diverse source of information of idea generation' for idea generation. The scale's alpha reliability for each of these three dimensions was 0.85, 0.86 and 0.86 respectively.

State Anger. A 10 item state anger subscale from the State-Trait Anger Expression Inventory – STAXI developed by Forgays, Forgays and Spielberger (1997) was used to measure state anger. The lead question for this subscale was: Please indicate your feelings today: (1 = 'Not at all', 2 = 'Somewhat', 3 = 'Moderately so', 4 = 'Very much so'). Sample items are, '*I was furious*', '*I felt irritated*'. The scale's alpha reliability for this scale was 0.95.

Co-worker support. A 3-item scale adapted from Madjar et al. (2002) was used to measure co-worker support. Sample items are '*My co-workers other than my supervisor are almost always supportive when I come up with a new idea about my job*', '*My co-worker other than my supervisor gives me useful feedback about my ideas concerning the workplace*'. Response options ranged from 1= 'Strongly disagree' to 7 = 'Strongly agree'. The scale's alpha reliability was 0.95.

Relationship Conflict. A 4 item scale adapted by Simons and Peterson (2000) from Jehn's scale (1995) was used to measure relationship conflict. Response options were 1 = 'None', 2 = 'A bit', 3 = 'Moderately', 4 = 'Much', and 5 = 'A very great deal'. Sample items are '*How much personal friction is there among your team?*', '*To what extent are grudges evident among members of your group?*' The scale's alpha reliability was 0.90.

Control variables. Age, gender, anger trait, and task characteristics - high effort task – were controlled for their potential impact on creativity. *Trait Anger-Temperament* was measured by two items ('*I am quick tempered*' and '*I have a fiery temper*') (Forgays et al., 1997) on a 4-point scale (1= 'Almost never' to 4 = 'Almost always'). The scale's alpha reliability was 0.78. *High Effort Tasks* was measured by a 6 item scale adapted from

Hackman and Oldham (1980). Sample items are ‘my *job tasks are very difficult*’ and ‘there is a lot of daily effort’. Response options ranged from 0 = ‘Never’ to 5 = ‘Always – everyday’. The scale’s alpha reliability was 0.87.

2.4.3. Scale validities.

As the data relied on self-report for both day- and person-level questionnaires, common method variance might influence the relationships examined (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), confirmatory factor analyses (CFA) were conducted to test the distinctiveness of our study variables. The results showed that both the hypothesized two-factor (state anger and CPE) model for the day-level data ($\chi^2_{(422)} = 326.15, p < 0.001, df = 109$, CFI = 0.97, RMSEA = 0.07, SRMR = 0.03) and the hypothesized four-factor model (high effort tasks, trait anger, co-worker support and relationship conflict) for the personal level data ($\chi^2_{(98)} = 87.51, p < 0.001, df = 71$, CFI = 0.97, RMSEA = 0.05, SRMR = 0.06) showed a good fit to the data. We then compared to hypothesized models to a single factor model where all variables were loaded on a single construct for the day- and personal- level data respectively. The results showed that both the hypothesized 2-factor model at the day-level and the hypothesized 4-factor model at the person-level fit the data better than the one-factor model ($\Delta\chi^2 = 2192.955, \Delta df = 6$; $\Delta\chi^2 = 384.521, \Delta df = 6$ respectively), indicating the distinctiveness of our study variables.

Furthermore, the construct and discriminant validities were tested by calculating the composite reliability and the average variance extracted (AVE). The composite reliability results showed that all variables exceeded 0.70, the minimum cut-off values except for that for co-worker support (0.67). The AVE for all variables except for co-worker support (0.49) exceeded the 0.50 cut-off value, indicating a reasonable convergent validity (Fornell & Larcker, 1981). Finally, the AVE of each variable was compared to its shared variance with all other variables (AVS) (Farrell, 2010). The AVS of each variable was always less than its AVE suggesting that the scales for this study have a satisfactory level of discriminant validity (Hair, Black, Babin, Anderson, & Tatham, 2006).

2.4.4. Analytic strategy.

Given the nested structure of the data, that is day level data were collected for each person, it was used hierarchical linear modelling to test the hypotheses (Aguinis, Gottfredson, & Culpepper, 2013; Bryk & Raudenbush, 1992; Hofmann, 1997). Following Hofmann and Gavin (1998), it was determined the centring strategy according to the nature of the hypothesis. Level 1 predictor grand mean centred to test for the main effects of state anger on the three sub-processes of the creative process (H1). For the hypothesized cross-level interaction effects (H2 and H3), the level 2 predictor was group mean centred to eliminate between-individual variance in the predictor variable, ensuring that estimates represent strictly within-individual associations.

2.5. Results

2.5.1. Descriptive statistic and correlations.

Table 2.1. displays descriptive the statistics and correlations among all study variables. The day level and the person level variables are presented separately.

2.5.2. Test of hypotheses.

The results for hierarchical linear modelling analyses are summarized in Table 2.2.. Using HLM 7.0 software, we estimated a null model for problem identification (CPE1), information searching and coding (CPE2) and idea generation (CPE3) respectively, in which no predictors were specified for either the Level 1 or the Level 2. The results confirmed that there was a significant between-person variance ($p < 0.01$) for all these three outcome variables. Furthermore, ICC1 for CPE1, CPE2 and CPE3 was 0.36, 0.43 and 0.38 respectively, indicating that a significant amount of variance in individual CPE resided between individuals and thus warranting the use of hierarchical linear modelling in the analyses. Age, gender, trait anger and HET were considered as control variables in all our analyses.

Anger and Creative Process Engagement

Table 2.1. Means, Standard Deviations and Correlations among Variables considered at level 1 and level 2

	Mean	SD	1 (SA)	2 (CPE1)	3 (CPE2)	4 (CPE3)	5 (AGE)	6 (GEN.)	7 (HET)	8 (TAT)	9 (CWS)	10 (RC)
Level 1 variables – Day-level (N = 422)												
1. SA	1.23	0.53	(0.95)									
2. CPE 1	3.10	0.94	0.08	(0.85)								
3. CPE 2	3.02	0.99	0.03	0.72**	(0.86)							
4. CPE 3	2.90	0.94	0.06	0.66**	0.70**	(0.86)						
Level 2 variables – Person-level (N = 98)												
5. AGE	31.32	5.89	-0.04	-0.10	-0.08	-0.10						
6. GENDER	0.36	0.48	0.09	0.05	0.03	0.10*	-0.25					
7. HET	1.51	0.94	0.25*	0.19	0.11	0.34**	-0.19	0.39**	(0.87)			
8. TAT	1.73	0.70	0.23*	0.28**	0.25*	-0.23*	-0.13	-0.03	0.17	(0.78)		
9. CWS	5.22	1.10	-0.10	-0.03	0.02	0.04	0.16	-0.22**	-0.08	0.05	(0.95)	
10. RC	1.76	0.69	0.34**	-0.05	-0.06	0.05	-0.08	0.14**	0.11	0.25*	-0.04	(0.90)

Notes: The Internal Consistency Reliability (Cronbach's Alphas) are in bold italic and on the diagonal parentheses. Gender: Male 0; Female 1. SA – state anger, CPE1 – problem identification, CPE2 – information searching and encoding, CPE3 – idea generation, HET – high effort tasks, TAT – trait anger temperament, CWS – Co-worker support, RC – Relationship conflict

* p < 0.05 **p < 0.01

Main effects (H1).

To test H1, we regressed on problem identification, CPE1 (Model 1), information searching and encoding, CPE2 (Model 2) and idea generation, CPE3 (Model 3) respectively state anger at the day-level and controls (i.e. age, gender, high effort tasks, trait anger) at the person level.

The results showed that state anger was positively related to CPE1 ($\gamma = .16, p < 0.05$) (Model 1) but was not related to CPE2 ($\gamma = -0.00, p = ns$) (Model 2), or CPE3 ($\gamma = -0.02, p = ns$) (Model 3). Thus, Hypothesis 1 received support.

Cross-level interaction effects (H2 and H3).

Although the cross-level interaction effects for CPE2 and CPE3 were only hypothesised, CPE1 was also included in the analyses to be parsimonious. Thus, to test the moderating effects of co-worker support and relationship conflict, we regressed on CPE1, CPE2, and CPE3 state anger at the day level, controls and co-worker support and the cross-level interaction term of co-worker support and state anger for H2 (Models 4, 5 and 6) and the interaction term of relationship conflict and state anger for H3 (Models 7, 8 and 9). The results showed that the interaction term of co-worker support and state anger was significant in Model 5 ($\gamma = 0.43, p < 0.01$) and Model 6 ($\gamma = 0.39, p < 0.05$) but non-significant in Model 4 ($\gamma = 0.23, p = ns$). The interaction term of relationship conflict and state anger was significant in Model 8 ($\gamma = -0.40, p < 0.01$) but not in Model 7 ($\gamma = -0.40, p = ns$) or Model 9 ($\gamma = -0.36, p = ns$). Thus, H3b was rejected.

Anger and Creative Process Engagement

Table 2.2. *Multilevel Modelling Analysis Predicting CPE1, CPE2, CPE3*

	Null Model	Model1 CPE1	Null Model	Model2 CPE2	Null Model	Model3 CPE 3	Model4 CPE1	Model5 CPE 2	Model6 CPE 3	Model7 CPE 1	Model8 CPE 2	Model9 CPE 3
Intercept	3.10 ** (0.07)	2.72 ** (0.52)	3.02 ** (0.08)	2.63 ** (0.57)	2.90 ** (0.07)	2.27 ** (0.58)	2.98 ** (0.54)	2.58 ** (0.59)	2.24 ** (0.59)	2.60 ** (0.54)	2.48 ** (0.60)	2.22 ** (0.59)
Level 1												
SA		0.16 * (0.08)		-0.00(0.07)		-0.02(0.07)	0.32(0.19)	0.01(0.12)	-0.02(0.13)	0.39 * (0.19)	0.01(0.14)	-0.01(0.14)
Level 2												
Age		-0.01(0.01)		-0.01(0.01)		-0.00(0.02)	-0.01(0.01)	-0.00(0.02)	-0.00(0.02)	-0.01(0.01)	-0.00(0.02)	-0.00(0.02)
Gender		0.06(0.15)		0.06(0.16)		0.04(0.14)	-0.00(0.16)	0.05(0.18)	0.05(0.15)	0.05(0.16)	0.09(0.17)	0.06(0.16)
HET		0.05(0.07)		-0.01(0.08)		0.17 * (0.07)	0.06(0.07)	0.00(0.08)	0.17 * (0.07)	0.07(0.07)	0.01(0.08)	0.17 * (0.07)
TAT		0.24 ** (0.08)		0.28 ** (0.09)		0.20(0.08)	0.28 ** (0.08)	0.27 ** (0.09)	0.19 * (0.08)	0.31 ** (0.08)	0.30 ** (0.09)	0.19 * (0.09)
CWS							-0.04(0.06)	-0.02 ** (0.07)	0.01(0.05)			
RC										-0.13(0.08)	-0.12(0.09)	-0.01(0.08)
Cross-level Interaction												
CWS X SA							0.23(0.22)	0.43 ** (0.15)	0.39 * (0.17)			
RC X SA										-0.40(0.23)	-0.40 * (0.18)	-0.36(0.20)
Variance Components												
L1 (within team variance)	0.56	0.54	0.55	0.55	0.54	0.54	0.53	0.54	0.53	0.53	0.55	0.54
L2 (Intercept variance)	0.31	0.26	0.41	0.38	0.33	0.27	0.29	0.40	0.29	0.28	0.40	0.29
Additional Information												
ICC	0.36	—	0.43	—	0.38	—	—	—	—	—	—	—
Deviance	1.064.72	1.062.19	1.082.10	1.086.20	1.059.96	1058.81	1.069.10	1.086.25	1.059.59	1.064.38	1.087.72	1.061.17
N° estimated parameters	2	4	2	4	2	4	4	4	4	4	4	4
Pseudo R2	0	0.07	0	0.04	0	0.07	0.13	0.02	0.06	0.06	0.03	0.06

Note: L1 N = 422 , L2 N = 98; SA – state anger, CPE1 – problem identification, CPE2 – information searching and encoding, CPE3 – idea generation, HET – high effort tasks, TAT – trait anger temperament, CWS – Co-worker support, RC – Relationship conflict.

* p < 0.05 ** p < 0.01

To further interpret the nature of the significant cross-level interaction effects, the latter were plotted using the procedures suggested by Aiken and West (1991). As shown in Figure 2.2. and 2.3, the relationship between state anger and CPE2 and that between state anger and CPE3 was positive when co-worker support was high but negative when co-worker support was low. Results of simple slope tests further showed that the simple slope for anger and CPE2 under conditions of high co-worker support was positive and significantly different from zero ($\gamma = 0.43$, $p < 0.01$). The same has happened with CPE3 ($\gamma = 0.39$, $p < 0.05$). Thus, Hypothesis 2a and 2b were supported.

