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Leader–member exchange, feelings of energy, and involvement in creative work

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ABSTRACT

This study examined how leaders create the impetus for creativity at work. One hundred ninety-three employees occupying a variety of jobs in Israeli organizations completed surveys at two points in time to assess their perceptions of the quality of their relationship with their leader (LMX), their level of energy, and their creative work involvement. SEM and regression analyses showed that LMX was positively related to employees' feelings of energy, which in turn were related to a high level of involvement in creative work. Factors that leaders should take into consideration in promoting followers' creative behaviors are discussed.

1. Introduction

In a knowledge-based economy, organizations face rising needs to increase not only productivity among their workers, but also their creativity. The speed of technological change as well as globalization and increasing competition, both domestically and internationally, has put enormous pressure on companies to be first-to-market, quick to solve problems, and ready to develop new ideas for products and procedures. Therefore, enhancing creativity, "the production of novel and useful ideas by an individual or small group of individuals working together" (Amabile, 1988, p. 126), has rapidly become a key goal of many organizations (Mumford, Scott, Gaddis, & Strange, 2002).[3] This poses a major leadership challenge as managers seek ways to augment and maintain creativity at work. Thus, a key research question is how leaders motivate individuals to engage in creative tasks (Mumford et al., 2002).

The processes by which managers encourage employees to become involved in creative work have yet to be fully understood. Despite research suggesting that leadership is important to creativity and innovativeness (Jung, Chow, & Wu, 2003; Scott & Bruce, 1994) and accumulating evidence that supports this notion (e.g., Redmond, Mumford, & Teach, 1993; Shin & Zhou, 2003; Sosik, Kahai, & Avolio, 1998; Tierney & Farmer, 2004), the potential influence of leadership on creativity has been understudied (Mumford et al., 2002). Amabile, Schatzel, Moneta & Kramer noted, "the literature linking specific leader behaviors to group performance is scant (Kim & Yukl, 1995, p. 352), and the literature linking specific leader behaviors to individual creative performance is even smaller" (2004, p. 9).

Although researchers have long been interested in the antecedents and consequences of job involvement (Carmeli, 2005; Dubin, 1956; Kanungo, 1982; Rabinowitz & Hall, 1977), relatively little is known about involvement in creative work, i.e., "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). Creative work involvement is of importance for creative achievements and innovation (Carmeli &

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[3] It should be noted that we distinguish between creative work involvement and innovation. Innovation is the intentional application of new ideas, products or procedures (West & Farr, 1990). Creativity, when associated with the innovation process, occurs through the generation of a potentially valuable idea at the start of the innovation process or even earlier (West & Atlink, 1996).

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Schaubroeck, 2007; Keller, 1997; Mumford et al., 2002). However, how and why individuals are motivated to become involved in creative work remains unclear and needs further research. As Carmeli & Schaubroeck noted: "although outcomes of the creative process are often studied, one of the key questions in creativity research relates to the motivation of individuals to become and remain creatively engaged at work" (2007, p. 36).

This theoretical call to better understand why some employees are more involved in creative tasks than others is crucial because creative work requires high levels of mental energy, focus and persistence and it differs from more repetitive work in terms of the demands it places on workers and leaders. Workers in jobs that require a high level of creativity are often individuals whose creative ideas do not fit into a typical 9–5 workday. They need to feel highly energized and enthusiastic about their work. The creative work environment has been described as highly dynamic "full speed", "go", and "breakneck" as compared to slow, job-trot environments with few surprises (Ekvall, 1996). Thus, leaders need to find ways to induce a level of energy that will result in high involvement in creative work.

Energy, the feeling that a person is capable of and eager to engage in a particular behavior or undertake a task (Dutton, 2003; Quinn & Dutton, 2005), clearly contributes to one's involvement in creative work, but as Polewsky & Will (1996) point out, "it is not all that easy to free up creative energy; new ideas and innovative vigour don't just materialize of their own free will — they require a special background and specific conditions…" (p. 43).[4]

How do leaders energize their employees to be involved in creative work? Researchers have directed some attention to studying how leaders provide the impetus for creativity in the workplace (e.g., Redmond et al., 1993; Shin & Zhou, 2003; Tierney & Farmer, 2004; Tierney, Farmer, & Graen, 1999). Amabile's (1983) Componential Theory of Creativity serves as the theoretical basis for the claim that supervisor's support "exerts an influence on subordinates' creativity through direct help with the project, the development of subordinate expertise, and the enhancement of subordinate intrinsic motivation" (Amabile et al., 2004, p. 6). These behaviors include serving as a role model, showing openness to new ideas, planning and setting goals appropriately, supporting the work group within the organization, shaping quality communication and interaction with work unit members, valuing individuals' contributions to the work task, showing confidence in them, and providing constructive feedback (Amabile et al., 2004). These specific, supportive leadership behaviors constitute both task-oriented and relationship-oriented actions (Amabile et al., 2004) that enhance one's willingness to become involved in creative work.

