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**Interactive Effects of Perceived Time Pressure, Work-Family Balance Satisfaction  
(SWFB), and leader-member exchange (LMX) on Creativity**

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## **Interactive Effects of Perceived Time Pressure, Work-Family Balance Satisfaction (SWFB), and leader-member exchange (LMX) on Creativity**

### **Abstract**

**Purpose** – Drawing on role theory, the paper aims to investigate a curvilinear relationship between employee’s perceived overall time pressure and creativity. Apart from this, we explore a three-way interaction of perceived time pressure, satisfaction with work-family balance (SWFB), and leader-member exchange (LMX) on creativity.

**Design/methodology/approach** – The paper reports a quantitative study of 251 employees from a European company. An online survey was used to collect data. The proposed hypotheses were tested using moderated hierarchical regression analysis.

**Findings** – Results demonstrate a U-shaped curvilinear relationship between perceived time pressure and creativity. Results further confirm the proposed three-way interaction of perceived time pressure, SWFB and LMX as joint predictors of creativity.

**Research limitations/implications** – The cross-sectional research design limits the ability to demonstrate causality. Moreover, the data were collected from a single source causing concern for common method bias. Nonetheless, recent research suggests that common method bias cannot create an artificial interaction effect.

**Originality/value** – This study is one of the rare attempts to examine a curvilinear relationship between perceived time pressure and creativity. Moreover, it contributes to the work-family literature by providing the first empirical examination of the linkage between SWFB and creativity. Furthermore, we find a three-way interaction between time pressure, SWFB and LMX, and creativity. Our findings broaden our understanding of how personal and contextual factors interact to foster creativity.

**Keywords** Creativity, Time pressure, Satisfaction with work-family balance, Leader-member exchange

**Paper type** Research paper

## **Introduction**

Creativity, defined as the production of novel and useful ideas (Amabile 1996), has been considered a key driver of organization's innovative potential and its subsequent survival in the competitive markets (Shalley, Zhou & Oldham 2004). It is one of the individual characteristics paramount for achieving organizational success. While not all employees are creative, those who have this unique ability alongside other relevant skills and knowledge, are considered to be strategically important for an organization (Lepak & Snell 2002; Lepak & Snell 1999). Thus, it is not surprising there has been increased scholarly and practitioners' interest to identify the personal and contextual factors that reinforce or restrict individual creativity (e.g. Amabile 1988; Černe et al. 2014; George & Zhou 2001; Shalley, Zhou & Oldham 2004).

Among the contextual factors, perceived time pressure has been frequently recognized as a salient contingency on creativity (Amabile et al. 1996; Andrews & Farris 1972; Andrews &

Smith 1996). Nevertheless, the results of previous studies were inconclusive and inconsistent (Amabile et al. 2002; Baer & Oldham 2006). Some demonstrated a negative effect of time pressure on creativity (Kelly & McGrath 1985), others found no effect (Amabile & Gryskiewicz 1989), and some even found a positive effect (e.g. Andrews & Farris 1972; Ohly & Fritz 2010). Yet, the majority of studies to date have focused on a linear relationship between time pressure and creativity, and inconsistent results might stem from the approach the authors undertook, which applies only to linear approximations. So far, only one study examined a curvilinear relationship between time pressure and creativity, but found a non-significant main effect (Baer & Oldham 2006). Therefore, we aim to further explore this matter by examining the curvilinear/quadratic U-shaped relationship between overall time pressure and creativity, where intermediate levels of time pressure are the most beneficial for stimulating creativity, which represents the first potential theoretical contribution of our study.

Employees tend to differ in their needs, values, attitudes and priorities, which determine individual productivity. Moreover, stressors at work such as time pressure do not affect all employees equally. As it is challenging for employees as well as their superiors to identify the conditions under which employees would experience intermediate time pressure in the workplace, we propose that particular boundary conditions exist that affect the nature and shape of the relationship between perceived time pressure and creativity. In response to previous assertions that certain personal and contextual factors may interact in moderating the curvilinear relationship between time pressure and creativity (Baer & Oldham 2006), we propose two such factors. The first one (i.e. an individual factor) is satisfaction with work-family balance (SWFB), conceptualized as the perceived contentment resulting from an evaluation of how successfully one copes with the demands at work and in the family (Valcour 2007). The second one (i.e. an

