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Leader–member exchange (LMX), job autonomy, and creative work involvement ☆

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ABSTRACT

Researchers have claimed that high quality of supervisor–employee relationships (i.e., leader–member exchange; LMX) fosters creativity at work. Moreover, researchers have acknowledged that this relationship is not clear-cut but rather complex. The present study focused on the moderating role of job autonomy in the LMX-creative work involvement relationship. Longitudinal field survey data ($N = 144$) collected in a high-technology firm revealed a positive association between LMX and creative work involvement and confirmed our assumptions on the moderating role of job autonomy. The positive relationship between LMX and creative work involvement was stronger when employees experienced greater job autonomy. Our findings point to the importance of considering the interplay of both, the leader–member relationship and job design issues for increasing employees' creative work involvement.

1. Introduction

As today's global companies are rapidly changing, they need employees who search for new opportunities and who continuously improve their work environment (Oldham & Cummings, 1996; Rank, Pace, & Frese, 2004; Unsworth, 2001). Creativity, defined as the generation of novel and useful ideas (Amabile, 1983, 1996), has been considered to be a key driver for organizational effectiveness and survival (Shalley & Gilson, 2004; Unsworth, 2001; Zhou & Shalley, 2003). Leaders are thought to be one of the most influential predictors of creativity at work (Mumford, Scott, Gaddis, & Strange, 2002; Rosing, Frese, & Bausch, 2011). Therefore, leaders need to know how to provide a context for employees' creativity in order to stay competitive in today's turbulent and fast-changing work environments (Tierney, 2008).

Researchers have begun investigating the impact of leaders on creativity, including studies that have considered leader and follower traits (Tierney, Farmer, & Graen, 1999; Zhou & George, 2003), transformational leadership (e.g., Jaussi & Dionne, 2003; Jung, Chow, & Wu, 2003; Sosik, Kahai, & Avolio, 1998), benevolent leadership (Wang & Cheng, 2010), and empowering leadership (Zhang & Bartol, 2010a). Researchers have also started examining the association between a relational concept of leadership, namely leader–member exchange (LMX) and creativity (e.g., Atwater & Carmeli, 2009; Scott & Bruce, 1994; Tierney et al., 1999). LMX theory differs from other leadership approaches by its explicit focus on unique, dyadic relationships and the notion that leaders and followers negotiate their relationship over time (Dansereau, Cashman, & Graen, 1973; Graen & Schiemann, 1978). There are major reasons (detailed below) to expect LMX to have a positive impact on creativity. However, research on the LMX-creativity association revealed heterogeneous findings (cf. Eder & Sawyer, 2007; Hammond, Neff, Farr, Schwall, & Zhao, 2011 for meta-analytical findings), pointing to inconsistencies in this relationship and suggesting an influence of third

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variables. Therefore, a major purpose of the present study was to extend existing research that connects LMX with creativity by focusing on job autonomy as a moderator.

It is important to note that in the present article, we follow earlier research (e.g., Atwater & Carmeli, 2009; Kark & Carmeli, 2009) and focus on employees' *creative work involvement* as one important component of creativity (Ohly, Sonnentag, & Pluntke, 2006). We will briefly define and differentiate our conceptualization from creative performance, which has been considered as another important component of creativity (e.g., Oldham & Cummings, 1996; Scott & Bruce, 1994; Vinarski-Peretz, Binyamin, & Carmeli, 2010; Zhang & Bartol, 2010b). According to Atwater and Carmeli (2009), creative work involvement is defined as "the extent to which an employee engages his or her time and effort resources in creative processes associated with work" (Carmeli & Schaubroeck, 2007, p. 36). A related construct, *creative performance*, refers to supervisors' evaluation of employees' creative problem solving at work (e.g., Tierney & Farmer, 2010), or objectively (through the use of external judges) assesses numbers and quality of suggestions or ideas (e.g., Zhang & Bartol, 2010a, 2010b; Zhou, 1998). In contrast, creative work involvement focuses on individuals' subjective assessment of their involvement in creative tasks at work. Researchers have argued that it is not only important to consider outcomes of creativity (i.e., creative performance), such as the actual idea or solution, but that it is of special importance to gain knowledge about employees' evaluation of creative involvement at work (Atwater & Carmeli, 2009; Carmeli & Schaubroeck, 2007; Kark & Carmeli, 2009). Creative work involvement is regarded as an important precursor of creative outcomes because it is strongly related to creative performance and innovation (Ohly et al., 2006).