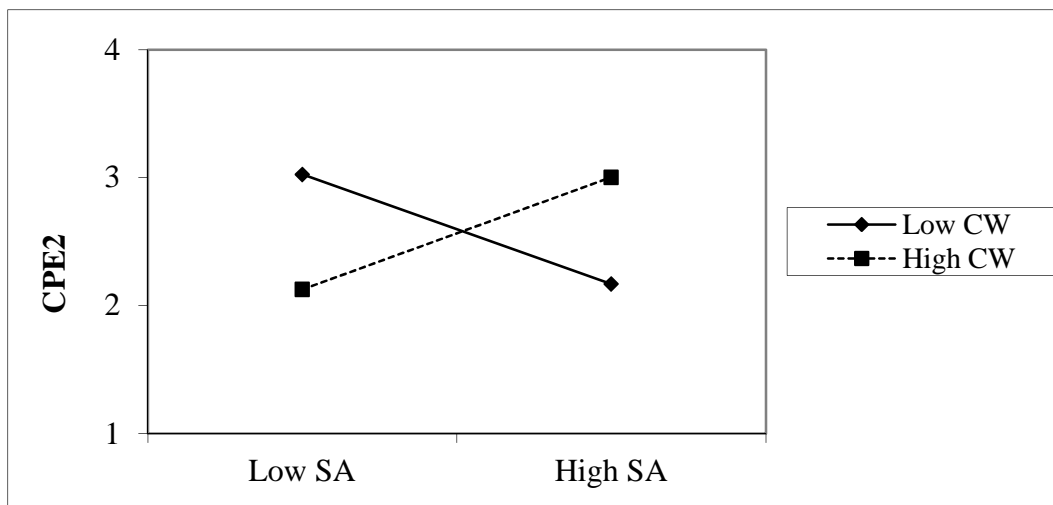


Figure 2.2. The Moderating Effect of Co-worker Support (CW) on the Relationship between State Anger (SA) and Information Seeking and Encoding (CPE2)

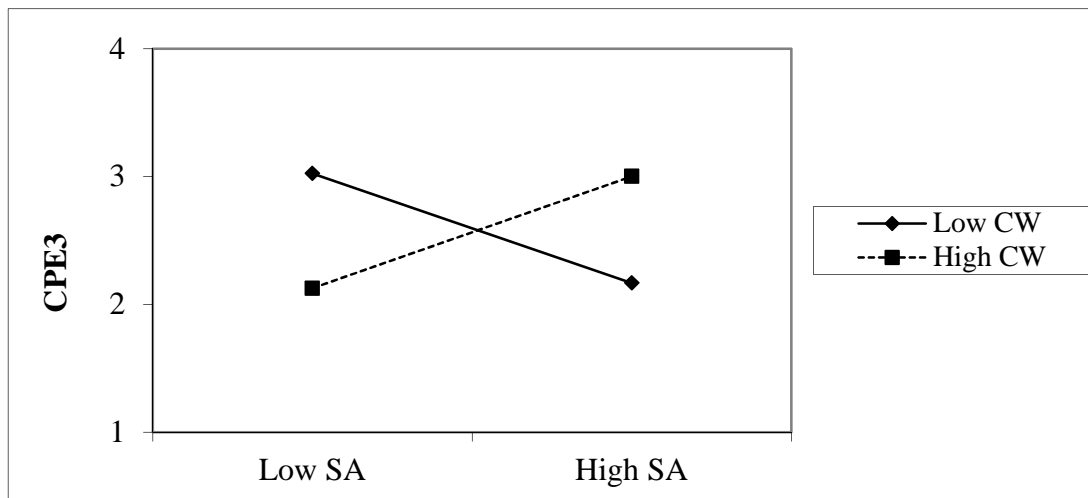


Figure 2.3. The Moderating Effect of Co-worker Support (CW) on the Relationship between State Anger (SA) and Idea Generation (CPE3)

Similarly, Figure 2.4. showed that the relationship between state anger and CPE2 was positive when relationship conflict is low but negative when relationship conflict was high. Results of simple slope tests showed that the simple slope for anger and CPE2 under conditions of high relationship conflict was negative and significantly different from zero ($b = -0.40$, $p < 0.05$) while the simple slope for anger and CPE3 under conditions of low relationship conflict was negative but non-significant ($b = -0.36$, ns). Thus, H3a was supported, but hypothesis 3b was rejected.

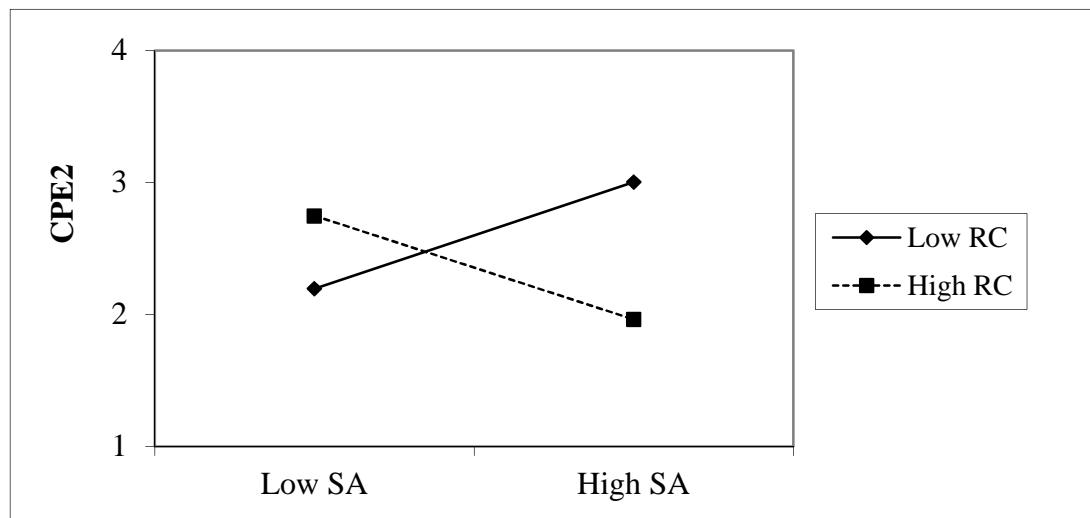


Figure 2.4. The Moderating Effect of Relationship Conflict (RC) on the Relationship between State Anger (SA) and Information Seeking and Encoding (CPE2)

2.6. Discussion

Although affect has been recognised as one of the most critical factors in the work environment influencing employee creativity (e.g. Amabile et al., 2005; Hennessey & Amabile, 2010; Shalley et al., 2004), the questions about whether and when negative emotions such as anger influence creativity have remained unclear. This paper addresses these gaps by investigating the relationship between anger and the creative process and the moderating effects of the social context, using daily survey data from 98 employees from three organisations over a period of five continuous working days. The results showed that anger has differentiated effects on the three sub-processes of the creative process: problem identification, information searching and encoding and idea generation. While anger was positively related to the initial stage of CPE, problem identification, it was found to be unrelated to the latter stages of the creative process, information searching and encoding, and idea generation. However, the relationship between anger and these two stages was found to be moderated by co-worker support and relationship conflict. Specifically, anger was positively related to information searching and encoding and idea generation when co-worker support was high rather than low. However, anger was negatively related to information searching and encoding when relationship conflict was high.

2.6.1. Theoretical implications.

The results from this study have several important theoretical implications. First, researchers have called for more studies to understand the impact of anger on creativity given the inconclusive evidence in the literature (Baas et al., 2011). Examining the relationship between anger and the creative process provides an opportunity to examine the differentiated impacts of anger on the sub-processes of the creative process. The finding that anger is positively related to problem identification but not to the other two sub-processes suggests that the potential positive impact of anger on creativity may be limited to the early stage of the creative process, i.e. problem identification. This is in line with the affect-as-information perspective in problem-solving (Schwarz & Skurnik, 2003) and prior research (Zhou & George, 2001). Anger may serve as signal that something is problematic thus triggering the creative process. Furthermore, the study provides empirical evidence for the notion that factors influential at one stage of the creative process may not have the same impact on other stages of the creative process (Amabile, 1983). Thus, the study augments the efforts to

understand the sub-processes of the creative process (Binnewies et al., 2007; Caniëls et al., 2014; Yuan & Zhou, 2008) and provides further insight on the role of anger at the different stages of the creative process.

On the other hand, the results that anger is not related to information searching and encoding and idea generation suggest that the motivation and the cognitive efforts to solve problems at work may not be sustained throughout the creative process. Baas et al. (2011) offered one possible explanation by attributing the change of positive impact of anger over time to cognitive resource depletion. Different from Baas and colleagues' focus on the internal change of cognitive resource (individual-based resources) in the creative process, and consistent with the interactionist view of creativity (Woodman et al., 1993; Woodman & Schoenfeldt, 1990), the importance of the social context is highlighted. The findings that social context such as co-worker support and relationship conflict moderated the relationship between anger and the creative process, especially at the stage of information seeking and encoding suggests that the social context plays a critical role in the processes linking anger and creativity. Although research has underscored the impact of social-context factors on employee creativity (Shalley et al., 2004), research has yet to explain when and what kind of social-context factors matter most during the creative process. The results show that the social context is particularly important for the information searching and encoding stage of the creative process when employees experience anger. When co-worker support is high, the potential benefits of anger on creativity will be sustained and employees will engage in searching and gathering relevant information to deal with work-related problems. Thus, although anger may deplete cognitive resource (Baas, et al., 2011), the support from co-workers is likely to provide external resources for them to maintain their momentum for their creative efforts. The importance of social context can also be highlighted from another set of results from our study- the relationship between anger and information seeking and encoding was negative when co-worker support was low or relationship conflict was high. Overall, these results offer a potential explanation for the documented inconclusive relationship between anger and creativity. Future research should extend the findings of this research and explore why social context may change the relationship between anger and creativity.

2.6.2. Practical implications.

The findings of this study provide actionable knowledge that organisations can use to manage anger experienced by employees and to channel it into creative performance. Managers should be informed of the nature of anger in the problem-solving process. Specifically, our finding suggests that anger is positively associated with problem identification at the initial stage of the creative process leading. Rather seeing anger as a negative emotion to be suppressed or avoided, managers should learn to see employee anger as an indicator of problems at work and pay attention to the problems that cause anger. The reported moderating influence of co-worker support and relationship conflict on the relationship between anger and the creative process suggest that management need to create a positive social environment if they are to channel the positive impact of anger to creativity. Management interventions that encourage team work and quality relationships will help sustain the motivation and cognitive efforts triggered by anger leading to creativity.

2.6.3. Limitations and future research.

This study has some limitations which must be highlighted. First, given the cross-sectional research design especially with the daily data, the direction of causality cannot be clearly determined. As Amabile et al. (2005) found that creativity may lead to emotions as well as being a result of emotions, it is possible that employees get angry when they fail in their creative efforts. Although theories (Schwarz & Skurnik, 2003) as well as experimental studies (Baas et al., 2011) have supported the causal relationship between anger and the creative process, future research that should use a longitudinal research to ascertain the causal status of the relationships reported in this study. As with other studies that use daily surveys (e.g. To et al., 2012), the present study relied on self-report data giving rise to concerns about the potential influence of common method variance (CMV) on the findings reported in this paper. However the CFA results revealed that these findings are not entirely attributable to CMV. Furthermore, CMV cannot account for the differentiated relationships between anger and the sub-processes of the creative process. Nevertheless, we suggest that future research should obtain data on some of the individual-level variables such as co-worker support from peers.

One of the hypotheses regarding idea generation (H3b) did not receive support. A closer examination of the results showed that although all the relationships were in the hypothesised direction, the statistics failed to reach the significant level (i.e. $p < 0.05$). One possible reason is that the process of idea generation may need something beyond social support as idea generation involves exploring multiple pathways which requires not only motivation but also divergent thinking skills (Amabile, 1983). Future research should further explore other types of social support such as informational support (Madjar, 2008) or intellectual stimulation (Zhou, Hirst, & Shipton, 2012) that may moderate the relationship between anger and idea generation.

2.7. Conclusion

Given the criticality of employee creativity to organisational success in a competitive business environment and the critical role of emotions such as anger plays in influencing such behaviour, more research is needed to resolve the inconclusive relationship between anger and creativity. Our research highlights the need to examine the differentiated impact of anger on the sub-processes of the creative process and the importance of taking the social context into consideration. Future research should extend the findings of this study by examining other social-contextual factors that may attenuate the relationship between anger and the creative process.

3. Emotional Exhaustion and Competitive Psychological Climate as antecedents of Anger

3.1. Abstract

Based on the affective events theory, the antecedents of state anger related to emotional exhaustion and competitive psychological climate (CPC) were studied from 422 daily responses from 98 employees of three multinationals in Portugal. As expected, the results of the hierarchical linear modelling revealed positive main effects of emotional exhaustion and a CPC that predicted state anger. Moreover, the relationship between emotional exhaustion and state anger (daily-level variables) was shown, by the moderating effect of CPC (person-level variable), to be stronger. Practical and theoretical implications are discussed from a positive human resource management perspective of state anger.

Keywords: state anger; emotional exhaustion; competitive psychological climate.

3.2. Introduction

Positive emotions are expected to occur more in the workplace on a daily basis among leaders and employees, since these are the kinds of emotions that are supposed to be most commonly related to positive organisational outcomes (Ashkanasy, Härtel & Daus, 2002; Dienfendorff & Richard, 2003). However, daily working life related to job insecurity, high emotional pressure and competitiveness standards are more likely to induce negative emotions (Bolino & Turnley, 2003; Idris, Dollard & Winefield, 2011; Sparks, Faragher, & Cooper, 2001).

Given its characteristics and its mixed consequences, anger is seen as a special case among negative emotions (Geddes & Callister, 2007; Gibson & Callister, 2010). As an emotion frequently felt in daily life and in the workplace, anger is characterised by syndromes of specific feelings, cognitions, and physiological reactions (Averill, 1983). Although there is far more research available pertaining to the consequences of anger than to its antecedents (Booth & Mann, 2005; Domagalski & Steelman, 2007), there are three main anger-related work antecedents studied in previous research that are worth mentioning (Gibson & Callister, 2010): perceptions of unfairness and injustice; goal interference; and interpersonal conflict.