interpersonal factor) is quality of the leader-member exchange (LMX), defined as favorable reciprocal exchanges between the leader and employee (Blau 1964). We investigate the possibility that extreme levels (i.e. low and high) of perceived time pressure, satisfaction with work-family balance, and leader-member exchange interact with one another and influence individual creativity. Based on role theory, we specify two conditions under which creativity should be high (depending on extreme levels of time pressure, SWFB, and LMX). Considering that it is easier for the leaders to create the condition of low and high time pressure at work than to identify its intermediate levels, we propose that creativity should be high when a) time pressure and the quality of LMX is low and SWFB is high (hands off approach) and b) time pressure and the quality of LMX is high and SWFB is low (hands on approach). Thus, our second intended contribution to the creativity literature is related to the examination of the joint influence of perceived time pressure, SWFB, and LMX on creativity. Third, as there is to the best of our knowledge no empirical evidence linking SWFB to creativity, we also intend to make an empirical contribution to the work-family balance literature. Specifically, we aim to do so by investigating how SWFB interacts with perceived time pressure and LMX in predicting a cognitive work outcome of creativity.

### **Perceived Time Pressure and Creativity**

Our emphasis in this article is to enhance the understanding of the influence of perceived time pressure on creativity, which has “the potential for direct or indirect value to the organization” (Shalley, Zhou & Oldham 2004, p. 943). Time pressure is defined as “either subjectively perceived time pressure or the imposition of a deadline” (Amabile et al. 2002, p. 1).

It is a contextual factor oftentimes present in today's work environment, which is, according to scholars' beliefs, a salient contingency on creativity (Amabile et al. 2002; Andrews & Farris 1972). Time is considered as one of the main resources that affect creativity (Amabile et al. 2002) because time is needed at every stage of the creative process, from the problem analysis through incubation and inspiration to idea verification (Andrews & Smith 1996).

To date, empirical research has yielded mixed and inconsistent results as to whether time pressure undermines or enhances creativity (Anderson, Potočnik & Zhou 2014; Amabile et al. 2002; Andrews & Farris 1972; Baer & Oldham 2006; Ohly & Fritz 2010). We found three empirical studies that demonstrated a negative effect of time pressure on creativity. Kelly and McGrath (1985) conducted an experimental study and found that groups facing time pressure generated less creative ideas than groups with more time to perform their work. Andrews and Smith (1996) also found that the more time pressure marketing professionals perceived, the less creative they were when developing creative ideas. Finally, Amabile et al. (1996) reported that a greater workload pressure was associated with a less creative group project in an organization.

In contrast, three previous studies have shown a positive effect of time pressure on creativity. Andrews and Farris (1972) found that time pressure enhanced scientific performance—including innovation. In addition, the results of a questionnaire study also provided evidence of a positive correlation between time pressure and idea generation/implementation (Noefer et al. 2009). Ohly and Fritz (2010) demonstrated a positive relationship between daily time pressure and daily creativity. Furthermore, one study found no effect of time pressure on creativity (Amabile & Gryskiewicz 1989). Taken together, existing research suggests that time pressure might have a positive, negative, or no effect on creativity. However, almost all previous studies modeled a linear relationship between time pressure and

creativity. So far, only one study examined a curvilinear relationship between time pressure and creativity, but found no effect (Baer & Oldham 2006).

Based on role theory (Kahn et al. 1964) and the findings reported above, we examine the possibility that intermediate time pressure is the most beneficial for fostering creativity, resulting in a curvilinear, inverted U-shaped function. Role theory posits that individuals engage in multiple roles in their lives (e.g. spousal, parental, leisure) to which they are strongly committed (Ruderman et al. 2002). Engaging in multiple roles might create a positive affect (Lenaghan & Sengupta 2007), which leads to cognitive variation that promotes creativity (Isen 1999). Furthermore, according to the role accumulation perspective, commitment to multiple roles is beneficial (Ruderman et al. 2002) for the individual and leads to positive outcomes such as a higher self-esteem, self-complexity, increased job satisfaction, organizational commitment, social support, and social connections (Nordenmark 2004; Pietromonaco, Manis & Frohardt-Lane 1986; Ruderman et al. 2002; Sieber 1974; Thoits 1983)—all of which should facilitate creativity.

In line with the above, to be creative, individuals should be involved in multiple roles and thus develop broad social networks, allowing them to interact and communicate with people from different environments who have different beliefs, competences, and ideas (Gupta 2007). Precisely interpersonal communication with individuals from different life domains enhances creativity (Perry-Smith & Shalley 2003) as it facilitates knowledge transfer and gives access to new ideas and insights (Ohly, Kašé & Škerlavaj 2010). Apart from work-related situations, non-work experience also benefits creativity at work (Jaussi, Randel & Dionne 2007). Thus, when time pressure is intermediate, individuals will be able to engage in all roles with higher priority;

the interaction with different people, ideas and environment will in consequence enhance creativity (Gupta 2007).