Although creative work involvement is a complex phenomenon that requires an interactional approach (Amabile, 1996; Woodman, Sawyer, & Griffin, 1993; Zhou & Shalley, 2003), research on how job characteristics can foster creative work involvement is still missing. Building on the Job Characteristics Model (JCM; Hackman & Oldham, 1976) from job design literature, we therefore examine the moderating role of job autonomy in the relationship between LMX and creative work involvement. We focus on job autonomy as a moderator because job autonomy as one component of the JCM has received a lot of research attention in the job design literature (Humphrey, Nahrgang, & Morgeson, 2007; Langfred & Moye, 2004). More importantly we focus on job autonomy because it has been considered to be of special importance among job characteristics for numerous outcomes (e.g., performance, turnover intentions, satisfaction, role conflict, anxiety; cf. for example Humphrey et al., 2007), since job autonomy enables self-determination and meaning (Deci & Ryan, 2000; Niemiec, Ryan, & Deci, 2010). We assume that opportunities provided within high-quality LMX relationships are best used in conjuction with job design features, such as job autonomy, which allows employees to determine the pace, sequence, and methods when accomplishing tasks. Job autonomy is important for creative work involvement as it provides employees – beyond the trust and support provided by a high-quality LMX relationship – with a sense of responsibility for their jobs (Langfred & Moye, 2004).

The present study contributes to the literature on leadership and creative work involvement in at least three important ways: First, researchers have ascertained that the inquiry of leadership for creativity is an unusually complex one (Mumford & Licuanan, 2004) and that it "is still in its nascent stage" (Tierney, 2008, p. 95). Our study contributes to the important role of leaders in fostering employees creative work involvement as an important antecedent of creative outcomes, which has yet to be adequately examined (for exceptions see Atwater & Carmeli, 2009; Carmeli & Schaubroeck, 2007). Second, although creativity research has emphasized the role of job autonomy for fostering creativity (Amabile, 1983; Hennessey & Amabile, 2010; Unsworth & Clegg, 2010), and for its connection with leadership (Krause, 2004; Wang & Cheng, 2010), we are not aware of a single study that has tested the interplay between a relational concept of leadership (i.e., LMX) and job autonomy for creative work involvement. This is surprising because such an analysis would broaden our theoretical knowledge about social exchange processes within LMX-theory, and about amplifying mechanisms, which lead to creative work involvement. More concretely, identifying job autonomy as one potential moderator suggests that job design features influence the type or content of the social exchange process between supervisor and subordinate. Imagine, for example, an employee with a great deal of autonomy. This employee feels responsible for the work to be done and can determine the methods and means for completing the work. This employee can actually translate the privileges associated within a high-LMX relationship like respect, trust, and recognition (Gerstner & Day, 1997; Ilies, Nahrgang, & Morgeson, 2007; Nahrgang, Morgeson, & Ilies, 2009) into creative work involvement since this employee has the opportunity to select and use knowledge independently and to actually take risks. Third, our study extends earlier research by theoretically integrating the important job design variable of job autonomy into LMX theory. Therefore, two important research streams of I/O-psychology are combined and can nurture each other in order to better understand the complex LMX-creative work involvement relationship. Furthermore, results provide important information for practitioners because identifying job conditions that amplify leadership effects are relevant for designing intervention tools in leadership training programs (Graen, Scandura, & Graen, 1986).

We approach our research question with a longitudinal study that takes place in the manufacturing branch of a large, internationally operating high-technology firm. In the following, we will outline our theoretical reasoning for our hypotheses. We will begin with the direct relationship between LMX and creative work involvement, followed by the moderator hypothesis.

2. Theory and hypotheses

2.1. Leader–member-exchange (LMX) and creative work involvement

LMX theory builds on social exchange theory (Blau, 1964; Gouldner, 1960) and assumes that a supervisor has a unique relationship to each employee (Graen & Uhl-Bien, 1995), which is negotiated over time as a result of role expectations and fulfillments between leaders and members. A high-quality relationship, as characterized by favorable reciprocal exchanges between

leader and member (Blau, 1964; Kelley & Thibaut, 1978), is associated with numerous positive outcomes, such as better performance, more commitment, job satisfaction, and a higher degree of mutual liking (see Gerstner & Day, 1997; Ilies et al., 2007; Liden, Sparrowe, & Wayne, 1997).