Theory and research have noted that an influential way to energize the workplace and augment involvement in the job is through high-quality interpersonal relationships (Dutton, 2003). However, studies that have focused on the relationship between leader–member exchange (LMX) and creativity have reported mixed results (Elkins & Keller, 2003; Tierney et al., 1999).

In an attempt to address this call and further contributing to this line of thinking and research, we investigate the intervening role of employee feelings of energy in the relationship between employee perceptions of LMX and creative work involvement. The present study draws on three emerging theories. First, consistent with the Componential Theory of Creativity in the workplace (Amabile, 1983), we argue that relational leadership shapes positive social exchanges between the leader and the follower. This positive exchange not only helps develop expertise and enhance cognitive thinking and flexibility but also enhances the motivation of the follower to be involved in creative work (Amabile, 1997). In this study, we focus on the employee's motivation to engage in creative work. Second, we follow a relatively new stream of research that has begun to document the effect of *affect* on creativity at work (Amabile, Barsade, Mueller, & Staw, 2005; Fredrickson, 1998, 2001). Third, we build on emerging research on high-quality interpersonal relationships at work (Dutton, 2003; Dutton & Heaphy, 2003; Dutton & Ragins, 2007) which enriches the Componential Theory of Creativity (Amabile, 1983). Dutton (2003) argues that high-quality relationships lead to positive emotions such as joy and interest, which help increase individuals' capacity to think and act in the moment.

2. Theoretical background

2.1. Leadership and creativity

Until the early 1980s, conventional wisdom prompted creativity researchers to focus on the background, personality traits and work style of creative people and how they differ from 'normal' (not outstandingly creative) people. However, this approach was "both limited and limiting" (Amabile, 1997, p. 42) because it did not take into account the work environment and its role in influencing employee creative behaviors. Amabile's (1983) watershed work about the Componential Theory of Creativity showed that leaders can influence both the level and frequency of creative behaviors among followers (see also Amabile, 1997; Amabile et al., 2004). This opened up a new line of research and thinking as researchers have directed increased attention to studying how

[4] We believe energy is a distinct construct that can be distinguished from positive emotions, self-efficacy, intrinsic motivation, involvement and extra effort. Positive emotions facilitate approach behavior (Carver & Scheier, 1990), increase readiness to act (Forgas, 2003) and they broaden an individual's momentary attention and thinking (Fredrickson, 2003). In this case, positive mood should make it easier to energize an individual to act, but energy involves the feelings of energy, vitality, passion, and a desire to act. Intrinsic motivation, as defined by Deci & Ryan, (1985) has to do with the joy one gets from doing a task or engaging in an activity. While people might be more energized to engage in tasks they find to be intrinsically motivating, again the concepts are distinct. Employee engagement has some similarity to energy as well, but the items that measure involvement include such phrases as "I know what is expected of me at work", "I have received recognition for doing good work", "I have the materials and equipment to do my job right" and "my opinion seems to count" (cf. Harter, Schmidt, & Hayes, 2002). Again, while this level of involvement in work may help promote energy, it is distinct from energy as we conceptualize it. Extra effort as conceptualized by Bass & Avolio (1994) is an outcome variable, and one that is often substituted for a performance measure. While we expect extra creative effort to be related to energy, we are concerned with the energy one has to put into the job rather than the actual level of effort put forth. Perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that impact events that affect their lives. Again, while this may affect the degree to which an individual has the confidence to explore creative endeavors, it is not the same as energy as we have defined it.

leaders can kindle creativity in the workplace (e.g., Redmond et al., 1993; Shin & Zhou, 2003; Tierney & Farmer, 2004; Tierney et al., 1999). For example, Mumford et al. (2002) noted that leaders use various tactics such as persuasion to increase employee creativity. Relatively widely studied is the role of leader supportive and non-controlling behaviors in encouraging followers to engage in and display creativity at work. Various studies have confirmed that supportive behavior on the part of supervisors enhances employees' creativity (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Amabile et al., 2004; Madjar, Oldham, & Pratt, 2002).