Role theory (Kahn et al. 1964) provides additional evidence for the relationship between time pressure and creativity. It suggests that each individual has a fixed sum of energy and time that must be divided among multiple roles—meaning that multiple roles may compete for these limited resources (Kahn et al. 1964). This may cause conflicting demands; however, unless high time pressure in at least one role is an issue, individuals will not necessarily encounter role conflicts (Coverman 1989; Greenhaus & Beutell 1985). According to the scarcity perspective, individuals have to choose and divide their time among the high priority roles from the work and non-work domains. As such, intermediate time pressure stimulates individuals to be fully engaged in their activities at work (Freedman & Edwards 1988), whereas low and high levels of time pressure decrease work engagement (Zivnuska et al. 2002).

As time pressure at work grows stronger, role conflict is inevitable (Yang et al. 2000), because the more time individuals devote to work roles, the less time they will have for other roles (Marks 1977; Yang et al. 2000). A high level of time pressure may stimulate frequent role conflict, which may cause stress, physical and psychological disorders (Goode 1960; Nordenmark 2004; Sieber 1974). Furthermore, stress may result in routine behavior patterns and thereby decrease creativity (Farr & Ford 1990). However, Tang and Chang (2010, p. 871) suggested that “despite the potentially negative effects of role conflict, contrary evidence suggests that role conflict might enhance creativity.”

Furthermore, research has shown that almost all individuals prefer at least some level of time pressure at work (Andrews & Farris 1972). Thus, we suspect that occasional experience of role conflict as a consequence of intermediate time pressure might be beneficial for creativity.

For example, Ekvall and Ryhammar (1999) found that some level of workload pressure is positively correlated with creativity. Intermediate time pressure may occasionally result in some level of role conflict; however, occasional role conflict may be beneficial as it exposes individuals to different viewpoints, expand their source of information and make them more flexible (Jones 1993; Sieber 1974) and thereby fosters creativity (Guilford 1950; Tang & Chang 2010).

Based on role theory, we propose that individuals, who occasionally experience role conflict, will have support from work and non-work roles, and this support will help them to perform well even when facing intermediate time pressure. Thus, we propose that intermediate time pressure will enhance creativity.

*Hypothesis 1: There will be an inverted U-shaped relationship between perceived time pressure and creativity.*

### **The Interplay among Individual and Interpersonal Factors in Predicting Creativity**

Even though we argue that intermediate time pressure should have a positive impact on creativity, it is challenging for the leaders to identify conditions under which each employee would experience intermediate time pressure at work. Considering that it may be easier for leaders to establish conditions of low and high time pressure at work, in what follows, we focus on extreme conditions of time pressure. As described above, low or high levels of time pressure at work may stimulate creative behavior. However, leaders need to develop a distinct relationship with each employee so they are able to see how the given time pressure influences

an employee's behavior. For this reason, we included LMX in our study. Yet, time pressure at work and the quality of LMX may also affect an employee's non-work responsibilities. Thus, we also included SWFB in our investigation as this factor may be relevant for understanding individual creativity as well. Recent studies namely demonstrate that family-friendly provisions, which are beneficial for SWFB, can improve the environment for learning and innovation (James 2014). We assume that time pressure, LMX, and SWFB interact with one another and influence individual creativity at work. Specifically, considering that leaders can easier establish conditions of low and high time pressure at work, in what follows, we specify two conditions under which extreme levels of time pressure, SWFB, and LMX interact with one another and influence creativity at work.

In the first condition (depicted in Figure 1), we propose—based on the role theory—that when individuals experience low time pressure at work, they are likely to engage in multiple work and family roles (Ruderman et al. 2002) and be satisfied with the distribution of time among these roles. This gives them more opportunities for interaction with diverse people with different beliefs and perspectives, which should enhance creativity (Gupta 2007). However, this requires not only their ability to successfully allocate limited resources between work and family roles, but also that they develop such a relationship with their leader that will allow them to spend fewer limited resources at work (such as time, attention, and energy) than needed. Namely, additional activity at work will force individuals to spend more time and energy at work, consequently individuals will have less time and energy to spend on non-work roles. Thus, when time pressure is low, the levels of SWFB and the quality of LMX relationship must be at appropriate echelons to stimulate creativity.