Theoretically, researchers have suggested a number of reasons for a positive LMX-creativity relationship. For example, employees in high-quality relationships are considered to be more creative compared to their less-privileged colleagues because of their more focused approach to challenging and difficult tasks, together with their greater risk-taking, and the fact that employees in high-quality LMX relationships receive more task-related recognition, interpersonal support, and appreciation (cf. Liden et al., 1997; Tierney, 2008; Tierney et al., 1999). Moreover, researchers have suggested that LMX is beneficial for innovation (including creativity) because enjoying a good LMX relationship is accompanied by encouraging climate perceptions (Scott & Bruce, 1994). The experience of an encouraging social climate is important for employees' creative work involvement (Kark & Carmeli, 2009). LMX research has also shown that employees who enjoy a high-quality LMX relationship feel obliged to reciprocate to their supervisors by engaging in discretionary processes at work (Ilies et al., 2007; Liden et al., 1997).

Empirically, most studies have provided support for a positive relationship between LMX and creativity (e.g., Atwater & Carmeli, 2009; Van Dyne, Jehn, & Cummings, 2002). For example, Van Dyne et al. (2002) found positive correlations between LMX and creative performance ($r = .37$, $p < .001$). Similarly, studying the association between LMX and creative work involvement, Atwater and Carmeli (2009) revealed a positive path-analytical direct effect ($\beta = .33$, $p < .001$). However, Clegg, Unsworth, Epitropaki, and Parker (2002) found no association between LMX and idea suggestion ($p = -.09$, ns). Recent meta-analyses (Eder & Sawyer, 2007; Hammond et al., 2011) help to obtain a more comprehensive picture of the association. Findings showed that, on average, there is a positive association between LMX and creativity ($\rho = .23$ and $\rho = .29$, respectively). One has to keep in mind when considering the primary studies, however, that the number of included primary studies was limited and that LMX-creativity correlations have been highly variable. Furthermore, we would like to point to the fact that the operationalizations of creativity have varied across primary studies and results have not reported separate findings for creativity and creative work involvement. Accordingly, researchers suggest a more detailed exploration of the LMX-creative work involvement relationship (cf. Atwater & Carmeli, 2009).

In our study, it is important to examine a direct relationship between LMX and creative work involvement both from a theoretical and practical perspective. The results could be interpreted in one of several ways: A direct relationship would add to the limited research of creative work involvement (Atwater & Carmeli, 2009; Kark & Carmeli, 2009). A positive direct effect would suggest that establishing high-quality LMX relationships encourages a certain level of creative work involvement regardless of job design characteristics. Finally, an interaction would mean that employers can establish (i.e., when there is no direct effect) or amplify (i.e., together with job autonomy) effects from LMX to creative work involvement by paying attention to job design characteristics.

Although we are mainly interested in the moderating role of job autonomy in the LMX-creative work involvement relationship, building on the majority of theoretical and empirical considerations outlined above, and for reasons of completeness, we assume a positive relationship between LMX and creative work involvement.

Hypothesis 1. The quality of leader–member exchange (LMX) will be positively related with creative work involvement.

2.2. The moderating role of job autonomy in the leader–member exchange (LMX) and creative work involvement relationship

Job autonomy defined as "…the extent to which employees have a major say in scheduling their work, selecting the equipment they will use, and deciding on procedures to be followed" (Hackman & Lawler, 1971, p. 265; cf. also Hackman & Oldham, 1975) is a prominent and important job design feature (Fried & Ferris, 1987; Karasek & Theorell, 1990). It refers to the extent to which an employee can determine the pace, sequence, and methods to accomplish tasks. Job autonomy is different from freedom; the latter refers to people's opportunities to make judgements at work and to choose which tasks to accomplish (cf. Cohen-Meitar, Carmeli, & Waldman, 2009). It is reasonable to suspect that job autonomy can affect the relationship between the quality of LMX and creative work involvement for at least two important reasons:

First, job autonomy as a core job characteristic (Hackman & Oldham, 1976) gives employees the opportunity to try out new and useful combinations of work procedures (Wang & Cheng, 2010). Increased job autonomy enables employees to break out of a routine and to find the best solution along the way (Shalley & Gilson, 2004). Consequently, employees in these environments should have many more opportunities – provided by job characteristics – to develop new and useful ideas and to demonstrate originality at work, for instance. In contrast, employees who have a good LMX relationship but less job autonomy might not be able (or may be limited in ability) to show creative work involvement because job design features (i.e., job autonomy) — that make new working procedures and trial-and-error procedures impossible.