However, studies that have focused on the *relationship* between leader and follower (e.g., LMX) and creativity are not as clear-cut. For instance, Scott and Bruce (1994) found that LMX was associated with innovative behaviors among professionals and managers in an R&D facility. However, Elkins and Keller (2003) concluded that generally the nature of high-quality exchange relationships between leaders and followers is of importance for creativity and innovation, but the link between LMX and creativity is complex. They called upon researchers to direct attention to exploring the intervening variables to better account for the ways LMX may influence creativity at work (Tierney et al., 1999).

2.2. Energy and creativity

A number of studies have shown that creative behavior requires a substantial amount of individual time and energy (Amabile, 1983). Welbourne, Andrews, & Andrews (2005) capture this by saying that "motivation at work is really about employee energy" (p. 56) and the ways it is directed at work. Fredrickson's Broaden-and-Build model (Fredrickson, 1998, 2001), the socially embedded Model of Thriving (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005), and Isen and colleagues' research on the impact of positive affect on cognitive capacities and activities (Isen, 1999a,b; Isen, Daubman, & Nowicki, 1987), all suggest that positive affective states of energy and vitality are necessary for optimal creative behavior.

The Broaden-and-Build model posits that when individuals experience positive emotions, the cognitions and actions available to them are enhanced. Positive feelings are likely to result in more novel and creative ideas (Fredrickson, 1998, 2001): "experiences of certain positive emotions prompt individuals to discard time-tested or automatic (everyday) behavioral scripts and to pursue novel, creative, and often unscripted paths of thought and action" (Fredrickson, 1998, p. 304).

Spreitzer et al.'s (2005) Model of Thriving suggests that contextual enablers of thriving increase the presence of positive psychological states. These states stem from relational connections with others. Interactions with others are important to energizing individuals at work (Reis & Gable, 2003; Dutton & Heaphy, 2003). Miller and Stiver (1997, as cited in Spreitzer et al., 2005) suggest that "vitality– what they term zest– comes from relational connections with others" (p. 539). Quinn (2007) expands upon this notion in his discussion of energizing employees at work. He contends that "the higher quality of the connection between two people,… the more energy those people will feel" (p. 74). Thus, experiencing positive interactions with others is a key for feeling vital and energized. Because employees experience continual, ongoing interactions with their supervisors, a positive leader–member connection should contribute to positive arousal and energy.

Similarly, Isen et al. (1987) argued that positive affect "gives rise to an enlarged cognitive context" (p. 222). This is because positive affect facilitates more open, resourceful and flexible cognitive processing as well as a more complex cognitive context, both of which are essential for problem solving and creativity (Isen, 1999a,b; Isen, 2004). More generally, Amabile et al. (2005) outlined a more overarching theory of affect and creativity in organizations, noting that positive affect facilitates cognitive variation and enables the sustainability of broadening cognitive associations. Thus, feelings of energy are affective states that are likely to encourage people to pursue creative paths. Empirical evidence indicates that vitality enhances involvement in creative work tasks (Kark & Carmeli, in press), and that thriving facilitates employee innovative behaviors at work (Carmeli & Spreitzer, in press).

Individuals who are highly energized are likely to be more involved in creativity than those who are less energized and enthusiastic at work. As Oldham & Cummings (1996) put it, individuals are expected to be most creative "when they are excited about a work activity and interested in it for the sake of the activity itself" (p. 609). Without energy, creative abilities will not be optimized and the employees are less likely to be creatively involved in work.

2.3. Leader–member exchange and energy

Quinn & Dutton's (2005) Theory of Coordination describes the relationship between interpersonal connections and energy as the "interplay of speech acts and energy" (Quinn, 2007, p. 79). This theory suggests that positive conversations, or engagements between people, increase energy because they heighten a person's sense of belonging, competence and autonomy. Leader–member exchange (LMX) is a key view of leadership that emphasizes the quality of relationship between leader and follower. This theory posits that "effective leadership processes occur when leaders and followers are able to develop mature leadership relationships (partnerships) and thus gain access to the many benefits these relationships bring" (Graen & Uhl-Bien, 1995, p. 225). LMX is a theory of leadership based on dyadic exchanges between leaders and followers. The central premise behind LMX is that within work groups, different types of relationships develop between leaders and followers. Some dyadic relationships are positive, resulting from positive work and emotional exchanges, whereas others are less positive or negative. Positive dyadic exchanges or higher quality connections between leader and follower should be related to greater employee energy.