SWFB consists of two components: a cognitive component, which involves the perception and appraisal of one's degree of success in achieving work-family balance; and an affective component, which entails emotional states or positive feelings emanating from these perceptions and appraisals (McNamara et al. 2012). We argue that individuals who experience low time pressure should experience higher level of SWFB because low time pressure decreases conflict between work and family roles (Baethge & Rigotti 2013; Höge 2009). Based on role theory and the cognitive component of SWFB, we propose that increased satisfaction with one's management of work and family roles should increase creativity. A more role-satisfied person will be able to draw upon a variety of perspectives and approaches from the work and family domains, which should result in higher creativity (Baer & Oldham 2006). In line with the affective component of SWFB we also propose that pride, followed by personal achievement—e.g. a high SWFB—represents a positive emotion (Fredrickson 1998) that promotes creativity by enlarging a complex cognitive context and foster unusual and creative thoughts (Fredrickson & Joiner 2002; Isen 1987).

To maintain a low level of time pressure and high level of SWFB, an “appropriate” quality level of LMX should be also sought to stimulate high creativity. LMX theory builds on the assumption that leaders have unique relationships with each employee (Graen & Schiemann 1978) and defines LMX as reciprocal exchanges between leaders and their employees based on trust, respect, and obligations (Graen & Uhl-Bien 1995). Therefore, a high quality level of LMX, together with a decreased level of SWFB satisfaction, should make an employee less prone to engage in work behaviors that lead to creativity. In contrast, a low quality level of LMX is based on narrow transactions (leader and member behaviors) written in the employment contract, and individuals receive only few resources from the leader (Graen & Uhl-Bien 1995). Therefore,

when quality of LMX is low, in order to be creative, at the same time employees need to experience a high SWFB, which will allow them to devote a sufficient amount of energy and time to work.

In light of the above, we contend that employees experiencing low time pressure and high SWFB do not need a high-quality LMX relationship to engage in high creative behavior. When the quality level of LMX is high, individuals will receive more formal and informal rewards (Sparrowe & Liden 1997), opportunities, autonomy, and more of the leader's time (Graen & Uhl-Bien 1995). In exchange for the aforementioned, employees will feel obligated to contribute to the advancement of the leader's agenda and thereby undertake challenging and difficult tasks (Graham & van Witteloostuijn 2010; Volmer, Spurk & Niessen 2012). This will result in a greater investment of resources in the work domain (Graen & Uhl-Bien 1995). The more time and energy individuals devote to their work role, the less time and energy they will devote to their family responsibilities (Greenhaus & Beutell 1985). We believe that when LMX quality is low, individuals will not feel obligated to devote more resources to work – they will do what is written in the contract. Therefore, a low-quality LMX relationship is necessary to balance a high SWFB and perceive low time pressure. As a result, individuals will be more creative. Thus,

*H2a: There is a three-way interaction between perceived time pressure, SWFB and LMX: the level of creativity is high when SWFB is high and time pressure and quality of LMX is low.*

In the second condition of our three-way interaction, we propose that in the case of high time pressure, creativity should be high when at the same time SWFB is low and the quality of LMX is high. When time pressure at work is high, individuals usually devote more time to work

to accomplish task-related goals; in turn, they have less time for their family roles (Marks 1977; Yang et al. 2000) and this causes role conflicts (Yang et al. 2000). While role conflict can have a number of negative effects, research has shown that when accompanied by high time pressure, role conflict might be positively correlated with creativity (Ekvall & Ryhammar 1999). In addition, studies have found that role conflict exposes individuals to different perspectives, expands their sources of information, and makes them more flexible (Jones 1993; Sieber 1974) which also enhances creativity (Guilford 1950; Tang & Chang 2010).

Furthermore, individuals who experience high time pressure at work are more likely to be unsatisfied with the way they balance work and family. In line with the affective component of SWFB, low levels of SWFB may lead to negative emotions. However, under some circumstances negative emotions may increase creativity, in that individuals can interpret them as an indication of a problematic situation and that more effort is necessary (Fong 2006; George & Zhou 2002). Negative emotions will increase creativity when individuals believe that leaders will reward and support their creative pursuits (George & Zhou 2002); therefore, the quality of LMX has an important impact on how creative individuals will be when they face high time pressure and low SWFB.

Employees in high-quality LMX relationships receive more rewards, support, task-related resources, and information about desired behavior from leaders, which is related to receptiveness and support for creative work (Amabile 1988), than those in low-quality LMX relationship (Dienesch & Liden 1986; Graen & Cashman 1975). Thus, when leaders are supportive (Černe, Jaklič & Škerlavaj 2013) and the quality of LMX is high, individuals will be more creative (Volmer, Spurk & Niessen 2012), even in situations when they will experience negative emotions due to low SWFB and high time pressure. In light of the above, we argue that when

perceived time pressure is high and SWFB is low, at the same time the quality of LMX relationship has to be high for individuals to be highly creative. Accordingly, we predict the following three-way interaction:

*H2b: There is a three-way interaction between perceived time pressure, SWFB and LMX: the level of creativity is high when SWFB is low and time pressure and quality of LMX is high.*

Our proposed conceptual model is presented in Figure 1.