Second, we assume that greater job autonomy stimulates employees to negotiate role expectations related to creative work involvement with their supervisor (Langfred & Moye, 2004; Wang & Cheng, 2010). Employees with greater job autonomy feel responsible for their jobs (Parker & Sprigg, 1999) and therefore are more likely to pick up creative work involvement as a central theme within the social-exchange process with their supervisor. The supervisor might explicitly formulate or implicitly express role-expectations toward the employee, suggesting that creative work involvement is desired and will be rewarded by the organization. Consequently, similar to a Pygmalion effect (e.g., Rosenthal, 1969; Rosenthal & Jacobson, 1992), the greater the supervisors' expectations, the higher the employees' creative work involvement (Bezuijen, van den Berg, van Dam, & Thierry, 2009; Tierney & Farmer, 2004). Furthermore, because of employees' broader role breadth self-efficacy (i.e., people's confidence to

being able to carry out an expanded role that focuses on proactive, integrative, and interpersonal tasks; cf. Parker, 1998) working in autonomous jobs (Axtell & Parker, 2003; Parker, Williams, & Turner, 2006), leaders and employees might negotiate multiple work roles that also foster creative work involvement. Graen and Scandura (1987; see also Pellegrini, Scandura, & Jayaraman, 2010) described such a negotiation pattern as a role-making sequence in which one exchange cycle follows another. Empirical findings have shown that high levels of job control and autonomy are negatively related to role conflict and role ambiguity (Spector, 1986). Under these circumstances, role-making sequences between supervisor and employee should be more efficient and productive. Thus, we propose that greater job autonomy conditions amplify or establish the positive effects of LMX on employees' creative work involvement.

On the contrary, employees with less job autonomy have only predefined strategies to fulfill their tasks (Humphrey et al., 2007; Langfred & Moye, 2004). They are restricted in terms of operation and method choice. Hence, they do not pick up creative work involvement as a central theme within the role negotiation process. Moreover, because these employees with fewer opportunities to try out new working procedures and less performance feedback from creative work involvement may have lower levels of creative self-efficacy (Unsworth & Clegg, 2010), and thus they might not be perceived as highly creative persons within their organization. As a result, the supervisor also might not delegate roles related to creative work involvement to these employees. We posit that under minimal job autonomy conditions, such role-making sequences are not specifically focused on creative work involvement. Hence, although a high-quality LMX relationship might influence the content of the role making sequence, it might not specifically focus on creative work involvement.

Taken together, we propose that in work environments with greater job autonomy, the relationship between LMX quality and creative work involvement will be stronger than in work environments with less job autonomy.

Hypothesis 2. Job autonomy will moderate the relationship between the quality of leader–member exchange (LMX) and creative work involvement such that the relationship is stronger for persons with greater job autonomy.

3. Method

3.1. Overview

We conducted our study between June and September at a large, internationally operating high-technology firm in Germany. The company had at the time about 2500 employees at the site. This site manufactures medical systems (e.g., X-ray apparatuses, nuclear spins). The main fields of responsibility for employees at this site consisted of manufacturing, quality management, and product support. In manufacturing jobs, creative work involvement is not a formal job requirement, but nevertheless creativity does vary between individuals and, on the whole, contributes to organizational effectiveness (Baer & Oldham, 2006; Prajogo, 2006). We used a longitudinal field study survey approach with two measurement times and a time lag of three months. We chose a time frame of three months to hold seasonal effects on business activities constant and to keep the attrition rate as low as possible. Employees filled out questionnaires during working hours. To assure anonymity, participants indicated a code so that we were able to match Time 1 with Time 2 questionnaires. We collected questionnaires in a sealed box. Alternatively, questionnaires could be sent back to the researchers in a pre-stamped envelope. As an incentive, participants could take part in a lottery and were provided feedback on results at the end of study completion.

3.2. Sample

After we obtained consent from managers to allow their employees to participate in our study, a total of 378 randomly selected employees were asked to participate. From these, 279 employees completed the questionnaire at Time 1, and 193 employees completed the questionnaire at Time 2 (69.18% of those who participated at Time 1). From Time 2 participants, 144 provided data on both measurement occasions (51.61% of those who participated at Time 1). To ensure that our Time 2 sample was representative of our Time 1 sample, we conducted drop-out analyses. We found no significant differences with respect to our study variables assessed at Time 1, indicating that we did not have systematic drop-out.

The sample total consisted of 144 individuals, of which 79.2% were men with an average age of 39.55 years ($SD = 9.24$). Most participants held an apprenticeship (78.5%) followed by a university degree or a comparable education (14.6%), and only a few participants had not (yet) received any formal professional training (6.3%). Only a minority of the participants had a supervisory position (7.7%). The majority (54.2%) had worked in the company for more than 15 years. Regarding the field of operation, the majority (46.7%) worked in manufacturing, followed by quality management (31.4%), and product support (21.9%). We did not find any significant differences for the various areas of operation with respect to our study variables, nor did we find any for creative work involvement or job autonomy.