Studies on antecedents of anger have, hitherto, been based on appraisal theories and, as such, were considered work-event causes that are cognitively appraised. This, in turn, explained the emotional experience felt and the behavioural consequences (Frijda, 1988; Roseman & Smith, 2001). Research on the causes of anger in the organisational context has, therefore, mainly focused on an external-based approach, in which an induced event situation is expected to be cognitively appraised. Thus, there has been no interest in studying the causes of anger in the organisational context in a daily setting (Booth & Mann, 2005). Indeed, the target of previous research on causes of anger has been employees' work perceptions related to goal setting (Gibson & Callister, 2010). Despite the fact that negative emotions have proved to be positively related to work overload (Wegge, Dick, Fisher, West & Dawson, 2006), research has so far neglected the study of working conditions related to modern working demands (Booth & Mann, 2005); conditions such as work overload and competitiveness demands. Additionally, the types of organisational emotional perspectives studied (e.g. emotional labour; emotion at work; among others) have revealed that the relationship level (employees – clients; employees – supervisors; employees – co-workers) is the main source of emotions caused (Miller, Considine & Garner, 2007).

Therefore, an alternative understanding of the causes of anger could go beyond an exclusive external-based approach and should also include individual aversive negative affective conditions, such as pain and stress (see Berkowitz, 2003; Berkowitz & Harmon-Jones, 2004, for a review). That is to say, there could be aversive inner conditions that may themselves influence feelings of anger. In line with this alternative understanding of the causes of anger, the primary goal of this study is to examine one individual inner condition that may have an impact on anger increasing; in other words, the aversive emotional condition known as emotional exhaustion. The changes that have taken place in working conditions, especially over recent decades, have been responsible for a significant increase in daily working demands and job insecurity (such as the work events mentioned above), which contribute to employees' emotional exhaustion (Sparks, Faragher, & Cooper, 2001; Idris, Dollard & Winefield, 2011). Furthermore, increasing demands faced by employees due to socio-economic challenges were responsible for the heightening of daily competitiveness (Bolino & Turnley, 2003). The more competitive the workplace is perceived to be, the more negative consequences are to be expected; consequences such as stress and intention to quit the organisation (Arhab, Houston, Kolla, & Lucker, 2013; Barankay, 2010). These two

organisational conditions – daily working demands and heightened competitiveness – may be related to the increase of negative emotions. Emotional exhaustion as a consequence of adverse working conditions is also related to a propensity to capture mainly negative information and therefore to increased feelings of anger (Fox, Spector, & Miles, 2001; Sokka et al., 2014). In addition, there is a relationship between competitive situations and negative feelings (Van Kleef, De Dreu & Manstead, 2010).

This study is based on the affective events theory (Weiss & Cropanzano, 1996) and drawn from a within-individual perspective (intra-individual differences across time). According to this theory, a specific emotion such as anger could be induced by particular work events in correlation with personal dispositions. The question that is addressed implies that personal dispositions (such as emotional exhaustion and CPC) impact on feelings of state anger on a daily basis. The intention of this study is to understand anger as being doubly caused by the daily internal state of emotional exhaustion, and how anger could be affected by a psychosocial factor like CPC, which is seen also as having a moderating role in the relationship between emotional exhaustion and state anger (see Figure 3.1).

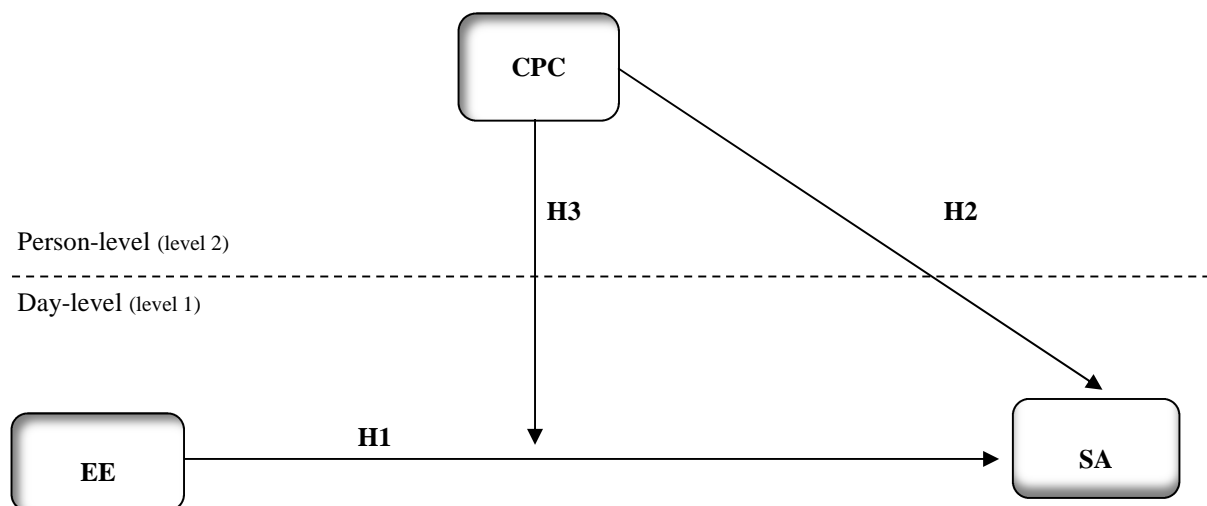


Figure 3.1. The Hypotheses Model – Emotional Exhaustion (EE) Competitive Psychological Climate (CPC) State Anger (SA)

On the whole, this study contributes to the literature on the causes of anger in an organisational setting in the following ways. Firstly, in an attempt to contribute towards research on the causes of anger in organisations' daily settings, this study considers anger

from a within-perspective by analysing intra-individual appraisals of two possible anger causes in a daily setting during a working week (Booth & Mann, 2005). Additionally, this study considers emotional exhaustion as a relevant factor that has an effect on a specific negative emotion, such as anger, which is in contrast to previous studies that have shown the contribution negative emotions make to emotional exhaustion (Zellars, Hochwater, Hoffman, Perrewé & Ford, 2004). Moreover, the study of CPC contributes to the discussion of contradictory results regarding the role a competitive climate plays in inducing negative emotions in specific conditions (Fülöp, 2009).

3.3. Theoretical Background and Hypotheses

3.3.1. Emotional exhaustion and state anger.

Emotional exhaustion is caused by several factors in the working context (Maslach, Schaufeli & Leiter, 2001) and could be expressed through negative emotions. Exhaustion is defined by the authors as the basic stress dimension of burnout, and manifests itself through a sense of emotional and physical resource depletion. Interestingly, there has been no preoccupation with analysing emotional exhaustion as causing a specific negative emotion, such as anger. The construct of emotional exhaustion in the work context has been analysed in the domain of emotional labour as caused by a cognitive dissonance response resulting from additional effort made by employees expressing an emotion different from what they would usually feel regarding an organisational rule (Grandey, 2003). But as well as understanding factors that lead to emotional exhaustion, it is relevant to consider that emotional exhaustion may, in turn, cause negative emotions (Zellars et al., 2004), particularly anger, in a daily organisational context.

In spite of the fact that causes of anger have been mostly related to a significant individual threat, such as the obstruction of goal attainment, causes of anger could also be related to an absence of gratification or general aversive conditions (Berkowitz & Harmon-Jones, 2004). There are job stressors commonly identified in any workplace, such as interpersonal conflict, role conflict and ambiguity, and situational constraints that could induce negative emotions (Fox, Spector, & Miles, 2001). Emotional exhaustion also proved to

induce feelings of anger in a teaching context (Goetz, 2015). As a consequence of job stressors and working conditions in general, as mentioned above, emotional exhaustion provokes cognitive changes.

One of the costs of feeling exhaustion at work is impaired executive cognitive control, which leads to low cognitive performance (Diestel, Cosmar & Schmidt, 2013). Additionally, it was found that job burnout predisposes individuals to fast attentional capture of negative information, as opposed to slow attentional capture of positive information (Sokka et al., 2014). Thus, emotional exhaustion reduces cognitive performance and predisposes individuals to capture negative information and thus generates negative emotions. Additionally, employees' emotional exhaustion is an individual aversive condition that can induce feelings of anger (Berkowitz & Harmon-Jones, 2004). Therefore, it is expected that the more emotional exhaustion an employee feels, the more anger will be generated.

***Hypothesis 1.** Emotional exhaustion is positively related to anger.*

3.3.2. CPC and state anger.

CPC is related to the perception an employee has about reward related to their own performance compared to that of their peers (Brown, Cron & Slocum, 1998). It can be seen as having positive and negative consequences depending on personality traits. As an individual perception perspective, CPC is influenced by personality trait dimensions, such as competitive trait (Brown, Cron & Slocum, 1998; Fletcher, Major & Davis, 2008). Therefore, with CPC as an individual perception, we cannot accurately infer real competitive conditions at the organisational level (Glick, 1985). The relevance of CPC perception is related to its organisational implications, as in the case of organisational commitment (Fletcher, Major, & Davis, 2008). CPC could weaken an employee's commitment to the organisation and foster their intention to leave it (Arhab et al., 2013; Barankay, 2010).

Competition could be understood as having two types of processes (Fülöp, 2009) leading to different outcomes: competition as a positive process that motivates and improves each competing party or, conversely, as a negative process in which the negative outcomes

may result in anger, among other negative emotions. As previous research has highlighted, people in competitive situations are more prone to negative feelings (Van Kleef, De Dreu & Manstead, 2010). There is even a relationship between competitive climate and workplace bullying as a defence against co-workers/competitors who might constitute a threat (Salin, 2003). The causes of anger that have been studied in the workplace relate to anger as a result of an employee perceiving a threat to their achieving job goals in general (Gibson & Callister, 2010). Thus, it is expected that the more CPC is perceived by an employee, the more negative emotions will be induced, specifically anger as a response to a specific work threat.

***Hypothesis 2.** CPC is positively related to anger.*

3.3.3. The moderating role of CPC.

There has been a call to study anger as caused by individual inner conditions (e.g. pain, psychological discomfort, stress) (see Berkowitz, 2003; Berkowitz & Harmon-Jones, 2004, for a review), rather than through the identification of a specific external entity responsible for anger. To address this challenge, emotional exhaustion was studied as an aversive inner condition that might be related to daily working demands. High CPC perception as a psychosocial factor is influenced by stress (Fletcher, Major & Davis, 2008). Thus, emotional exhaustion and CPC are considered as two interactive factors explaining anger in the organisational context.

As stated above, socio-economic challenges leading to daily working demands are responsible for organisations' achieving quality standards that can guarantee the competitive advantage essential to organisational survival (Idris et al., 2011). The daily demands of a job, coupled with fewer job resources lead to increased employee emotional exhaustion that is characterised by low energy, tiredness and a diminished sense of accomplishment (Smith, Gustafson & Hassmén, 2010). The greater the emotional exhaustion, the lower the energy expended in accomplishing a task and, consequently, decreasing involvement in the competitive environment. CPC proved to be related to increased levels of stress (Fletcher, Major & Davis, 2008).

Employees' emotional exhaustion increases a predisposition to negative emotions (Malash & Schaufeli, 2001), which are supposed to be regulated according to organisational rules (Grandey, 2003), and thus further increases emotional exhaustion. High emotional exhaustion with low energy to accomplish a task, in addition to a high competitive climate could be related to more feelings of anger. Being exhausted and more predisposed to capture negative information (Sokka et al., 2014), as well as to a perception of CPC where others could be seen as a threat (Salin, 2003), it is expected that both variables lead to feeling anger as follows. The relationship between emotional exhaustion and state anger is expected to be stronger when employees perceive CPC as high instead of low.

***Hypothesis 3.** The relationship between emotional exhaustion and state anger is moderated by CPC, such that the relationship between emotional exhaustion and state anger will be stronger when CPC is high rather than low.*

3.4. Method

3.4.1. Participants and procedure

This study sample comprises three multinationals in Portugal operating in the following consultancy domains – IT, finance and human resource management. Managers were involved from the beginning of the study, were informed about the goal of the study and assumed responsibility for employees' active participation. The initial number of participants was 188 full-time workers who, since their functions involved creativity tasks, were appraised for creativity. This initial sample completed the general questionnaire and the response rate of 48.2% was above the average response related to online surveys (Nulty, 2008). To be included in the final sample, participants had to fulfil the criteria – each participant, after completing the general questionnaire, had to have completed the daily questionnaire for at least 3 days out of the five required in a working week. From the final sample, a total of 422 responses were obtained, with a mean daily response of 4 days ($M = 4.3$ days per person).

The final sample (comprising 98 participants) is characterised by the following socio-demographic characteristics: 71.4% of the participants are male; the average age is 31.3 years

(SD = 5.9, ranging from 23 to 53 years); the average tenure was 4.2 years (SD = 2.7); 71% of participants had worked for 5 years or less in the company; 92.9% of the participants have a university degree.

There were two questionnaires answered by Qualtrics - a web survey tool. The questionnaires were translated from English into Portuguese and then back translated into English (Brislin, 1980). In the beginning of the study, participants answered the general online questionnaire appraising person variables such as CPC, trait anger temperament and demographics. Two days later, and at the end of every working day for one working week (Monday to Friday), the daily questionnaire was filled out, appraising variables such as state anger and emotional exhaustion.

3.4.2. Measures.

State anger. Assessed by a 10-item state anger sub-scale from the state-trait anger expression inventory – STAXI (Forgays, Forgays & Spieberger, 1997) to measure SA. The tip question was: “Please indicate your feelings today”. Response options ranged from 1 (Almost never) to 4 (Almost always). Example of sample items: “*I was furious*”, “*I felt irritated*”. The alpha coefficient was 0.95.

Emotional exhaustion. 6 items were used out of 9 from the sub-scale of emotional exhaustion developed by Maslach and Jackson (1981). The tip question was: “Please describe how you have felt today about the work you have just completed”. The word *today* was added to the items selected. Only one dimension to rate each item was considered – strength (instead of frequency) on a 7-point scale ranging from 0 (Never felt this way) to 7 (Completely felt this way). Example of sample items: “*I feel emotionally drained from my work today.*”; “*I feel used up today*”. The alpha coefficient was 0.90.