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Insert Figure 1 about here  
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## **Methods**

### ***Sample and Procedures***

As part of a large-scale questionnaire data we used in the analysis were collected in a Slovenian (EU) insurance company in September 2013. An Internet-based survey was e-mailed to the employees via company representatives. The company has a sales network of 12 regional units, 42 representative offices with numerous outlets and around 600 insurance agents, who represented a target sample for our study. They held a wide variety of jobs, including knowledge-intensive jobs, clerical jobs, sales etc. and are formally organized in units with clearly labeled supervisors.

The company representative (one of the HR managers), who was used in order to make sure that the response rate would be as high as possible, sent an email with our survey links and a short memo signed by the company CEO and Head of the HR department to all the company's employees that have access to a company email. We used a translation-back translation

procedure (Brislin 1986) to translate the original (English) versions of the measurement instruments into the Slovenian versions of the scales.

Altogether, 262 employees responded to the survey (~~response rate 9.58%~~). Eleven questionnaires were excluded from further analysis due to missing values in more than 10% of variables. The final sample consisted of 251 responses (response rate 9.58%). Among the respondents, 56% were female and about 63% had an undergraduate degree. The average age was 42.20 years (s.d. = 8.56), ranging from 24 to 64 years. The average length of work experience was 8.13 years (s.d. = 7.70), ranging from 1 to 35 years. A total of 36% of respondents reported less than seven years of work experience (s.d. = 7.89), and 35% reported less than three years of working with one particular supervisor (dyad tenure: s.d. = 4.97). 48% of employees reported having five or fewer years of formal work experience and 35% between five and 15 years.

### *Measures*

All the variables were self-reported and measured with a 7-point Likert scale with the anchors “strongly agree” and “strongly disagree,” unless indicated otherwise. The following is a description of the measurement scales used for focal and control variables. In our analysis, we averaged and centered the items per Aiken and West (1991).

***Creativity.*** The employees completed the creativity scale developed by Zhou and George (2001). To avoid the overlap with idea implementation, as warned against by Montag et al. (2012), we used eight items that concerned only the generation of novel, useful ideas but not the implementation of these ideas. Thus, the items used in the analysis are the following (Zhou & George 2001): “How often do you ... suggest new ways to achieve goals or objectives; come up

with new and practical ideas to improve performance; search out new technologies, processes, techniques, and/or product ideas; suggest new ways to increase quality; is a good source of creative ideas; exhibits creativity on the job when given the opportunity to; often has new and innovative ideas; comes up with creative solutions to problems; often has a fresh approach to problems; suggests new ways of performing work tasks.” ( $\alpha = .96$ ).

***Time pressure.*** We measured time pressure by using five items proposed by Putrevu and Ratchford (1997). We slightly modified the items to comply with the research context. Specifically, we added “When working” to the five items. Sample items include: “When working ... I do not have enough time to complete what I should do; I often feel in a hurry.” ( $\alpha = .85$ ).

***Satisfaction with work-family balance.*** We measured SWFB using a five-item measure developed by Valcour (2007). Response options range from 1 (very dissatisfied) to 7 (very satisfied). A sample item is the following: “How satisfied are you with the way you divide your time between work and personal or family life?” ( $\alpha = .93$ ).

***Leader-member exchange.*** We measured LMX with items describing the employee’s perceptions of the supervisor’s leadership behavior. Specifically, respondents indicate to what extent they agree the supervisor exhibited certain behaviors, such as understanding employees’ needs, helping behavior, and recognition of employees’ potential (Graen & Uhl-Bien 1995). The leader-member exchange scale consists of seven items, including “My supervisor would “bail me out” at his/her expense.” ( $\alpha = 0.92$ ).

***Control variables.*** We included the employees’ gender, age, and work experience as control variables. Recent research in the area of LMX has characterized the leader-follower relationship in terms of two dimensions: economic (ELMX) and social (SLMX) (Kuvaas, Buch, Dysvik, & Haerem, 2012); therefore, we controlled for ELMX and SLMX. We measured ELMX

( $\alpha = .82$ ) and SMLX ( $\alpha = .76$ ) using a scale by Kuvaas and colleagues (2012). Four items measured each of the constructs. Sample items are the following: for SMLX: “My relationship with my supervisor is based on mutual trust”; for ELMX: “All I really expect from my supervisor is that her or she fulfills his or her formal role as supervisor or boss.”