3.3. Measures

At Time 1, we measured control variables (gender, education, leadership position, and tenure) as well as the predictor and moderating variables LMX and job autonomy. At Time 2, perceived creative work involvement was measured.

3.3.1. LMX

We measured LMX from the employee perspective using the LMX 7 scale from Graen and Uhl-Bien (1995). Meta-analytical evidence has indicated that the LMX 7 provides the soundest psychometric properties and the highest correlations with outcomes, compared to all other available instruments (Gerstner & Day, 1997). LMX is usually a dyadic construct; however, for the purpose of the current study, we viewed LMX in terms of employees' perceptions of the supervisor–subordinate relationship. A sample item was "How well does your supervisor understand your problems and needs?". Employees answered on 5-point Likert-type scales with question-specific labels (for the sample item 1 = *not a bit* to 5 = *a great deal*). Cronbach's α was .86.

3.3.2. Job autonomy

We measured job autonomy with five items from a scale developed by Semmer (1984) and Zapf (1993), (cf., Frese, Kring, Soose, & Zempel, 1996). Analyses comparing these self-reported items with expert ratings, yield medium to high correlations (Semmer, Zapf, & Dunckel, 1999). The scale job autonomy measures how much influence the workplace offers over sequence, time frame, method, and means of one's work tasks. A sample item was "How much can you influence the way in which you accomplish your tasks?" Items were answered on 5-point Likert-type scales ranging from 1 = *very little* to 5 = *very much*. Cronbach's α was .76.

3.3.3. Creative work involvement

Following the approach of Atwater and Carmeli (2009), we assessed creative work involvement with Tierney et al.'s (1999) scale. Due to organizational obligations to keep the survey as short as possible, we followed the procedure from Ohly et al. (2006) and used a shortened seven-item version from this nine-item measure. Earlier research has shown that an item selection procedure based on quality indices allows to efficiently and accurately measure constructs in the organizational context (e.g., Russell et al., 2004; Stanton, Sinar, Balzer, & Smith, 2002). Respondents were asked to indicate how often situations such as those in the sample items "I identified opportunities for new products/processes" and "I took risks in terms of producing new ideas in doing job" were present at work. Items were rated on five-point Likert-type scales ranging from 1 = *never* to 5 = *very often*. The reliability of the scale was high with a Cronbach's alpha of .89.

3.3.4. Control variables

We controlled for gender, education, leadership position, and tenure since each of these variables have been found to relate to employee creativity (Atwater & Carmeli, 2009; Oldham & Cummings, 1996; Tierney & Farmer, 2004). Education was measured by asking for the highest degree obtained. The rating scale was 1 = *none*, 2 = *apprenticeship completed*, 3 = *university degree*. Leadership position was measured with one item asking if the respondent had disciplinary responsibilities. Job tenure was measured with one item asking for the number of years in the company. The rating scale was 1 = *less than one year*, 2 = *1–5 years*, 3 = *6–10 years*, 4 = *11–15 years*, and 5 = *more than 15 years*.

4. Results

Table 1 displays means, standard deviations, and zero-order correlations among study variables. Creative work involvement had a significant negative correlation with gender ($r = -.21$, $p < .05$) with females, indicating lower levels of creative work involvement. Creative work involvement also had significant positive correlations with leadership position ($r = .27$, $p < .01$), LMX ($r = .17$, $p < .05$), and job autonomy ($r = .33$, $p < .01$).

4.1. Preliminary analyses

In order to test the psychometric validity of our measures and to show that our employed constructs were empirically different from one another, we conducted a confirmatory factor analysis (CFA) using Mplus version 5 (Muthén & Muthén, 1998–2007).

Table 1
Means, standard deviations, and zero-order correlations between study variables.

	M	SD	1	2	3	4	5	6	7
1 Age	39.55	9.24	–						
2 Gender[a]	1.21	0.41	.07	–					
3 Leadership Position[b]	1.08	0.27	.02	−.15	–				
4 Tenure[c]	3.88	1.39	.60**	.03	.01	–			
5 LMX (Time 1)	3.38	0.72	−.11	−.03	.12	−.18*	(.86)		
6 Job autonomy (Time 1)	3.43	0.71	−.17	−.19*	.28**	.04	.28**	(.76)	
7 Creative Work Involvement (Time 2)	3.17	0.73	−.07	−.21*	.27**	.16	.17*	.33**	(.89)

Note. $N = 144$.

[a] Gender is coded as 0 = *male*, 1 = *female*.