CPC. The 4-item scale developed by Brown et al. (1998) was used. The tip question was: “Please indicate how you agree with the following statements related to your work”. Response options ranged from 1 (Strongly agree) to 5 (Strongly disagree). Example of sample items: “*My manager frequently compares my results with those of others*”, “*The amount of recognition you get in this company depends on how your results rank compared to other workers*”. The alpha coefficient was 0.76.

Control Variables. In line with previous studies, age, gender and trait anger temperament were controlled to test their effect on state anger (Forgays et al., 1997). The 4-item sub-scale trait anger temperament (TAT) from state-trait anger expression inventory - STAXI (Forgays et al., 1997) was used. The tip question was: “Please indicate how you generally feel or react”. Response options ranged from 1 (Almost never) to 4 (Almost always). Example of sample items: “*I am quick-tempered*”, “*I have a fiery temper*”. The alpha coefficient was 0.66.

3.4.3. Scale validities.

Confirmatory factor analysis (CFA) was used, via AMOS software, to test convergent and discriminant validity related to the variables present in the study. Two models were tested – Model 1 (within) comprising three factors (state anger and emotional exhaustion), and Model 2 (between) comprising two factors (trait anger temperament and CPC). Model 1 and Model 2 indicated good model fit to the data [$\chi^2_{(422)} = 1160.85$, $p < 0.001$, $df = 272$, CFI = 0.948, RMSEA = 0.08, SRMR = 0.04], [$\chi^2_{(98)} = 90.34$, $p < 0.001$, $df = 19$, CFI = 0.916, RMSEA = 0.094, SRMR = 0.068], respectively. In Model 1, the covariance of associate errors of the two factors with similar meanings were estimated. This procedure results from a post-test AMOS modification indices procedure (O’Brien, 1994).

Using self-reported data usually related to common method variance, Harman’s single factor was applied (Podsakoff, MacKenzie, Lee and Podsakoff, 2003). This test indicates whether the variance is associated with the measurement method or the constructs themselves. Compared to the previous results of Model 1(within) and Model 2 (between) for CFA a single-factor model did not show better fit results ($\Delta\chi^2_{(422)} = 5477.27$, $\Delta df = 3$; $\Delta\chi^2_{(422)} = 252.61$, $\Delta df = 1$, respectively). Since the models have only two factors, the test of AVE and ASV are not possible to estimate.

3.4.4. Analytic strategy.

The variables included in the model did not present a normal distribution. In this case, as suggested by Limpert, Stahel & Abbt (2001), it is possible to use a technique known as

transformation of data to obtain accuracy in estimating standard deviation and confidential intervals from skewed data. The initial data were transformed into a logarithmic scale in order to obtain a distribution close to normality for each variable included in the model, as done in previous research (e.g. Guan, Yusoff, Zainal & Yun, 2012).

The hypotheses testing used a multilevel model – hierarchical linear regression model (Aguinis, Gottfredson & Culpepper, 2013; Bryk & Raudenbush, 1992; Hoffman, 1997). The data structure considers 2 levels in which days (Level 1) were nested in persons (Level 2). Level 1 (the day-level) includes two variables such as state anger and emotional exhaustion. Level 2 (the person-level) included two variables among participants, trait anger temperament and CPC.

Full maximum likelihood was used to estimate the parameters. Respecting the nature of hypotheses, a centring strategy was used (Hoffman & Gavin, 1998). To test main effects (H1 and H2) of emotional exhaustion and CPC on state anger, a grand-mean centring was applied. To test cross-level interaction (H3), a group-mean centring at Level 1 was applied to eliminate between-individual variance in the predictor variable, thus estimating within individual associations exclusively. At Level 2, a grand-mean centring was used to reduce the non-essential multi-collinearity (Raudenbush & Bryk, 2002).

3.5. Results

3.5.1. Descriptive statistics and correlations.

Results from descriptive statistics and correlations at the day-level and person-level regarding about variables studied are shown in Table 3.1.. At Level 1 – the day level – state anger is positively related to emotional exhaustion ($r = 0.58, p < 0.01$). At Level 2 – the person level – trait anger temperament is related positively with state anger ($r = 0.32, p < 0.01$), emotional exhaustion ($r = 0.20, p < 0.05$). CPC is correlated positively with state anger ($r = 0.32, p < 0.01$) and emotional exhaustion ($r = 0.18, p < 0.01$).

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Table 3.1. *Means, Standard Deviations and Correlations among Variables considered at level 1 and level 2*

	Mean	SD	1(SA)	2(E)	3(AGE)	4(GEN.)	5(TAT)	6(CPC)
Level 1 variables – Day-level (N = 422)								
1. SA	1.23	0.53	(0.95)					
2. EE	1.00	1.52	0.58**	(0.90)				
Level 2 variables – Person-level (N = 98)								
3. Age	31.32	5.89	-0.06	-0.14**				
4. Gender	0.36	0.48	0.14	0.11*	-0.25*			
5. TAT	1.73	0.70	0.32**	-0.04	-0.06	0.04	(0.66)	
6. CPC	4.17	1.36	0.32**	0.18**	0.02	-0.01	0.12	(0.76)

Notes: The internal consistency reliabilities (Cronbach's Alphas) are in bold italic and on the diagonal parentheses. SA – state anger, EE – emotional exhaustion, TAT – trait anger temperament, CPC – competitive psychological climate

* $p < 0.05$ ** $p < 0.01$

3.5.2. Test of hypotheses.

The main effects and cross-level moderation effects related to state anger are included in Table 3.2.. The variance predicting state anger at Level 1 was 0.05, and at Level 2 was 0.03, and ICC = 0.38, indicating that 38% of the variance was related to the person level and 62% to the day-level, justifying hierarchical linear modelling analysis.

Main effects (H1 and H2).

According to Model 1 and Model 2 (Table 3.2), emotional exhaustion (H1) and CPC (H2) are shown to be significantly related to state anger ($b = 0.19$, $p < 0.01$) and ($b = 0.15$, $p < 0.05$), respectively. So H1 and H2 were supported. Age, gender and TAT were considered as control variables.

Moderation effect (H3).

In accordance with H3 (*The relationship between emotional exhaustion and state anger is moderated by CPC, such that the relationship between emotional exhaustion and state anger will be stronger when CPC is higher than when CPC is lower.*), the moderating effect

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of CPC was tested in Model 2 (Table 3.2). Emotional exhaustion, creative psychological climate, control variables and two-way interaction effect (CPC X emotional exhaustion) were entered, with the interaction effect being significant ($b = 0.16$, $p < 0.05$).

Table 3.2. *Multilevel Modelling Analysis Predicting State Anger*

	Null Model	Model 1	Model 2
Intercept	0.15** (0.02)	0.15** (0.02)	0.15** (0.02)
Day-level (N = 422)			
EE		0.20** (0.03)	0.19** (0.03)
Person-level (N = 98)			
Age		-0.00(0.00)	-0.00(0.00)
Gender		0.06(0.05)	0.06(0.05)
TAT		0.14** (0.06)	0.14** (0.05)
CPC		0.15* (0.06)	0.15* (0.06)
Interaction			
CPC X EE			0.16* (0.08)
Variance Components			
L1 (within team variance)	0.05	0.03	0.03
L2 (Intercept variance)	0.03	0.04	0.04
Additional Information			
ICC	0.38	—	—
Deviance	42.34	114.91	120.09
Number of estimated parameters	2	2	2
Pseudo R ²	0	0.13	0.13

Note: L1 N = 422, L2 N = 98; SA – state anger; EE – emotional exhaustion; TAT – trait anger temperament; CPC – competitive psychological climate.

* $p < 0.05$ ** $p < 0.01$

Figure 3.2. reveals that the effect of high emotional exhaustion on state anger is stronger for employees higher in CPC perception.

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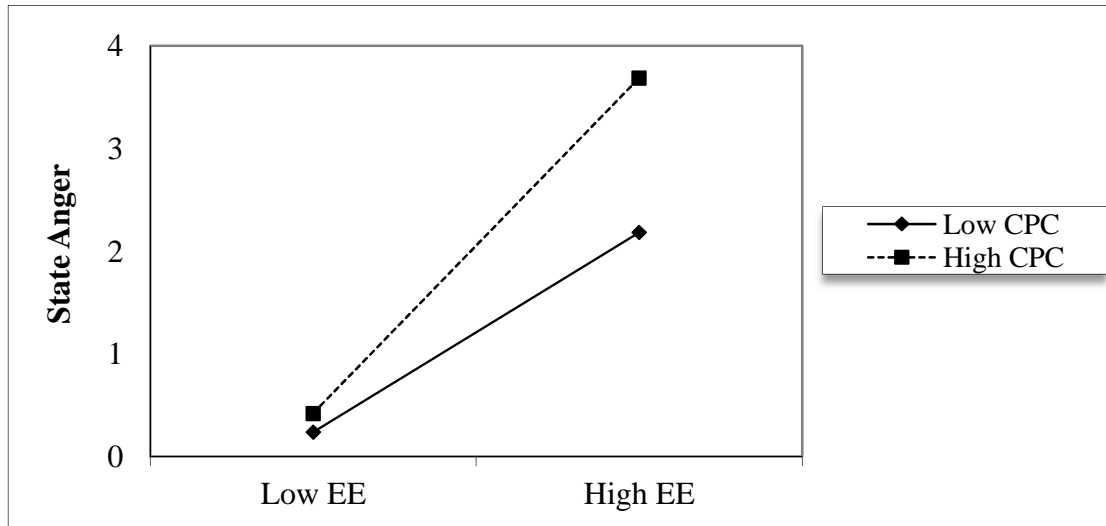


Figure 3.2. *The Moderating Effect of CPC on the Relationship between Emotional Exhaustion and State Anger*

3.6. Discussion

Anger as a special negative discrete emotion, given its specific characteristics and also given both its positive and negative consequences (Gibson & Callister, 2010), should be more studied in the work context. That is to say that knowledge about anger antecedents is important for a more aware emotional human resources management. As per the literature review, the consequences of anger are more studied than its antecedents (Domagalski & Steelman, 2007). Moreover, daily working conditions, related to work demands and competitiveness, and their relationship with negative emotions should be more widely known, especially negative emotions such as anger which is an approach tendency emotion (Carver & Harmon-Jones, 2009). Thus, this study intended to analyse emotional exhaustion and CPC as antecedents of anger in an organisational context in a within-perspective via a daily setting. Therefore, the purpose of this study was to bring additional knowledge to understanding how internal individual causes of anger are daily developed and what consequences they could bring.

Results showed that anger is doubly caused by emotional exhaustion and CPC, as these conditions predispose employees to more negative information (Salin, 2003; Sokka et al., 2014). The relationship between emotional exhaustion and state anger proved to be moderated

by CPC; the higher the perceived psychological climate, the stronger the impact of emotional exhaustion on state anger.

3.6.1. Theoretical implications.

There are several theoretical implications regarding the results of this study. The antecedents of anger studied took into consideration two common working conditions - emotional exhaustion as an inner condition and CPC as a perception of a contextual factor, rather than what has commonly been studied as causes of anger (Gibson & Callister, 2010). Emotional exhaustion has particularly been considered a cause of negative emotion instead of being studied as a consequence of it (Berkowitz, 2003; Berkowitz & Harmon-Jones, 2004; Maslach et al., 2001; Zellars et al., 2004). This could be seen as a contribution to the literature on causes of anger and reveals that interaction factors such as aversive inner individual conditions and individual perception of contextual factors should both be considered. In this sense, our findings advance the existing literature because hitherto, aversive inner conditions (Harmon-Jones, 2004) and individual perceptions of the working context resulting from modern working demands (Booth & Mann, 2005) have been neglected in studies on the causes of anger.

Moreover, contrary to what has been done previously (Booth & Mann, 2005), this study intended to highlight the relevance of analysing the impact of a cause of emotion (emotional exhaustion) and an individual perception of a contextual factor characteristic (CPC) in a within-perspective in a daily setting. The causes of negative emotions, in particular anger, in an organisational context should be studied by considering the interaction of personal and contextual factors (Gibson & Callister, 2010; Weiss & Cropanzano, 1996).

3.6.2. Practical implications.

The understanding of multiple causes of anger in an organisational context (Geddes & Callister, 2007; Gibson & Callister, 2010) could bring an improvement in emotional daily management by employees and their supervisors. State anger, as caused by individual and continuous daily emotional exhaustion in the working context, might be an additional source of emotional and cognitive resource depletion (Baas et al., 2011). Bearing in mind that this

additional resource depletion (inherent to the process of feeling anger) has a detrimental effect on performance, the positive consequences of anger - such as in the creative process - (Baas et al., 2011) could be questioned. That is to say, the energy of anger as an emotional approach tendency (Carver & Harmon-Jones, 2009) - might not be used in a positive way over time.

Learning how to use anger energy to improve performance could also be an additional way for employees to prevent emotional exhaustion caused by the anger they feel. Specifically, to achieve effective emotional human resources management, it is necessary to prevent anger increasing to a level that might be dysfunctional to employee performance, instead of exclusively regulating its expression (Grandey, 2003). The negative consequences attributed to anger may prevent employees from analysing the different causes that could lead to anger, and from being able to use feelings of anger as a motivational energy. Therefore, training in the causes of anger brings about knowledge improvement, and the positive use of anger is needed. Moreover, it may be relevant in recruitment, selection, and performance appraisal to not only identify an outstanding skill in anger management, but to include awareness of its causes.

3.6.3. Limitations and future research.

Despite the contributions made in this study, there are limitations to be regarded in future studies. The results were obtained from self-reported measures in a specific context (consultancy companies). Thus, others measures should be used to assess causes of anger in other more vast samples. The impact of the two causes studied that related to other negative emotions besides anger, to allow for comparisons, should also be considered. Apart from considering the impact of CPC on anger, other variables of competition such as competitive trait (Fletcher et al., 2008), group or team competition could be considered in order to provide additional data.