### ***Results***

Table 1 provides the descriptive statistics, zero-order correlations, and reliability coefficients of the focal and control variables used in the study. None of the correlations between the four focal variables from the conceptual model exceeded the .30 threshold, which indicated there should be little concern for the presence of multicollinearity in the data. Based on the Cronbach’s alpha coefficients, all scales exhibited internal consistency and ranged from .96 for creativity to .76 for SLMX.

Before testing the proposed hypotheses, we evaluated the factor structure for the four constructs: time pressure, creativity, SWFB, and LMX. The proposed four-factor solution estimated with maximum likelihood estimation method fit the data well: Chi-square [266] = 474.23, CFI = .959, TLI = .954, SRMR = .052, RMSEA = .056. Altogether, the factor loadings were all significant and ranged from .73 to .90 for creativity items, .71 to .83 for time pressure items, .71 to .89 for LMX items, and .73 to .92 for SWFB items. As such they were good representations of the focal constructs.

We tested alternative models to assess discriminant validity. These exhibited worse fit with the data (creativity and time pressure items on the same factor: Chi-square [269] = 1010.02, CFI = .854, TLI = .838, SRMR = .121, RMSEA = .105; SWFB and LMX items on the same factor: Chi-square [269] = 1251.62, CFI = .807, TLI = .785, SRMR = .128, RMSEA = .121). In

addition, the low correlations between focal constructs provided further evidence of discriminant validity.

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Insert Table 1 about here  
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Table 2 presents the results of the moderated hierarchical regression analysis used to test our hypotheses. We grand-mean-centered our independent variables to reduce unnecessary multicollinearity between the linear terms and their quadratic counterparts (Aiken & West 1991). All five models for creativity in Table 2 include the following control variables: gender, age, work experience, ELMX, and SLMX. In the first step (Model 1) we entered only the control variables. In the second step (Model 2) we included all first-order associations between creativity and time pressure, LMX, and SWFB, respectively. Time pressure was positively related to creativity ( $\beta = .17, p = .01$ ), while the effects of LMX and SWFB were insignificant. Next, to test our prediction that time pressure would have a curvilinear relation to creativity (Hypothesis 1), we introduced the quadratic term of time pressure (i.e., time pressure squared) in the third step (Model 3) of the regression equation. As shown in Table 2, the coefficient associated with this term was positive and statistically significant ( $\beta = .13, p = .04$ ), thus Hypothesis 1 is rejected. Specifically, while results do provide support for a curvilinear relationship between time pressure and creativity, the positive coefficient suggests a U-shaped relationship between time pressure and creativity rather than an inverted one. In the fourth step (Model 4) we added all second-order associations. The only statistically significant two-way interaction was the interaction between SWFB and LMX ( $\beta = -.19, p = .02$ ); all other two-way interactions were statistically insignificant.

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Insert Table 2 about here

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To test the proposed three-way interaction effects of three independent variables - time pressure, LMX, SWFB and creativity - (Hypothesis 2), we first grand-mean-centered all independent variables, then multiplied the centered values of independent variables (time pressure x LMX x SWFB) to get three-way interaction and included the proposed three-way interaction in Model 5. The results show that three-way interaction was significant ( $\beta = -.30$ ,  $p = .05$ ). This interaction is shown in Figure 2, where it is evident that creativity is high when time pressure and the quality level of LMX are low and SWFB is high, supporting Hypothesis 2a. Furthermore, from Figure 2 it is also evident that creativity is high when time pressure and the quality level of LMX are high and SWFB is low, supporting Hypothesis 2b.

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Insert Figure 2 about here

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## Discussion

We have drawn on role theory (Kahn et al. 1964) to examine the possibility of a U-shaped relationship between perceived time pressure and creativity and to investigate whether the combined influence of perceived time pressure, satisfaction with work-family balance (SWFB), and leader-member exchange (LMX) influences creativity. In line with the first hypothesis, our results showed a U-shaped relationship between perceived time pressure and creativity. Moreover, we found support for our second hypothesis by demonstrating a three-way interaction between perceived time pressure, SWFB, and LMX. Specifically, results indicated that the interconnectedness of these factors determines two conditions that lead to high creativity.

First, the employees exhibited high creativity when perceived time pressure and quality of the LMX relationship was low and SWFB was high. Second, creativity was also high when employees perceived high time pressure, high quality of the LMX relationship, and low SWFB.