[b] Leadership position is coded as 0 = *no*, 1 = *yes*.

[c] Tenure is coded as 1 = *less than one year*, 2 = *1–5 years*, 3 = *6–10 years*, 4 = *11–15 years*, 5 = *more than 15 years*.

* $p < .05$.

** $p < .01$.

Errors were not allowed to covary. In a three-factor model, we modeled three latent factors (LMX, job autonomy, and creative work involvement) that were allowed to correlate. Every item measuring each construct was allowed to load only on the corresponding latent factor (all LMX items on the latent LMX factor, and so on). This model should have the best model fit, evaluated by a X^2-difference test, compared to alternative models with fewer latent factors (cf. Kline, 2005). We compared the three-factor model with a one-factor model (all items loading on one general factor). The comparison model showed a worse model fit compared to the assumed three-factor solution ($\Delta X^2(3) = 563.45$, $p < .001$). The three-factor solution has a satisfactory model fit ($X^2 = 262.43$, $df = 149$, CFI = .90, TLI = .90, RMSEA = .07, SRMR = .07). All standardized factor loadings were from .53 to .84 (all $ps < .001$). In summary, we conclude that the constructs are empirically distinct.

4.2. Hypotheses testing

Hierarchical regression analyses were used to test our hypotheses. After centering the independent variables (Aiken & West, 1991), we entered the control variables gender, tenure, leadership position, and education in the first step, followed by the main effect variables LMX and job autonomy (step 2), and the interaction term LMX × job autonomy (step 3). Table 2 displays the findings of the hierarchical regression analysis predicting creative work involvement. Results of the first step of the regression analysis revealed a positive relationship of leadership position ($\beta = .20$, $p < .05$), and education ($\beta = .19$, $p < .05$) on creative work involvement. Persons with disciplinary responsibilities as well as persons with higher education indicated more creative work involvement compared to others.

In Hypothesis 1, we postulated that LMX would be positively related to creative work involvement. We analyzed findings from our moderated hierarchical regression analysis (Table 2). Following the recommendation from Aiken and West (1991), we centered our variables and tested whether the *conditional* effects, that is, the average value of the regression Y (i.e., creative work involvement) on X (i.e., LMX) at the mean value of Z (i.e., job autonomy) (cf. Aiken & West, 1991, pp. 102–103), was significant. This strategy has been suggested to be "the method of choice" (p. 102) for significant interaction effect and for the use of centered variables. Recently, Aguinis and Gottfredson (2010) also stated that mean-centering achieves the goal of making the interpretation of first-order coefficients meaningful. After entering the interaction effects and after mean-centering the predictor variables, the first-order effects are also called conditional effects that provide useful information about predicting changes in the outcome variable at a zero moderator value. Because psychological scales usually do not have zero values, the mean-centering is especially important, and after mean-centering zero values on the moderator variable, they can be interpreted as mean value of the moderator variable. Findings from the regression analysis revealed a positive and significant conditional beta-weight ($\beta = .17$, $p < .05$). Thus, Hypothesis 1 was supported.

In Hypothesis 2, we were interested in the moderating role of job autonomy as an important job design feature in the LMX-creative work involvement relationship. As postulated in Hypothesis 2, job autonomy moderates the relationship between LMX and creative work involvement. Results of Step 3 of the regression analysis showed that the interaction term LMX × job autonomy was statistically significant ($\beta = .20$, $p < .05$), and explained an additional 4% of the variance in creative work involvement. Fig. 1 is a graphic representation of the interaction.

Following the procedure recommended by Aiken and West (1991), the relationship between LMX and creative work involvement was plotted at different levels of job autonomy (i.e., one standard deviation above/below the mean of job autonomy). Findings revealed that creative work involvement was highest for employees who experienced a good relationship with their leader

Table 2
Moderated hierarchical regression analyses of creative work involvement on leader–member exchange (LMX) and job autonomy.

	Creative work involvement								
	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
	.18***	.18***		.23***	.05*		.27***	.04*	
Constant			2.82***			2.80***			2.77***
Gender[a]			−.13			−.11			−.10
Tenure[b]			.16			.17*			.17*
Leadership position[c]			.20*			.15			.13
Education[d](Dummy 1)			−.13			−.12			−.12
Education[d] (Dummy 3)			.19*			.16*			.15
Block 2:									
Leader–member exchange (LMX)						.12			.17*
Job autonomy (JA)						.17*			.19*
Block 3: Interaction									
LMX × JA									.20*
Model *F*			F(5, 139) = 6.084***			F(7,137) = 5.749***			F(8,136) = 6.098***

Note. $N = 144$.