2.4. The research model

This study aims at exploring how employee perceptions of relationships with their supervisor, via feelings of energy, are related to employees' involvement in creative activities at work. Employees' perceptions of a positive relationship with their leaders

should contribute to the energy they need to put the necessary effort into creative behavior. This will expand our understanding of the Componential Theory of Creativity and is consistent with the interactional approach advocated by creativity researchers who argue that situational and personal factors contribute jointly to employees' creativity (George & Zhou, 2001; Oldham & Cummings, 1996).

The model posits that employee perception of a high LMX relationship will be related to employee energy, which in turn will be related to creative work involvement. The following hypotheses follow from this model.

Hypothesis 1. Employees' perceptions of high-quality relationships with their supervisors will be positively related to employee feelings of energy.

Hypothesis 2. Individuals' feelings of energy will be positively associated with creative work involvement.

Hypothesis 3. Individuals' feelings of energy mediate the relationship perceptions of leadership and creative work involvement.

3. Method

3.1. Respondents and data collection

Two hundred and fifty-five employees working for industrial and service organizations in Israel were asked to participate in this study. In total, we sampled individuals from 24 different organizations and nearly 50 job types. Participants were asked to complete a structured survey at two points in time, with a lag of two weeks between Time 1 and Time 2. The questionnaires were distributed on site by research assistants who had approved access to administer surveys in the sampled organizations. About 62% of the organizations operate in the service sector. The average time for completing each questionnaire was 15–20 min. The surveys were coded in order to match the same respondents' completed questionnaires from Time 1 with those from Time 2, and to preserve the respondents' anonymity.

One hundred and ninety-three employees completed the two surveys, representing a response rate of 75.69%. About 29% of the participants held 'more creative' jobs, defined as is typical in the literature as managers, engineers, programmers, senior assistants to the chair of the board, analysts, physicists, marketing employees, army combat reserve soldiers, physicians, consultants and TV content specialists. The respondents' average age was 32.16 years (SD 8.41), and their average job tenure was 3.38 years (SD 4.07). Ninety-nine of the respondents were female and 88 were living with a spouse. One hundred and sixteen participants were employed in service organizations. Thirty-four percent of the participants held a high school diploma, 47.8% held a Bachelor's Degree, while the remainder of the participants held a Master's degree or Ph.D. degree.

3.2. Measures

3.2.1. Creative work involvement

To assess employee involvement in creative work we used Tierney et al.'s (1999) 9-item measure of employee creativity. Tierney et al. (1999) showed that the measure exhibits high reliability (alpha = .95) and good validity. Respondents were asked to indicate how often statements such as "I demonstrated originality at my work" and "I generated novel, but operable work-related ideas" characterized their involvement in creative work. Responses were made on a five-point Likert-type scale ranging from 1 = never to 5 = very often. The Cronbach's alpha for this measure was .93, identical to the reliability of .93 reported in Carmeli & Schaubroeck's (2007) work, and similar to the reliability above reported in Tierney et al.'s (1999) study.

3.2.2. Feelings of energy

To assess employees' feelings of energy at work we constructed an 8-item measure. To ascertain the validity of our measure of energy, we used two focus groups and a pilot study. First, we asked 20 students, who participated in a research seminar in an organizational behavior course, to indicate the extent to which the eight items reflected the definition of individuals' feelings of energy as a "sense of being eager to act and capable of action" (Dutton, 2003, p. 6). Next, after minor refinements we asked eight doctoral students to follow the same procedure. This process only resulted in some further minor changes and therefore we accepted these measurement items. Finally, we did a pilot study among graduate students who held full-time positions in a wide variety of organizations in Israel. A cover letter attached to the questionnaire explained the objective of the study as an investigation of positive psychological experiences at work and assured them it was voluntary and confidential. Surveys were distributed to 140 students in class by a research assistant. Response options ranged from 1 = not at all to 5 = to a large extent. Of the 140 students, 120 returned usable surveys, for a response rate of 85.71%. We conducted an exploratory factor analysis. This procedure produced a one-factor solution with an eigenvalue of 6.48, accounting for 80.83% of the variance and having factor loadings ranging from .88 to .93. The alpha reliability (.97) was well above the .70 criterion suggested by Hair, Anderson, Tatham, & Black (1998). From these results, we concluded that the measure of feelings of energy is valid.