### **Theoretical Contributions**

Our research takes a step further towards resolving the controversy about the nature of time-pressure – creativity relationships in light of mixed results yielded by existing studies. Most previous studies focused on a linear relationship, and inconsistent results might stem from that approach, which applies linear approximations. Therefore, we hypothesized an inverted U-shaped relation between overall perceived time pressure and creativity. Surprisingly, results showed a U-shaped relationship, suggesting that a) high levels of time pressure will result in more creativity since high time pressure may be perceived as challenging, and challenge appraisal in turn is related to creativity (Ohly & Fritz 2010) and b) low levels of time pressure will also facilitate creativity by allowing employees to have enough time to engage in multiple roles (Coverman 1989), which enables interaction with different people and support from colleagues and family when necessary. This finding presents the study's first theoretical contribution to the creativity literature by providing evidence of the existence of a curvilinear, U-shaped relation between perceived time pressure and creativity. Namely, to date, only one study has investigated the possibility of an inverted U-relationship between time pressure and creativity, which found no effect (Baer & Oldham 2006). However, they found a significant curvilinear interaction of experienced creative time pressure and support for creativity on creativity and a three-way curvilinear interaction of creative time pressure, openness to

experience, and support for creativity on creativity (Baer & Oldham 2006). Unlike us, Baer and Oldham (2006) measured the *experienced creative* time pressure rather than the *overall* amount of time pressure perceived at work. The authors speculated that “employees may not necessarily feel high levels of overall time pressure, but may still feel that they have little time available to pursue creative activities” (Baer & Oldham 2006, p. 963). In our view, overall time pressure may be a better predictor because an individual cannot separately assess the levels of pressures from different work activities but, at best, makes a general evaluation that stems from his/her feelings experienced in different work tasks. Furthermore, we propose that employees can provide a more accurate estimate of how time pressure (low, high or intermediate) at work influences their creativity than managers, who are less sensitive to these changes.

Secondly, we make an important contribution to work–family literature where, to date, only limited attention has been directed towards cognitive types of workplace performance outcomes. Despite the wide interest in work-family balance among scholars and practitioners alike, this concept has not been linked with creativity as an individual outcome. Our research provides the first empirical examination of SWFB as antecedent of individual creativity. In other words, we propose creativity as a novel outcome of SWFB, thereby steering away from traditionally explored outcomes in this area that have mostly revolved around work-related attitudes (Amstad et al. 2011; McNamara et al. 2012; Valcour 2007). We highlight that positive personal characteristics (i.e. SWFB) in conjunction with contextual factors are relevant for individual creative pursuits. In view of that, we draw attention to the fact that being highly content and having positive feelings about work and family overall acts as a personal resource that facilitates creativity in inadequate working situations (when one is under time pressure and has a poor relationship with supervisor). This provides a unique insight into how personal and

contextual factors complement one another in pursuit of organizationally sought-after performance.

Finally, we confirm a three-way interaction between perceived time pressure, SWFB, and LMX, which broadens the understanding of how personal and contextual factors interact to foster creativity. We explicitly examined and found two conditions, depending on the levels of perceived time pressure, SWFB, and LMX, under which creativity is high. We provide evidence that creativity is high when a) time pressure and quality of the LMX relationship are low and SWFB is high and b) time pressure and quality of the LMX relationship are high and SWFB is low. Our results are consistent with previous studies suggesting that personal and contextual factors may interact to affect creativity (Amabile 1983; Oldham & Cummings 1996; Woodman, Sawyer & Griffin 1993). By proposing and finding the three-way interaction between time pressure, SWFB and LMX, and creativity, we respond to Baer and Oldham's (2006) call to explore whether other individual differences and social characteristics moderate the curvilinear relationship between perceived time pressure and creativity. By exploring a specific personal characteristic (SWFB), we add to the small number of studies that have examined how involvement in non-work domain can contribute to creativity at work (Madjar, Oldham & Pratt 2002).

### **Practical Implications**

Time pressure at work is increasing (Noefer et al. 2009), and there are no indicators of a trend in the opposite direction; therefore, leaders are confronted with the challenge of how to stimulate employee creative behavior, one of the most desirable behaviors in today's work environment. Our study investigates this challenge, and the results offer some practical

implications. First, this study proposes that extreme time pressure is conducive to creativity. Thus, if supervisors are interested in boosting creativity, they should identify how tight deadlines and high workloads influence the employees' experience of time pressure and then adjust those deadlines and workloads so that employees will in turn experience high and low levels of time pressure. It is important to note, that frequent and continuous high time pressure may lead to burnout and other negative consequences, whereas frequent and ongoing low time pressure may lead to boredom. Thus, it is essential that managers use the extreme levels of time pressure in turn. Our findings go a step further and help clarify the role of the supervisor in achieving high levels of performance (i.e., creativity) by focusing on these two extreme levels of time pressure. This study proposes that in the condition of low time pressure, leaders should use a hands-off leadership style in order to stimulate employees' creativity. When time pressure is low, leaders should only delegate the tasks to their employees and then leave them to choose their own working pace. On the contrary, when time pressure is high, leaders should use a hands-on leadership style to enhance creativity. In particular, when employees are facing high time pressure, leaders have to provide them with full support to stimulate their creative behavior.