[a] Gender is coded as 0 = *male*, 1 = *female*.

[b] Tenure is coded as 1 = *less than one year*, 2 = *1–5 years*, 3 = *6–10 years*, 4 = *11–15 years*, 5 = *more than 15 years*.

[c] Leadership position is coded as 0 = *no*, 1 = *yes*.

[d] Education is coded as 1 = *none*, 2 = *apprenticeship completed*, 3 = *university degree*.

* $p < .05$.

*** $p < .001$.

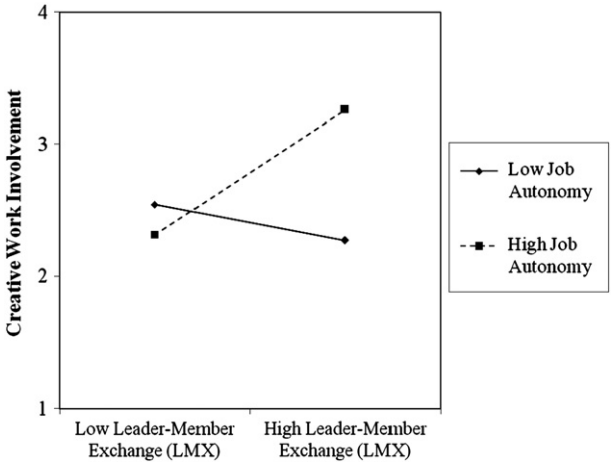

Fig. 1. Job autonomy as a moderator in the relationship between LMX and creative work involvement.

and who also had greater job autonomy. Additional simple slope tests showed that LMX was unrelated with creative work involvement under conditions of minimal job autonomy (for SD = −1: β = −.07, $t = -.64$, ns) and positively related with creative work involvement under conditions of greater job autonomy (for SD = +1: β = .38, $t = 2.97$, $p < .01$). Therefore our hypotheses that the LMX-creative work involvement relationship is stronger under conditions of greater job autonomy (H2), was supported.

5. Discussion

Acknowledging the complexity of the impact of leadership on creative work involvement, we examined whether relationship quality (in terms of leader–member exchange; LMX) was associated with creative work involvement, and whether job autonomy as a core job design feature moderates this relationship. Our findings show that LMX – as leadership construct that focuses on interpersonal relationships – was positively related with creative work involvement. Furthermore, and most importantly, our results yielded support for our postulated effect of the moderating role of job autonomy. A closer inspection of the interaction effect indicated that LMX was positively related with creative work involvement under high levels of job autonomy but unrelated with creative work involvement under minimum levels of job autonomy. Results from the present study might explain why the results of previous studies on the LMX-creativity relationship have been mixed. Under minimal job autonomy conditions, LMX is unrelated to creative work involvement. This implies that a high-quality LMX relationship, which is associated with many numerous work and non-work outcomes (Gerstner & Day, 1997; Ilies et al., 2007; Schyns & Day, 2010), is not sufficient when employees experience job design constraints. Our findings point to the importance of considering both the leader–member relationship and job design issues for increasing creative work involvement.

Our study adds to recent calls for research on "how leaders create a context for creativity" (Atwater & Carmeli, 2009; p. 272). To our knowledge, this is the first study that has tested the interplay between a relational concept of leadership (i.e., LMX) and job autonomy for creative work involvement. Thereby, we integrated job design literature with LMX theory. Our study findings suggest that this research stream integration helps to better understand what business leaders can do to stimulate creative work involvement. We also drew on earlier research that focused on positive interpersonal relationships at work to energize organizations (cf. Dutton, 2003; Dutton & Heaphey, 2003) that can offer new insights and add value to organizational studies. Our findings suggest that employees who have a good social connection with their supervisors, involving mutual awareness and trust together with a high job autonomy, are more creatively involved in their work. High quality connections at work might also be relevant for work and job involvement (e.g., Kanungo, 1982; Macey & Schneider, 2008) as well as for job commitment (Allen & Meyer, 1990; Golden & Veiga, 2008).

The conditional effect from LMX to creative work involvement suggests that moderate job autonomy conditions in which a basic level of pace, sequence, and methods determination for accomplishing tasks are given, do not sufficiently impede LMX-creative work involvement relationships. Of course, this conditional effect is not very large, and we conclude that effect sizes reported in meta-analyses (cf. Hammond et al., 2011) would be larger if relevant moderators – like job autonomy – were considered.