Additionally, in the study of emotional exhaustion and CPC as causes of anger, other personal and contextual factors should be considered as having possible moderating effects (e.g. personality traits, work support). Moreover, the causes of anger should be studied in other samples where anger display rules might be different (e.g. Goetz et al., 2015; Woodman et al., 2009).

3.7. Conclusion

Anger as a complex discrete emotion present in the workplace needs to be thoroughly understood instead of simply being regulated. A broader understanding of antecedents could shed some light on the personal and contextual factors that explain feelings of anger and, eventually, possible differences in its expression. In this study, anger proved to be caused by emotional exhaustion and CPC. Emotional human resources management should include anger management skills as a possible balance between the promotion of employee health and the expected positive working outcomes of anger.

GENERAL CONCLUSION

Creativity in the organisational context is seen as a current strategic challenge to human resources development and management (Baker & Sonnenburg, 2013; Gibb & Waight, 2005). In addition to studying creativity through an outcome-approach (Amabile, 1983; Drazin, Glynn & Kazanjian, 1999), the process approach is an alternative way to consider psychological engagement in creative working tasks, studied as CPE (To et al., 2012; Zhang & Bartol, 2010a; 2010b). Furthermore, understanding the creative process highlights the influence of time on individuals' daily creative engagement (Drazin, Glynn & Kazanjian, 1999). Additionally, the affective component present daily in the work context, in conjunction with the interplay of individual and contextual factors, was shown to have a significant influence on increasing or decreasing creativity (Zhou & Hoever, 2014).

The main goal of this dissertation was to study a discrete negative emotion – anger - in the organisational context, and to determine its relationship with CPE. This study was undertaken in order to contribute to the discussion about hitherto inconclusive findings regarding the relationship between negative emotions and creativity (Baas et al., 2008; Shalley et al., 2004). Almost all of the studies on the negative affect-creativity link that have been carried out in the organisational context have overemphasised the role of moods as defined in the valence-based approach (Brief & Weiss, 2002). The three studies conducted were based on a specific-emotion approach (Lerner & Keltner, 2000; Lerner & Tiedens, 2006), with anger being considered as having particular characteristics that are distinct from other negative discrete emotions and even from negative mood, which are considered as a whole entity. Moreover, anger as an approach-tendency emotion (Carver & Harmon-Jones, 2009) has a positive motivational impact on behaviours that could be related to positive consequences in the organisational context rather than exclusively negative ones. This is in line with the positive social functions of specific negative emotions revealed in previous studies (González-Gomez & Richter, 2015).

The three studies conducted in three consultancy companies in Portugal used a daily survey approach and contemplated five working days (N=422) of 98 employees. Each study done was driven by a particular research challenge related to anger and the creative process in the organisational domain. The first article (chapter 1) explores the differences between the impact of state and trait anger on the CPE, and the role emotion regulation strategies play in

these relationships. This study, therefore, aims to contribute towards clarifying somewhat the contradictory data about the negative affect-creativity relationship (Amabile et al., 2005; Gibson & Callister, 2010), with the main goal being to understand what impact the specificity of anger could have - as a state and as a trait - on the creativity process (Deffenbacher et al., 1996; Forgas et al., 1997). The results of this study on the impact of anger specificity showed there was a positive direct impact of anger, especially of anger trait. Second, taking into account existing rules about displaying workplace emotion, another of the goals set was to analyse emotion regulation strategies as moderators of anger-CPE (Geddes & Callister, 2007). The relationship between anger (as a state and as a trait) and CPE proved to be moderated by emotion regulation strategies. Reappraisal strategies when greatly used had a negative effect on the positive impact of state anger in CPE. That is to say, using high reappraisal strategies diminishes the positive impact of state anger on CPE. On the other hand, suppression strategies used by individuals displaying trait anger revealed an equally negative effect on the positive impact of trait anger in CPE.

The second article (chapter 2) analysed the relationship between anger and the three stages of CPE (Zhang & Bartol, 2010a). The main goal was to study possible differences between the anger relationship and each of the three stages of CPE, with each stage involving different cognitive resources. Given the non-existence of a relationship between anger and the other two stages of CPE, the positive relationship between anger and the first stage of CPE – problem identification – was confirmed (Baas et al., 2011). The second goal was to identify contrasting social context factors as moderators (Woodman et al., 1993). Factors such as co-worker support and relationship conflict, which could either foster or hinder the previous two relationships. When co-worker support was high rather than low, anger proved to be related to information searching and idea generation (George & Zhou, 2007), with the relationship between anger and idea generation being stronger when relationship conflict was low. These results are in line with the role of cooperation context versus conflict context in the cognitive process (Carnevale & Probst, 1998).

The third article (chapter 3) considered the impact of inner and contextual factors related to anger increasing (Berkowitz & Harmon-Jones, 2004; Idris et al., 2011). Anger was studied as being caused positively by emotional exhaustion (Berkowitz & Harmon-Jones, 2004) and by competitive psychological climate (Van Kleef, De Dreu & Manstead, 2010). The moderation effect of this last variable was shown to increase the relationship between emotional exhaustion and anger (Fletcher, Major & Davis, 2008).

The first two studies conducted were intended to contribute to the understanding of what the relationship between anger and CPE could be. The first study (chapter 1) analysed anger specificities (state and trait) related to CPE, and then, in study 2 (chapter 2), the specificities of CPE related to anger were considered. Finally, the third study (chapter 3) considered two specific causes of anger and questioned what the consequences of anger might be with regard to the creative process.

Contributions and implications

This dissertation contributes to the literature in some specific aspects that contemplate negative affect and CPE. First, and in accordance with a few previous studies (Baas et al., 2011, 2012), showing the positive impact of anger on CPE testifies to the relevance of adopting a specific-emotion approach when studying emotions. This is in contrast to previous research, which was mainly based on the valence dimension that studied negative affect as a whole entity. Second, the study of a discrete emotion relationship with the creative process specificity instead of creative outcomes (Zhang & Bartol, 2010a, 2010b) is also a valid contribution. Moreover, in contrast to the majority of anger studies carried out in experimental settings, the setting used in this study is based on a daily design in an organisational context. This makes an important contribution to the understanding of anger expression in employees' natural contexts (Booth & Mann, 2005). In addition, the study of anger from a within-perspective also contributes to our understanding of how employees are affected by anger, and how anger impacts on their creative process performance. The direct impact of anger in the CPE revealed by the results of study 1 – particularly trait anger as a stable condition, but also state anger – is an alternative proposal to the exclusive context-dependent view of negative affect and creativity found in previous studies (George & Zhou, 2002, 2007). The results from study 2 are in line with previous research (Baas et al., 2011, 2012) and highlight the impact of state anger on creativity in the first stages of the cognitive process. Therefore, it is relevant to know which factors could foster creativity in the other stages of the creative process.

The study of moderators in the relationship between types of anger – CPE can enhance our understanding of how anger impacts on CPE. Anger regulation was considered an individual factor moderator of anger in the CPE relationship in study 1, as it is a critical issue in an organisational context limited by strict social norms (Geddes & Callister, 2007;

Grandey, 2003). It has been shown that emotion regulation strategies, as moderators of positive state anger and trait anger, have a negative influence on CPE. These results, although in line with the organisational anger regulation expectations about employees' not expressing anger (Averill, 1983; 2005), nevertheless highlight the need to discuss what the limits of emotion regulation should be when a positive outcome such as creativity has to be improved. Additionally, the study of two specific contextual factor moderators (as done in study 2) should be considered in order to further the improvement of or prevent a decrease in creative outcomes, as previous research has shown (Amabile, 1983, 1996; Shalley et al., 2004). The role co-worker support plays in improving the relationship between information searching and encoding and idea generation may result in the need to improve support conditions in the workplace in order to improve employee creativity. In contrast, relational conflict proved to play a negative moderating role in the relationship between anger and the two stages of CPE mentioned above.

The results from study 1 and study 2 led to an attempt to understand some of the multiple antecedents of anger that could widely contribute to a better understanding of anger expression, and its possible positive and negative consequences in an organisational context. Following the same procedures as in the two previous studies, study 3 considered an individual factor and a contextual factor. The inner condition of emotional exhaustion as a cause of anger was studied as a consequence of previous research (Berkowitz, 2003; Berkowitz & Harmon-Jones, 2004) and proved to be a contributing factor. The specific cause of anger that leads to emotional and cognitive resource depletion could, when added to the resource depletion related to feeling anger, hinder the positive consequence of anger in the creative process (Baas et al. 2011). CPC was studied as a cause of anger and also as a moderator of the relationship between emotional exhaustion and anger. The results revealed the significance of considering both the inner condition (emotional exhaustion) and the aversive contextual factor (CPC) (Gibson & Callister, 2010).

From the main contributions of the 3 studies, there are some practical implications worth mentioning. A deeper understanding of emotional competences on the part of human resources management in general, and of supervisors and employees in particular is a way of improving organisational outcomes such as creativity. Improving knowledge about negative discrete emotions, anger in particular, and their causes and consequences could contribute to human resources management considering the adoption of an emotional strategy. This, then,

could be a way of considering anger in a more positive manner instead of through the existing generalised display rules about anger expression in the organisational context (Gibson & Callister, 2010). A deeper understanding of anger management may involve an instrumental approach to emotion regulation (Ford & Tamir, 2012) through usefully adapting the level of anger feeling. Thus, a specific human resources strategy for emotions that would benefit employees' health and organisational outcomes, could confer greater knowledge of anger management and, through the development of anger management skills, foster creativity. Developing a specific human resources strategy for emotion management might involve a new perspective on employee selection and career management related to new organisational demands. Managers should also be aware of social contextual factors that could improve creativity in the different stages of the CPE. Factors such as the improvement of positive social environment to enhance the positive impact of anger in subsequent stages of creativity. The study of inner personal conditions and psychosocial factors as antecedents of anger should be considered more as a facilitator of anger management by both employees and supervisors. The consequences of anger related to the negative impact of anger feelings on employees' positive performance appraisals could bring into discussion the role of emotion display rules. Conversely, the development of an employee's emotional skill may lead to a useful adaptation of the level of anger felt in performance.

Future research directions

The contributions stated above should be developed and tested upon consideration of some future research directions. Despite the methodological difficulties involved in collecting data from companies, daily studies should nevertheless be used to study discrete emotions. Emotions such as emotional transitive states should be appraised more than once a day and for more than 5 consecutive days. Although it is certainly relevant to study a specific discrete emotion, considering other emotions in the same study might facilitate comparisons between emotions studied in identical conditions (e.g. happiness and sadness, Lerner & Tiedens, 2006). Thus, it is important to study more than one discrete emotion according to different dimensions – the valence and approach tendency. Future research on anger should consider dimensions of anger besides state and trait, dimensions such as expression or control, in the same study to test their relationship with CPE (Forgays et al., 1997). In the specific case of

the causes of anger, studying their consequences could be related to work outcomes like CPE and creative outcomes.

Additionally, the results should be tested by experimental studies to check internal validity. Moreover, the results of these studies may be tested in other types of samples with different characteristics, as is the case of the professions. In the specific case of moderators, other work contexts should be considered - like, for example, the study of more strategies for emotion regulation (Gross, 1998a, 1998b). In future studies, creativity as a dependent variable could include comparisons between subjective creative process appraisals, supervisory appraisals, and objective measures of creativity (Shalley, Zhou & Oldham, 2004).

The study of discrete emotions is a promising research domain characterised by wide idiosyncratic features that should all be addressed as worthy of study. Anger, in particular, is a special negative emotion that has several functions in the workplace. Anger provides the additional energy needed to achieve individual goals, thus increasing task involvement. It is also responsible for positive outcomes, such as in the specific case of CPE.

REFERENCES

- Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modelling. *Journal of Management*, 56(3), 218-226.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Akinola, M., & Mendes, W. B. (2008). The dark side of creativity: Biological vulnerability and negative emotions lead to greater artistic creativity. *Personality and Social Psychology Bulletin*, 34, 1677-1686.
- Amabile, (1983). The Social of Creativity: A componential Conceptualization. *Journal of Personality and Social Psychology*, 45(2), 357-376.
- Amabile, T. M. (1996). *Creativity in Context*. Boulder, CO: Westview.
- Amabile, T. M., Barsade, S. G., Mueller, J. S & Staw, B. M. (2005). Affect and Creativity at Work. *Administrative Science Quarterly*, 50, 367-403.
- Amabile, T. M., Conti, R., Coon, H., Lazenby, J. & Herron, M. (1996). Assessing the work Environment for Creativity. *Academy of Management Journal*, 39(5), 1154-1184.
- Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, 40(5), 1297-1333.
- Arhab, A., Houston, J., Kolla, V., & Lucker, J. (2013). Are star performers leaving you? Workforce analytics can help you determine why, and what to do about it. *Human Resource Executive Online*.
- Ashkanasy, N. M., Härtel, C. E. J. & Daus, C. S. (2002). Diversity and emotion: The new frontiers in organizational behavior research. *Journal of Management*, 28(3), 307-338.
- Averill, J. R. (1983). Studies on Anger and Aggression- Implications for Theories of Emotion. *American Psychologist*, Nov., 1145-1160.
- Averill, J. R. (2005). Emotions as Mediators and as Products of Creative Activity. In J. Kaufman & J. Baer (Eds.). *Creativity across domains: Faces of the muse*. (pp. 225-243). Mahwah NJ: Erlbaum.
- Averill, J. R. (2012). *Anger and aggression: An essay on emotion*. Springer Science & Business Media.
- Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., & Waterson, P. E. (2000). Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of Occupational & Organizational Psychology*, 73(3), 265-385.