SWFB appears to be a relevant condition for an individual's creative endeavors. Organizations need to consider this when designing family-friendly initiatives that directly impact an employee's levels of SWFB. While these initiatives may be costly, they can bring direct benefits for the organization. It has namely been shown that the use of work-life arrangements, in terms of flexible policies, has enabled employees to better manage the temporal and spatial boundaries, which in turn was conducive to getting creative ideas, enabled creative problem solving, and more focused thinking (James 2011). Organizations without established family-friendly provisions on the other hand, would need to invest in nurturing interpersonal

relationships. Namely, the present study finds that high-quality relationships between the supervisor and an employee can help mitigate the potentially negative effects of unsatisfactory work-family balance on creativity in task-related engagements. The particularly interesting finding is that employees can be highly creative at work despite experiencing work-family problems. This can potentially broaden implications regarding individual performance and career progression. When employees have problems fulfilling work and family obligations, the role of the supervisor is of paramount importance for assuring adequate employee performance. Supervisors should therefore pay attention to these occurrences, and provide support, guidance, and motivation.

Finally, our study shows that human resources (HR) professionals should jointly consider different factors when planning individual career paths, for example, an individual's perceptions of work-family balance and the quality of dyadic relationships (particularly with the supervisor). Our study supports that factors at different levels interact and that ignoring one factor can lead to poorer performance. In sum, this study brings attention to the need to consider the interplay of different factors (individual, dyadic, organizational, and cultural) in predicting individual creativity.

### **Limitations and Suggestions for Future Research**

Despite our contributions, our study has some limitations that need to be mentioned. First, the data were cross-sectional, which limits the ability to demonstrate causality. Future research could benefit from longitudinal designs, which could enable the observations of variations in creativity and other variables of interest over time. Second, the data were all self-reported, which raises concerns about common method bias. However, according to Siemsen,

Roth, and Oliveira (2010, p. 470) “there is no reason that common method bias would create an artificial interaction effect [...] Finding significant interaction effect despite the influence of common method bias in the data should be taken as strong evidence that an interaction effect exists”. Nevertheless, when collecting the data, some items in the questionnaire were reverse-coded to lower the possibility of common method bias, and respondents were assured anonymity. A possible extension of this study would provide supervisor ratings of employee creativity as well as the quality of LMX. The latter could serve to observe the differences of perceptions in the quality of the leader–employee relationship.

In light of employees’ increasing demands for work-family balance (Drobnič & Guillén 2011), we incorporated an individual-level variable, SWFB, in our study. It would be worthwhile to investigate how organizational factors that contribute, at least in part, to an individual’s assessment of work-family balance, jointly affect creativity. Studies could compare the effects on creativity in companies with high adoption and high use of family-friendly programs with companies characterized by high adoption and low use of these practices by employees themselves (Pasamar & Alegre 2015). This would provide a more complete picture of the studied topic.

Another limitation to this study, highlighted by recent research, is the greater tendency for busy individuals to decline to participate in surveys (Vercruyssen, Roose & Van de Putte 2011). We can expect, therefore, that highly time pressured individuals and individuals with low work-life balance might be under-sampled in this study. In addition, response rate was 9.58%, which is rather low. Thus, future data collection projects should employ special effort to recruit individuals, including time pressured individuals, and research should particularly attend to the intersection of time pressures across domains. Fourth, the hypotheses were tested using data

from one organization, which could be regarded as either a strength or drawback. On the one hand, it may limit the generalizability of the findings. Therefore, studies in other industries could provide additional insight into investigated relationships. On the other hand, using one organization represents a control for the existence of a unique culture and expectations that vary across organizations. In addition, we collected data in Slovenia where many employees perceive challenges in juggling the different role responsibilities and report work-family conflicts (Mihelič 2014). This is partly due to the fact that dual-career households are the dominant type of family structure in the country. Therefore, replicating this study in other countries could also provide additional insights into investigated relationship.

Finally, in contrast to a previous study that examined the curvilinear relationship between time pressure and creativity (Baer & Oldham 2006), we measured the overall time pressure. Future research may add to this measurement approach by examining the relationship between several types of time pressure (e.g., time deadline pressure, creative time pressure) and creativity. Scholars should also continue to explore the association between time pressure and creativity in the attempt to provide further evidence for a U-shaped relationship.

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