For practical implications, our findings suggest that LMX alone is positive for creative work involvement but that it can be augmented by granting job autonomy. Job autonomy is associated with higher levels of decision-latitude and higher levels of accepted responsibility for work outcomes. Employees with greater job autonomy are able to determine, for instance, the pace, sequence, and methods for accomplishing tasks without major organizational constraints and restrictions. Job design literature offers a variety of opportunities for increasing job autonomy (Hackman & Oldham, 1976; Humphrey et al., 2007). For example, employees should be allowed to determine in which order and with whom they accomplish tasks. Moreover, they should have the opportunity to experiment with different ways of task completion and to take responsibility for their results. Granting job autonomy is not only beneficial for creative work involvement as examined in the present study, but also has been associated with

positive consequences, for instance, for well-being (e.g., Ilies, Dimotakis, & De Pater, 2010; Spector & Bruk-Lee, 2008; Taris & Schreurs, 2009).

5.1. Limitations and suggestions for future research

Our study has some limitations that have to be discussed. First, as we were mainly interested in the employee perspective of the quality of supervisor–subordinate relationship, we adopted a subordinate-centered perspective when we assessed the quality of LMX relationship. Yet, future research should add the leader perspective (Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Scandura & Schriesheim, 1994; Schwind Wilson, Sin, & Conlon, 2010) to obtain a more comprehensive picture of the LMX-creative work involvement relationship.

Second, our results were based on self-reported data. Thus, common method bias cannot completely be ruled out (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Yet, our longitudinal design with two measurement points should have reduced common method bias. Recent research has also shown that common-method bias makes it even more difficult to find interaction effects (Siemsen, Roth, & Oliveira, 2010). Thus our study approach was a more conservative estimate of underlying relationships.

Third, as we were interested in employees' assessment of their creative work involvement, our measure captured subjective perceptions of employees' work involvement (cf. also Atwater & Carmeli, 2009; Carmeli & Schaubroeck, 2007). To further broaden our understanding of creative work involvement, future research should also examine the effects of relationship quality in terms of LMX together with job autonomy on other measures of creative work behavior (e.g., supervisory evaluations, return on investments of inventions). However, as we were interested in examining factors that give business leaders recommendations about how employees become motivated and involved in creative work, we consider the previously used measure of creative work involvement (e.g., Atwater & Carmeli, 2009) as best suited for our study purpose. Moreover, studies have compared different indicators of creative and proactive work behavior and involvement and found substantial correlations, for example, between self and supervisory ratings of creativity ($r = .62$; Axtell et al., 2000), and in the extent of proposed changes of work (i.e., extent of suggestions) and implementation ($rs \leq .62 \geq .78$; Axtell, Holman, & Wall, 2006), or creative work involvement and innovation ($r = .64$; Ohly et al., 2006). Therefore, creative work involvement should be a good precursor for creative outcomes.

Additionally, two other creative work involvement related constructs should be given attention in future research. Creative process engagement (Zhang & Bartol, 2010b) examines in more detail *how* ideas are developed (i.e., problem identification, information searching, and idea generation). Creative process engagement might be especially relevant for a detailed analysis of role-making sequences. Engagement in innovative behaviors at work (Vinarski-Peretz et al., 2010) is different from creative work involvement as it is considered to be a broader construct which, besides cognition, also comprises emotions and behavior, both of which might be additionally important correlates of creative performance.

In our study we investigated job autonomy since it has been shown to be especially relevant for creative work involvement (Ohly & Fritz, 2010; Unsworth & Clegg, 2010; Unsworth, Wall, & Carter, 2005). Future research should build on these findings and investigate whether other job characteristics (e.g., task identity) also play a significant role in the LMX-creative work involvement relationship. For example, an employee with a high level of task identity, who performs not only a sub-task but the entire task, might be more motivated to engage in creative work because this employee knows what might be a suitable solution for current business challenges. Moreover, other possible potential moderators, such as motivational orientations and feedback or collaboration structures (Amabile, 1983, 1996), should be investigated in future research. It is conceivable, for example, that depending on the business leader's power motivation, employees might be motivated to be involved in a creative process to a lesser or greater degree (Urbach, Fay, & Lauche, 2011).

5.2. Conclusion

Due to today's fast-changing and turbulent work environments, it becomes more and more important for organizational effectiveness to have employees who search for new opportunities and who try out unconventional ideas at work. Business leaders are considered to be one of the most influential factors of creative work involvement. Our study suggests that organizations should adopt an interactional approach by taking both leadership issues and work design issues into account in order to foster employees' creative work involvement. These findings highlight the fact that researchers and practitioners need to combine different research streams in an attempt to better understand what is needed for employees to undertake risky actions at work.

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