- Baas, M., De Dreu, C. K. W., & Nijstad, B. A. (2008). A Meta-Analysis of 25 Years of Mood-Creativity Research: Hedonic Tone, Activation, or Regulatory Focus? *Psychological Bulletin*, 134(6), 779-806.
- Baas, M., De Dreu, C. K. W. & Nijstad, A. (2011). Creative production by angry people peaks early on, decreases over time, and is relatively unstructured, *Journal of Experimental Social Psychology*, 47, 1107-1115.
- Baas, M., De Dreu, C. & Nijstad, B. A. (2012). Emotions That Associate With Uncertainty Lead to Structured Ideation. *Emotion*, 12(5), 1004-1014.
- Baker, L. & Sonnerburg, S. (2013). Business co-creativity with an eye towards MENA. *Journal of Strategy and Management*, 6(2), 123-138.
- Bakker, A. B., & Schaufeli, W.B. (2008). Positive organizational behavior: Engaged employees in flourishing organizations. *Journal of Organizational Behavior*, 29(2), 147-154.
- Barankay, I. (2010). Rankings and social tournaments: evidence from a field experiment. *University of Pennsylvania mimeo*, 15.
- Barsade, S. G. & Gibson, D. E. (2007). Why Does Affect Matter in Organizations? *Academy of Management Perspectives*, 21(1), 36-59.
- Basadur, M., Graen, G. B., & Green, S. G. (1982). Training in Creative Problem Solving: Effects on Ideation and Problem Finding and Solving in an Industrial Research Organization. *Organizational Behavior and Human Performance*, 30(1), 41.
- Basadur, M. S., Pringle, P., Speranzini, G., & Bacoc, M. (2000). Measuring divergence thinking attitudes related to creative problem solving and innovation management. *Creativity and Innovation Management*, 9(1), 54-76.
- Basch, J., & Fisher, C. D. (1998). Affective events – emotions matrix: a classification of work events and associated emotions. *School of Business Discussion Papers*. Paper 65, 1-20.
- Bauer, J. A., & Spector, P. E. (2015). Discrete Negative Emotions and Counterproductive Work Behavior. *Human Performance*, 28(4), 307-331.
- Berkowitz, L. (2003). Affect, aggression, and antisocial behavior. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.). *Handbook of affective sciences* (pp. 804– 823). New York: Oxford University Press.
- Berkowitz, L. & Harmon-Jones, E. (2004). Toward an Understanding of the Determinants of Anger. *Emotion*, 4(2), 107-130.
- Bettencourt, B. A., Talley, A., Benjamin, A. J. & Valentine, J. (2006). Personality and aggressive behavior under provoking and neutral conditions: a meta-analytic review. *Psychological Bulletin*, 132(5), 751-777.

Anger and Creative Process Engagement

- Binnewies, C., Ohly, S., & Sonnentag, S. (2007). Taking personal initiative and communicating about ideas: What is important for the creative process and for idea creativity?. *European Journal of Work & Organizational Psychology*, 16(4), 432-455.
- Binnewies, C. & Wörnlein, S. C. (2011). What makes a creative day? A diary study on the interplay between affect, job stressors, and job control. *Journal of Organizational Behavior*, 32, 589-607.
- Bledow, R., Rosing, K. & Frese, M. (2013). A Dynamic Perspective on Affect and Creativity. *Academy of Management Journal*, 56 (2), 432-450.
- Bliese, P. D., & Halverson, R. R. (1998). Group consensus and psychological well-being: a large field study. *Journal of Applied Social Psychology*, 28, 563–580.
- Bolino, M. C., & Turnley, W. H. (2003). More than one way to make an impression: Exploring profiles of impression management. *Journal of Management*, 29(2), 141-160.
- Booth, J., & Mann, S. (2005). The experience of workplace anger. *Leadership & Organization Development Journal*, 26(4), 250-262.
- Brief, A. P. & Weiss, H. M. (2002). Organizational Behavior: Affect in the Workplace. *Annual Review of Psychology*, 53: 579- 307.
- Brislin, R. W. (1980). Translation and content analysis of oral and written material. In H. C. Triandis & J. W. Berry (Eds.). *Handbook of Crosscultural Psychology*. (Vol. 2) (pp. 349-444).
- Brown, S. P., Cron, W. L., & Slocum Jr, J. W. (1998). Effects of trait competitiveness and perceived intraorganizational competition on salesperson goal setting and performance. *The Journal of Marketing*, 88-98.
- Bryk, A., & Raudenbush, S. W. (1992). *Hierarchical linear models for social and behavioral research: applications and data analysis methods*. Newbury Park, CA: Sage.
- Butt, A. N., Choi, J. N., & Jaeger, A. (2005). The effects of self-emotion, counterpart emotion, and counterpart behavior on negotiator behavior: A comparison of individual-level and dyad-level dynamics. *Journal of Organizational Behavior*, 26, 681-704.
- Caniëls, M. C. J., De Stobbeleir, K., & De Clippeleer, I. (2014). The Antecedents of Creativity Revisited: A Process Perspective. *Creativity & Innovation Management*, 23(2), 96-110.
- Carnevale, P. J., & Probst, T. M. (1998). Social Values and Social Conflict in Creative Problem Solving and Categorization. *Journal of Personality & Social Psychology*, 74(5), 1300-1309.
- Carver, C. (2006). Approach, Avoidance, and Self-Regulation of Affect and Action. *Motiv Emot*, 30,105-110.

Anger and Creative Process Engagement

- Carver, C. S. & Harmon-Jones, E. (2009). Anger is an Approach-Related Affect: Evidence and Implications. *Psychological Bulletin*, 135(2), 183-204.
- Clore, G. L., Schwarz, N., & Conway, M. (1994). Affective causes and consequences of social information processing. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (2nd ed., Vol. 1, pp. 323-418): Hillsdale, NJ: Erlbaum.
- Cohen, S., & Wills, T. A. (1985). Stress, Social Support, and the Buffering Hypothesis. *Psychological Bulletin*, 98(2), 310-357.
- Cole, M. S., & Bedeian, A. G. (2007). Leadership consensus as a cross-level contextual moderator of the emotional exhaustion-work commitment relationship. *Leadership Quarterly*, 18(5), 447-462.
- Davis, M. A. (2009). Understanding the relationship between mood and creativity: A meta-Analysis. *Organizational Behavior and Human Decision Processes*, 108, 25-38.
- De Dreu, C.K.W. (2008). The virtue and vice of workplace conflict: food for (pessimistic) thought. *Journal of Organizational Behavior*, 29, 5-18.
- De Dreu, C. K. W., Baas, M. & Nijstad, B. A. (2008). Hedonic Tone and Activation Level in the Mood-Creativity Link: Toward a Dual Pathway to Creativity Model. *Journal of Personality and Social Psychology*, 94(5), 739-756.
- Deffenbacher, J. L. (1992). Trait anger: Theory, findings, and implications. *Advances in personality assessment*, 9, 177-201.
- Deffenbacher, J., L., Oetting, E. R., Thwaites, G. A., Lynch, R. S., Baker, D. A., Stark, R. S., Thacker, S., Eiswerth-Cox, L. (1996). State-trait anger theory and the utility of the trait anger scale. *Journal of Counseling Psychology*, 43(2), 131-148.
- Denson, T. F., Moulds, M. L., & Grisham, J. R. (2012). The effects of analytical rumination, reappraisal, and distraction on anger experience. *Behavior Therapy*, 43(2), 355-364.
- Diefendorff, J. M., & Richard, E. M. (2003). Antecedents and consequences of emotional display rule perceptions. *Journal of Applied Psychology*, 88(2), 284-294.
- Domagalski, T. A., & Steelman, L. A. (2007). The impact of gender and organizational status on workplace anger expression. *Management Communication Quarterly*, 20(3), 297-315.
- Drazin, R., Glynn, M. A., & Kazanjian, R. K. (1999). Multilevel Theorizing About Creativity in Organizations: A Sensemaking Perspective. *Academy of Management Review*, 24(2), 286.
- Elfenbein, H. A. (2007). Emotion in Organizations: A review in stages. *The Academy of Management Annals*, 1(1), 315-386.

- Ekman, P. (2004). *Emotions Revealed – Understanding Faces and Feelings*. London: Phoenix.
- Farrell, A. M. (2010). Insufficient discriminant validity: A comment on Bove, Pervan, Beatty, and Shiu (2009). *Journal of Business Research in Organizational Behavior*, 63, 324–327.
- Fisher, C. D. & Noble, C. S. (2004). A within-person examination of correlates of performance and emotions while working. *Human Performance*, 17(2), 145-168.
- Fitness, J. (2000). Anger in the workplace: an emotion script approach to anger episodes between workers and their superiors, co-workers and subordinates. *Journal of Organizational Behavior*, 21, 147-162.
- Fletcher, T. D., Major, D. A., & Davis, D. D. (2008). The interactive relationship of competitive climate and trait competitiveness with workplace attitudes, stress, and performance. *Journal of Organizational Behavior*, 29(7), 899-922.
- Foo, M. D. (2011). Emotion and entrepreneurial opportunity evaluation. *Entrepreneurship Theory and Practice*, 85(2), 375-393.
- Ford, B. Q., & Tamir, M. (2012). When getting angry is smart: emotional preferences and emotional intelligence. *Emotion*, 12(4), 685-689.
- Forgays, D. G., Forgays, D. K., & Spielberger, C. D. (1997). Factor structure of the state-trait anger expression inventory. *Journal of Personality Assessment*, 69(3), 497-507.
- Fornell, C., & Larcker, D. (1981). Structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Fox, S., Spector, P. E., & Miles, D. (2001). Counterproductive work behavior (CWB) in response to job stressors and organizational justice: Some mediator and moderator tests for autonomy and emotions. *Journal of Vocational Behavior*, 59(3), 291-309.
- Fredrickson, B. L. (2004). The Role of Positive Emotions in Positive Psychology – The Broaden-and-Build Theory of Positive Emotions. *American Psychologist*, 56(3), 218-226.
- Frijda, N. H. (1986). *The Emotions*. Cambridge: CUP.
- Frijda, N. H. (1988). The laws of emotion. *American Psychologist*, 43(5), 349-358.
- Frijda, N. (2005). Emotion experience. *Cognition & Emotion*, 19(4), 473-497.
- Fülöp, M. (2009). Happy and unhappy competitors: What makes the difference?. *Psichologiske teme*, 18(2), 345-367.
- Geddes, D. & Callister, R.R. (2007). Crossing The Line(s): A Dual Threshold Model of Anger in Organizations. *Academy of Management Review*, 32(3), 721-746.
- George, J. M. (2007). Creativity in Organizations. *The Academy of Management Annals*, 1(1), 439-477.

- George, J. M., & Zhou, J. (2001). When openness to experience and conscientiousness are related to creative behavior: An interactional approach. *Journal of Applied Psychology*, 86(3), 513.
- George, J. M. & Zhou (2002). Understanding When Bad Moods Foster Creativity and Good Ones Don't: The role of Context and Clarity of Feelings. *Journal of Applied Psychology*, 87(4), 687-697.
- George, J. M. & Zhou (2007). Dual Tuning in a Supportive Content: Joint Contributions of Positive Mood, Negative Mood, and Supervisory Behaviors to Employee Creativity. *Academy of Management Journal*, 50(3), 605-622.
- Giandini, A. & Frese, M. (2008). Linking service employees' emotional competence to customer satisfaction: a multilevel approach. *Journal of Organizational Behavior*, 29(2), 155-170.
- Gibb, S., & Waight, C. L. (2005). Connecting HRD and creativity: From fragmentary insights to strategic significance. *Advances in Developing Human Resources*, 7(2), 271-286.
- Gibson, D. E., & Callister, R. R. (2010). Anger in Organizations: Review and Integration. *Journal of Management*, 36(1), 66-93.
- Gilson, L. L., & Shalley, C. E. (2004). A little creativity goes a long way: An examination of teams' engagement in creative processes. *Journal of Management*, 30(4), 453-470.
- Glick, W. H. (1985). Conceptualizing and Measuring Organizational and Psychological Climate: Pitfalls in Multilevel Research. *Academy of Management Review*, 10(3), 601-616.
- Goetz, T., Becker, E.S., Bieg, M, Keller, M. M, Frenzel, A.C., Hall, N.C. (2015). The Glass Half Empty: How Emotional Exhaustion Affects the State-Trait Discrepancy in Self-Reports of Teaching Emotions. *PLoS ONE*, 10(9): e0137441. doi:10.1371/journal.pone.0137441
- Goldberg, L. S. & Grandey, A. A. (2007). Display rules versus display autonomy: emotion regulation, emotional exhaustion, and task performance in a Call Center Simulation. *Journal of Occupational Health Psychology*, 12(3), 301-308.
- Golec, A., & Federico, C. M. (2004). Understanding responses to political conflict: Interactive Effects of the need for closure and salient conflict schemas. *Journal of Personality and Social Psychology*, 87, 750-762.
- González-Gómez, H. V., & Richter, A. W. (2015). Turning shame into creativity: The importance of exposure to creative team environments. *Organizational Behavior and Human Decision Processes*, 126, 142-161.
- Grandey, A. A.(2000). Emotional regulation in the workplace: A new way to conceptualize emotional labor. *Journal of Occupational Health Psychology*, 5(1), 95-110.

- Grandey, A. A. (2003). When “the show must go on”: Surface acting and deep acting as determinants of emotional exhaustion and peer-rated service delivery. *Academy of Management Journal*, 46(1), 86-96.
- Grandey, A. A., & Gabriel, A. S. (2015). Emotional labor at a crossroads: Where do we go from here?. *Annual Review of Organizational Psychology and Organizational Behavior*, 2(1), 323-349.
- Gross, J.J. (1998a). The Emerging Field of Emotion Regulation: An Integrative Review. *Review of General Psychology*, 2(3), 271-299.
- Gross, J. J. (1998b). Antecedent- and Response-focused Emotion Regulation: Divergent Consequences for Experience, Expression, and Physiology. *Journal of Personality and Social Psychology*, 74(1), 224-237.
- Gross, J. J. (2014). Emotion regulation: Conceptual and empirical foundations. *Handbook of Emotion Regulation*, 2, 3-20.
- Gross, J. J. & Jonh, O. P. (2003). Individual Differences in Two Emotion Regulation Processes: Implications for Affect, Relationships, and Well- Being. *Journal of Personality and Social Psychology*, 85(2), 348-362.
- Gross, J. J. & Levenson, R.W. (1993). Emotional suppression: physiology, self-report, and expressive behavior. *Journal of Personality and Social Psychology*, 64(6), 970-986.
- Gross, J. J. & Thompson, R. A. (2007). Emotion Regulation: Conceptual Foundations. In J.J. Gross (Ed.). *Handbook of Emotion Regulation*. New York: Guilford Press.
- Guan, N. C., Yusoff, M. S. B., Zainal, N. Z., & Yun, L. W. (2012). Analyses of two independent samples with non normality using non parametric method, data transformation and bootstrapping method. *International Medical Journal*, 19(3), 227-229.
- Hackman, J.R. & Oldham, G.R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Hair, J., Black, B., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Hanin, Y. L. (2004). Emotions in sport: An individualized approach. *Encyclopedia of applied Psychology*, 1, 739-750.
- Hareli, S. & Rafaeli. A. (2008). Emotion cycles: On the social influence of emotion in organizations. *Research in Organizational Behaviour*, 28, 35-59.
- Hareli, S., Rafaeli, A. & Parkinson, B. (2008). Emotions as social entities: interpersonal functions and effects of emotion in organizations. In N. M. Ashkanasy & C. L. Cooper (Eds.). *Research companion to emotion in organizations* (pp. 349-359). Cheltenham, UK: Edward Elgar.

Anger and Creative Process Engagement

- Hazebroek, J. F., Howells, K., & Day, A. (2001). Cognitive appraisals associated with high trait anger. *Personality and Individual Differences*, 30(1), 31-45.
- Hennessey, B. A. & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology*, 61, 569- 598.
- Higgins, E. T. (1997). Beyond Pleasure and Pain. *American Psychologist*, 52(12), 1280- 1300.
- Hobföll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513-524.
- Hochschild, A. R. (1983). *The managed heart: Commercialization of human feelings*. Berkely: UCP.
- Hofmann, D. A. (1997). An overview of the logic and rationale of hierarchical linear models. *Journal of Management*, 23(6), 723-744.
- Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management*, 24(5), 623-641.
- Idris, M. A., Dollard, M. F. & Winefield, A. H. (2011). The effect of globalization on employee psychological health and job satisfaction in Malaysian workplaces. *Journal of Occupational Health*, 53, 447-454.
- Ilie, A., Penney, L. M., Ispas, D., & Iliescu, D. (2012). The Role of Trait Anger in the Relationship between Stressors and Counterproductive Work Behaviors: Convergent Findings from Multiple Studies and Methodologies. *Applied Psychology: An International Review*, 61(3), 415-436.
- Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology*, 52, 1122-1131.
- Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science*, 2(3), 260-280.
- James, K., Brodersen, M. & Eisenberg, J. (2004). Workplace Affect an Workplace Creativity: A Review and Preliminary Model. *Human Performance*, 17(2), 169-194.
- Jehn, K. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40, 256-282
- Kaufmann, G. (2003). Expanding the mood–creativity equation. *Creativity Research Journal*, 15, 131-135.
- Kaufmann, G., & Vosburg, S. K. (1997). Paradoxical effects of mood on creative problem solving. *Cognition and Emotion*, 11, 151–170.

Anger and Creative Process Engagement

- Kelly, J. R., & Barsade, S. G. (2001). Mood and emotions in small groups and work teams. *Organizational Behavior and Human Decision Processes*, 86 (1), 99-130.
- Keltner, D. & Gross, J. J. (1999). Functional Accounts of Emotions. *Cognition and Emotion*, 13(5), 467-480.
- Keltner, D. & Haidt, J (1999). Social Functions of Emotions at Four Levels of Analysis. *Cognition and Emotion*, 13(5), 505-521.
- Lazarus, R. S. (2000). Cognitive-motivational-relational theory of emotion. *Emotions in sport*, 39-63.
- LePine, J. A., Lapine, M. A., & Jackson, C. L. (2004). Challenge and Hindrance Stress: Relationships With Exhaustion, Motivation to Learn, and Learning Performance. *Journal of Applied Psychology*, 89(5), 883.
- LePine, J. A., Podsakoff, N. P., & Lapine, M. A. (2005). A meta-analytic test of the challenge stressor-hindrance stressor framework: An explanation for inconsistent relationships among stressors and performance. *Academy of Management Journal*, 48(5), 764.
- Lerner, J. S. & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition and Emotion*, 14(4), 473-493.
- Lerner, J. S. & Keltner, D. (2001). Fear, Anger, and Risk. *Journal of Personality and Social Psychology*, 81(1), 146-159.
- Lerner, J. & Tiedens, L. Z. (2006). Portrait of the Angry Decision Maker: How Appraisals Tendencies Shape Anger's Influence on Cognition. *Journal of Behavioural Decision Making*, 19, 115-137.
- Limpert, E., Stahel, W. A. & Abbt, M. (2001). Log-normal distributions across the sciences: Keys and Clues. *BioScience*, 51(5), 341-352.
- Lopes, P.N., Salovey, P., Côte, S. & Beers, M. (2005). Emotion Regulation Abilities and the Quality of Social Interaction. *Emotion*, 5(1), 113-118.
- Lubart, T. I. (2001). Models of the creative process: Past, present and future. *creativity Research Journal*, 13(3&4), 294-308.
- Luthans, F. (2002). The need for and meaning of positive organizational behaviour. *Journal of Organizational Behaviour*, 23(6), 695-706.
- Madjar, N. (2008). Emotional and informational support from different sources and employee creativity. *Journal of Occupational & Organizational Psychology*, 81(1), 83-100.

- Madjar, N., Oldham, G. & Pratt, M. G. (2002). There's no Place like Home? The contributions of work and non-work creativity support to employees' creative performance, *Academy of Management Journal*, 757- 767.
- Malatesta, C. Z. (1990). The role of emotions in the development and organization of personality. *Nebraska symposium on motivation*. (Cap. 1, Vol. 36, 1-56). Lincoln, NE: University of Nebraska Press.
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of occupational behavior*, 2(2), 99-113.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397-422.
- Matta, F. K., Erol-Korkmaz, H. T., Johnson, R. E., & Biçaksiz, P. (2014). Significant work events and counterproductive work behavior: The role of fairness, emotions, and emotion regulation. *Journal of Organizational Behavior*, 35(7), 920-944.
- Miller, K. I., Considine, J., & Garner, J. (2007). "Let me tell you about my job": Exploring the terrain of emotion in the workplace. *Management Communication Quarterly*, 20(3), 231-260.
- Mumford, M. D., Mobley, M. I., Uhlman, C. E., Reiter-Palmon, R., & Doares, L. M. (1991). Process analytic models of creative capacities. *Creativity Research Journal*, 4, 91-122.
- Nulty, D. N. (2008). The adequacy rates of response to online and paper survey: What can be done? *Assessment & Evaluation in Higher Education*, 33(3), 301-314.
- O'Brien, R. M. (1994). Identification of simple measurement models with multiple latent variables and correlated errors. *Sociological methodology*, 24, 137-170.
- Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology*, 9(2), 79-93.
- Park, J., Kitayama, S., Markus, H. R., Coe, C. L., Miyamoto, Y., Karasawa, M., & Ryff, C. D. (2013). Social status and anger expression: The cultural moderation hypothesis. *Emotion*, 13(6), 1122-1131.
- Parrot, D. J., Zeichner, A. & Evces, M. (2005). Effect of Trait Anger on Cognitive Processing of Emotional Stimuli. *The Journal of General Psychology*, 132(1), 67-80.
- Pietruska, K., & Armony, J. L. (2013). Differential effects of trait anger on optimism and risk behaviour. *Cognition & Emotion*, 27(2), 318-325.

Anger and Creative Process Engagement

- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879.
- Raudenbush, S.W. & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: Sage.
- Reiter-Palmon, R., & Illies, J. J. (2004). Leadership and creativity: Understanding leadership from a creative problem-solving perspective. *The Leadership Quarterly*, 15(1), 55-77.
- Richards, J. M. & Gross, J. J. (2000). Emotion regulation and memory: The cognitive costs of keeping one's cool. *Journal of Personality Social Psychology*, 79(3), 410-424.
- Roseman, I. J., & Smith, C. A. (2001). Appraisal theory: Overview, assumptions, varieties, controversies. K. R. Scherer, A. Schorr, T. Johnstone (Eds.). (2001). *Appraisal processes in emotion: Theory, methods, research* (pp. 3-19). New York: Oxford University Press.
- Runco, M. A. (2004). Creativity. *Annual Review of Psychology*, 55(1), 657-687.
- Russ, S. W., & Kaugars, A. S. (2001). Emotion in children's play and creative problem solving. *Creativity Research Journal*, 13(2), 211-219.
- Salin, D. (2003). Ways of explaining workplace bullying: A review of enabling, motivating precipitating structures and processes in the work environment. *Human Relations*, 56(10), 1213-1232.
- Scherer, K. R., Schorr, A. & Johnstone, T. (2001) (Eds.) *Appraisal processes in emotions: Theory, Methods, Research*, New York: Oxford University Press.
- Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45, 513-523.
- Schwarz, N., & Clore, G. L. (2003). Mood as Information: 20 Years Later. *Psychological Inquiry*, 14(3/4), 296-303.
- Schwarz, N., & Skurnik, I. (2003). Feeling and thinking: implications for problem solving. In J. E. Davidson & R. J. Sternberg (Eds.), *The psychology of problem solving* (pp. 263-290): New York: Cambridge University Press.
- Scott, G., Leritz, L. E., & Mumford, M. D. (2004). The effectiveness of creativity training: A quantitative review. *Creativity Research Journal*, 16(4), 327-361.
- Shalley, C. E., Zhou, J. & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management*, 30(6), 933-958.

- Simons, T. L. & Peterson, R. S. (2000). Task conflict and Relationship Conflict in Top Management Teams: The Pivotal Role of Intragroup Task, *Journal of Applied Psychology*, 85(1), 102-111.
- Smith, A. L., Gustafsson, H. & Hassmén, P. (2010). Peer motivational climate and burnout perceptions of adolescent athletes. *Psychology of Sport & Exercise*, 2010, 11(6), 453-460.
- Sokka, L., Huotilainen, M., Leinikka, M., Korpela, J., Henelius, A., Alain, C. & Pakarinen, S. (2014). Alterations in attention capture to auditory emotional stimuli in job burnout: an event-related potential study. *International Journal of Psychophysiology*, 94(3), 427-436.
- Sparks, K., Faragher, B., & Cooper, C. L. (2001). Well-being and occupational health in the 21st century workplace. *Journal of Occupational and Organizational Psychology*, 74(4), 489-509.
- Stearns, C. Z. & Stearns, P. N. (1986). *Anger: The struggle for emotional control in America's History*. Chicago: UCP.
- To, M. L., Fisher, C. D., Ashkanasy, N. M., & Rowe, P. A. (2012). Within-Person Relationships Between Mood and Creativity. [Article]. *Journal of Applied Psychology*, 97(3), 599-612.
- Van Kleef, G. A. (2009). How emotions regulate social life the emotions as social information (EASI) model. *Current Directions in Psychological Science*, 18(3), 184-188.
- Van Kleef, G. A., Anastasopoulou, C., & Nijstad, B. A. (2010). Can expressions of anger enhance creativity? A test of the emotions as social information (EASI) model. *Journal of Experimental Social Psychology*, 46(6), 1042-1048.
- Van Kleef, G. A., De Dreu, C. K., & Manstead, A. S. (2010). An interpersonal approach to emotion in social decision making: The emotions as social information model. *Advances in experimental social psychology*, 42, 45-96.
- Youssef, C. M., & Luthans, F. (2007). Positive organizational behavior in the workplace the impact of hope, optimism, and resilience. *Journal of Management*, 33(5), 774-800.
- Waight, C. L. (2005). Exploring connections between human resource development and creativity. *Advances in Developing Human Resources*, 7(2), 151-159.
- Wallas, G. (1926). *The art of thought*. New York: Harcourt Brace.
- Wegge, J., Dick, R. V., Fisher, G. K., West, M. A., & Dawson, J. F. (2006). A Test of Basic Assumptions of Affective Events Theory (AET) in Call Centre Work1. *British Journal of Management*, 17(3), 237-254.
- Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. B.M. Staw & L.L. Cummings (Eds). *Research in organizational behavior: An Annual Series of Analytical Essays and Critical Reviews*, Vol. 18, (pp. 1-74).

Anger and Creative Process Engagement

- Wilkowski, B. M. & Robinson, M. D. (2010). The anatomy of anger: An integrative cognitive model of trait anger and reactive aggression. *Journal of Personality*, 78(1), 9-38.
- Williams, S. (2001). *Emotion and Social Theory*. London: Sage.
- Woodman, R. W., Sawyer, J. E. & Griffin, R. W. (1993). Toward a theory of organizational creativity. *Academy of Management Review*, 18, 293-321.
- Woodman, R. W., & Schoenfeldt, J. F. (1990). An interactionist model of creative behavior. *Journal of Creative Behavior*, 24, 279-290.
- Youssef, C. M., & Luthans, F. (2007). Positive organizational behavior in the workplace the impact of hope, optimism, and resilience. *Journal of Management*, 33(5), 774-800.
- Yuan, F., & Zhou, J. (2008). Differential Effects of Expected External Evaluation on Different Parts of the Creative Idea Production Process and on Final Product Creativity. *Creativity Research Journal*, 20(4), 391-403.
- Zeelenberg, M. & Pieters, R. (2004). Beyond valence in customer dissatisfaction: A review and new findings on behavioural responses to regret and disappointment in failed services. *Journal of Business Research*, 57, 445-455.
- Zeelenberg, M. & Pieters, R. (2006). Feeling is for Doing: A Pragmatic Approach to the study of Emotions in Economic Behavior. In D. De Cremer, M. Zeelenberg & K. Mumighan (eds.) *Social Psychology and Economics*, (Chapter) (117-137).
- Zellars, K. L., Hochwater, W. A., Hoffman, N. P., Perrewé, P. L., and Ford, E. W. (2004). Experiencing Job Burnout: The Roles of Positive and Negative Traits and States. *Journal of Applied Social Psychology*, 34(5), 887-911.
- Zenasni, F. & Lubart, T. (2008). Emotion-Related Traits Moderate the Impact of Emotional State on Creative Performances. *Journal of Individual Differences*, Vol. 29(3), 157-167.
- Zhang, X. & Bartol, K., M. (2010a). Linking empowering leadership and employee creativity: the influence of psychological empowerment, intrinsic motivation, and creative process engagement. *The Academy of Management Journal*, 53(1), 107-128.
- Zhang, X. & Bartol, K. M. (2010b). The Influence of creative Process Engagement on Employee Creative Performance and Overall Job Performance: A Curvilinear Assessment. *Journal of Applied Psychology*, 95(5), 862-873.
- Zhou, J., & George, J. M. (2001). When job dissatisfaction leads to creativity: Encouraging the expression of voice. *Academy of Management Journal*, 44(4), 682.
- Zhou, Q., Hirst, G. & Shipton, H. (2012). Context matters: Combined influence of participation and intellectual stimulation on the promotion focus-employee creativity relationship. *Journal of Organizational Behavior*, 33, 894-909.

- Zhou, J., & Hoever, I. J. (2014). Research on workplace creativity: A review and redirection. *Annual Review of Organizational Psychology and Organizational Behavior*, 1(1), 333-359.
- Zhou, Q., & Pan, W. (2015). A Cross-Level Examination of the Process Linking Transformational Leadership and Creativity: The Role of Psychological Safety Climate. *Human Performance*, 28(5), 405-424.
- Zhou, J. & Shalley, C. E. (2003). Research on employee creativity: A critical review and directions for future research. In J. Martocchio (Ed.). *Research in Personnel and Human Resource Management* (pp. 165-217). Oxford: Elsevier.

APPENDIX A - *Scales*

Anger and Creative Process Engagement

State Anger - STAXI (Forgays, Forgays & Spieberger, 1997)

1. Furious
2. Irritated
3. Angry
4. Mad
5. Burned up
6. Feel yelling
7. Feel breaking
8. Feel banging
9. Feel hitting
10. Feel swearing

Trait Anger – temperament - STAXI (Forgays, Forgays & Spieberger, 1997)

1. I am quick tempered
2. I have a fiery temper
3. I am hot-headed person
4. I fly off the handle

Emotional Exhaustion (Malash & Jackson, 1980)

1. I have felt emotionally drained from my work today
2. I have felt burned out from my work today
3. I have felt I'm working too hard on my work today

Creative process engagement (Zhang & Bartol, 2010a, 2010b)

1. I have spent considerable time trying to understand the nature of the problem
2. I have thought about the problem from multiple perspectives
3. I have decomposed a difficult problem/assignment into parts to obtain greater understanding
4. I have consulted a wide variety of information
5. I have searched for information from multiple sources (e.g., personal memories, others' experience, documentation, Internet, etc.)
6. I have retained large amounts of detailed information in my area of expertise for future use
7. I have considered diverse sources of information in generating new ideas
8. I have looked for connections with solutions used in seeming diverse areas
9. I have generated a significant number of alternatives to the same problem before I choose the final solution
10. I have tried to devise potential solutions that move away from established ways of doing things
11. I have spent considerable time shifting through information that helps to generate new ideas

Competitive Psychological Climate (Brown et al., 1998)

1. My manager frequently compares my results with those of my co-workers.
2. The amount of recognition you get in this company depends on how your results rank compared to other workers.
3. Everybody is concerned with finishing at the top of the ranking.
4. My co-workers frequently compare their results with me.

Anger and Creative Process Engagement

Emotion Regulation Questionnaire (ERO) (Gross & John, 2003)

Reappraisal

1. I control my emotions by changing the way I think about the situation I'm in
2. When I want to feel less negative emotion, I change the way I'm thinking about the situation
3. When I want to feel more positive emotion, I change the way I'm thinking about the situation
4. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about
5. When I want to feel more negative emotion (such as sadness or anger), I change what I'm thinking about
6. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm

Suppression

1. I control my emotions by not expressing them
2. When I'm feeling negative emotions, I make sure not to express them
3. I keep my emotions to myself
4. When I'm feeling positive emotions, I am careful not to express them

Relationship Conflict (Jehn's scale, 1995, adapted by Simons & Peterson, 2000)

1. How much personal friction is there among members in your executive group?
2. How much are personality clashes evident in your executive group?
3. How much tension is there among members in your executive group?
4. To what extent are grudges evident among members of your executive group?

Support for creativity from co-workers (Madjar et. al., 2002)

1. My co-workers other than my supervisor discuss with me my work-related ideas in order to improve them
2. My co-worker other than my supervisor are almost always supportive when I come up with a new idea about my job
3. My co-worker other than my supervisor give me useful feedback about my ideas concerning the workplace
4. My co-workers other than my supervisor are always ready to support me if I introduce an unpopular idea or solution at work

APPENDIX B - *General Questionnaire (English version)*

Anger and Creative Process Engagement

General Questionnaire (English version)

Information & Instructions

Survey goal

This survey directs to your perception about contextual factors of your daily working life and about your feelings about it. Therefore there are no right or wrong answers, being your own opinion what really matters. So it is important you answer without thinking too much about what should be your best answer but instead what really is your immediate impression about each question.

Confidentiality

The data you will provide do not identify you personally, being directly collected by the researchers. The data globally analysed will be presented in a way that even a worker or the enterprise will not be identified. The only propose is to know a bite more about organisational context to improve the knowledge we have about workers perception, what could give some additional light about human resources management.

Instructions

Please answer to questions as accurately as you can, and do not think for too long to answer. The first reaction to the question is your best answer.

You must circle the number which is the most appropriate answer according to your opinion, like the following sample:

Scale Questions	Completely disagree				Completely Agree
Question X...	1	2	3	4	5

Thank you very much for your help!

Anger and Creative Process Engagement

<i>Please indicate how do you agree with the following statements related to your work:</i>							
Questions	Scale	Strongly Disagree					Strongly Agree
My co-workers other than my supervisor discuss with me my work-related ideas in order to improve them.	1	2	3	4	5	6	7
My co-workers other than my supervisor are almost always supportive when I come up with a new idea about my job.	1	2	3	4	5	6	7
My co-worker other than my supervisor gives me useful feedback about my ideas concerning the workplace.	1	2	3	4	5	6	7
My co-workers other than my supervisor are always ready to support me if I introduce an unpopular idea or solution at work.	1	2	3	4	5	6	7
My manager frequently compares my results with those of my co-workers.	1	2	3	4	5	6	7
The amount of recognition you get in this company depends on how your results rank compared to other workers.	1	2	3	4	5	6	7
Everybody is concerned with finishing at the top of the ranking.	1	2	3	4	5	6	7
My co-workers frequently compare their results with me.	1	2	3	4	5	6	7

Anger and Creative Process Engagement

<i>Please indicate how do you generally feel or react:</i>					
Questions	Scale	Almost never	Sometimes	Often	Almost always
I am quick tempered.		1	2	3	4
I have a fiery temper.		1	2	3	4
I am hot-headed person.		1	2	3	4
I get angry when I'm slowed down by others' mistakes.		1	2	3	4
I feel annoyed when I am not given recognition for doing good work.		1	2	3	4
I fly off the handle.		1	2	3	4
When I get mad, I say nasty things.		1	2	3	4
It makes me furious when I am criticized in front of others.		1	2	3	4
When I get frustrated, I feel like hitting someone.		1	2	3	4
I feel infuriated when I do a good job and get a poor evaluation.		1	2	3	4

Anger and Creative Process Engagement

How often do you think the following situations are related to your work:							
Questions	Scale	Never	Almost never (A few times a year or less)	Rarely (Once a month or less)	Sometimes (A few times a month)	Often (Once a week)	Always (Every day)
My job tasks are very difficult.		0	1	2	3	4	5
There is a lot of daily effort.		0	1	2	3	4	5
There are lots of physical efforts.		0	1	2	3	4	5
There are lots of cognitive efforts.		0	1	2	3	4	5
There are lots of emotional efforts.		0	1	2	3	4	5

<i>What do you generally do?</i>						
Questions	Scale	Not at all	Very little	Somewhat	Much	Very much
I control my emotions by changing the way I think about the situation I'm in.		1	2	3	4	5
When I want to feel less negative emotions, I change the way I'm thinking about the situation.		1	2	3	4	5
When I want to feel more positive emotion, I change the way I'm thinking about the situation.		1	2	3	4	5
When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.		1	2	3	4	5
When I want to feel more negative emotion (such as sadness), I change what I'm thinking about.		1	2	3	4	5
When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.		1	2	3	4	5
I control my emotions by not expressing it.		1	2	3	4	5
When I'm feeling negative emotions, I make sure not to express them.		1	2	3	4	5
I keep my emotions to myself.		1	2	3	4	5
When I'm feeling positive emotions, I am careful not to express them.		1	2	3	4	5

Anger and Creative Process Engagement

<i>What is your opinion about the following questions?</i>						
Questions	Scale	None			A great deal	
How much personal friction is there among members in your executive group?		1	2	3	4	5
How much are personality clashes evident in your executive group?		1	2	3	4	5
How much tension is there among members in your executive group?		1	2	3	4	5
To what extent are grudges evident among members of your executive group?		1	2	3	4	5

In order to help research data analysis it is important to know some data about you, that will only be used for statistical analyses and not for individual identification.	
<u>Gender:</u> Male Female	<u>Age:</u> _____
<u>Highest Education Level:</u> High school Technician school Undergraduate Postgraduate Others: _____	<u>When did you start this job?</u> Year: _____

APPENDIX C - ***Daily Questionnaire (English version)***

Anger and Creative Process Engagement

Information & Instructions

Survey goal

This survey directs to your perception about contextual factors of your daily working life and about your feelings about it. Therefore there are no right or wrong answers, being your own opinion what really matters. So it is important you answer without thinking too much about what should be your best answer but instead what really is your immediate impression about each question.

Confidentiality

The data you will provide do not identify you personally, being directly collected by the researchers. The data globally analysed will be presented in a way that even a worker or the enterprise will be identified. The only propose is to know a bite more about organisational context to improve the knowledge we have about workers perception, what could give some additional light about human resources management.

Instructions

Please answer to questions as accurately as you can, and do not think for too long to answer. The first reaction to the question is your best answer.

You must circle the number which is the most appropriate answer according to your opinion, like the following sample:

Scale	Questions	Completely disagree				Completely Agree
	Question X...	1	2	3	4	5

Thank you very much for your help!

Anger and Creative Process Engagement

Please describe your feelings today:					
Questions	Scale	Not at all	Somewhat	Moderately so	Very much so
I was furious		1	2	3	4
I felt irritated		1	2	3	4
I felt angry		1	2	3	4
I was mad		1	2	3	4
I felt annoyed		1	2	3	4
I feel like yelling at somebody		1	2	3	4
I feel like breaking things		1	2	3	4
I feel like banging on the table		1	2	3	4
I feel like hitting someone		1	2	3	4
I feel like swearing		1	2	3	4

<i>Please describe how have you felt today concerning the work you have just completed:</i>								
Questions	Scale	Never felt this way						Completely felt this way
I feel emotionally drained from my work today.	0	1	2	3	4	5	6	7
I feel used up today	0	1	2	3	4	5	6	7
I feel burned out from my work today.	0	1	2	3	4	5	6	7
I feel frustrated by my job today	0	1	2	3	4	5	6	7
I feel I'm working too hard on my work today.	0	1	2	3	4	5	6	7
I feel like I'm at the end of my rope today.	0	1	2	3	4	5	6	7

Anger and Creative Process Engagement

<i>Please describe how do you agree with the following statements, related with your work today:</i>					
Scale	Never	Rarely	Occasionally	Frequently	Very Frequently
Questions					
I have spent considerable time trying to understand the nature of the problem.	1	2	3	4	5
I have thought about the problem from multiple perspectives.	1	2	3	4	5
I have decomposed a difficult problem/assignment into parts to obtain greater understanding.	1	2	3	4	5
I have consulted a wide variety of information.	1	2	3	4	5
I have searched for information from multiple sources (e.g., personal memories, others' experience, documentation, Internet, etc.).	1	2	3	4	5
I have retained large amounts of detailed information in my area of expertise for future use.	1	2	3	4	5
I have considered diverse sources of information in generating new ideas.	1	2	3	4	5
I have looked for connections with solutions used in seeming diverse areas.	1	2	3	4	5
I have generated a significant number of alternatives to the same problem before I choose the final solution.	1	2	3	4	5
I have tried to devise potential solutions that move away from established ways of doing things.	1	2	3	4	5
I have spent considerable time shifting through information that helps to generate new ideas.	1	2	3	4	5