The following items were used: "I feel active and energetic at work", "I have high energy to complete my work", "During the work day I feel I am full of energy", "I have the energy to successfully do my job", "When I get to work in the morning I have energy for the new day", "I feel enthusiastic when I am doing my work", "The work in this organization gives me positive energy", and "When I am at work I feel vital and alive". Items were all anchored on a 5-point scale ranging from 1 = not at all to 5 = to a large

extent. Results of factor analysis on all items using oblimin rotation indicated that all items loaded onto one factor, with an eigenvalue of 6.19, accounting for 77.38% of the variance and having factor loadings ranging from .83 to .91. The Cronbach's alpha for this measure was .96.

3.2.3. Leader–member exchange (LMX)

We measured LMX from the employee perspective, using the 11-item LMX–MDM scale developed by Liden & Maslyn (1998). Following Liden & Maslyn's (1998) study in which they provide support for a higher-order factor, we used a composite of all items as a measure of the employees' perceptions of the quality of their relationships with their supervisors. LMX is generally considered a dyadic construct. However, for the purposes of our study we were interested in followers' perceptions of the leader–member relationship. If the follower believes the relationship is of high quality, this is what is relevant for energizing the follower toward creative work involvement. The respondents assessed their leader–member exchange relationship on a five-point scale, ranging from 1 = strongly disagree to 5 = strongly agree. Sample items are "I like my supervisor very much as a person", "I respect my supervisor's knowledge and competence on the job", and "My supervisor would come to my defense if I were 'attacked' by others". The Cronbach's alpha for this measure was .91.

3.2.4. Control variables

We controlled for job tenure because work domain expertise (Oldham & Cummings, 1996; Tierney & Farmer, 2004) may account for variance in creative behaviors. In addition we controlled for educational level because previous research indicates that people who hold different educational experiences may develop different work attitudes and behaviors. Following Carmeli and Schaubroeck's (2007) study, we also controlled for gender differences (1 = Female, 0 = Male) and age because they may account for differences in creative work involvement. We also controlled for organization type (1 = service organization; 0 = industrial organization). Finally, because different types of jobs require more creativity than others, we controlled for differences in creativity expectations across jobs by creating a dummy variable (1 = more creative job, 0 = less creative job).

3.3. Data analyses

To estimate the research model, we used structural equation modeling (SEM) (Bollen, 1989), employing AMOS 6 software (Arbuckle, 2003). We followed the two-step approach to SEM outlined by Anderson & Gerbing (1988) in which construct validity was assessed using confirmatory factor analysis followed by a comparison of a sequence of nested structural models. Because no single index has been demonstrated as superior in structural equation modeling (Medsker, Williams, & Holahan, 1994), we used multiple goodness-of-fit indices in assessing the fit of the research model (Joreskog & Sorbom, 1993; Kline, 1998). These fit indices include the Chi-square statistic divided by the degrees of freedom (χ^2/df); Incremental Fit Index (IFI), Comparative Fit Index (CFI), Tucker–Lewis coefficient (TLI), and Root Mean Square Error of Approximation (RMSEA). As suggested in the literature (Joreskog & Sorbom, 1993; Kline, 1998), the following criteria of goodness-of-fit indices were used to assess the model-fit: χ^2/df ratio is recommended to be less than 3; the values of RFI, NFI, CFI, and TLI are recommended to be greater than .90; RMSEA is recommended to be up to .05, and acceptable up to .08.

3.4. Assessment of common method influence

To address the issue of reliance on self-report measures, which may result in potential inflation of the relationships observed among the variables, we followed several procedural remedies outlined by Podsakoff, MacKenzie, Lee, & Podsakoff (2003). See the Appendix A for a description of these analyses and results.

4. Results

The means, standard deviations, reliabilities and correlations among the research variables are presented in Table 1. The bivariate correlations indicate that employee perceptions of LMX were positively related to feelings of energy, ($r = .47$, $p < .001$) supporting Hypothesis 1. Individuals' feelings of energy were positively associated with creative work involvement ($r = .59$, $p < .001$) supporting Hypothesis 2. We also found that compared to individuals in service organizations, employees in organizations that operate in the industrial sector reported a higher level of creative work involvement ($r = -.20$, $p < .01$).

4.1. Preliminary analyses

Prior to testing the proposed model, we sought to show evidence of the construct validity of the exogenous and endogenous variables. Using confirmatory factor analysis (CFA), a measurement model was tested in order to assess whether each of the measurement items would load significantly onto the scales with which they were associated. The results of the overall CFA showed acceptable fit with the data; a Chi-square of 596.8 with 335 degrees of freedom, and other goodness-of-fit statistics (CFI = .95; IFI = .95; TLI = .94; RMSEA = .06) were obtained. Standardized coefficients from items to factor ranged from .59 to .91. In addition, the results for the CFA indicated that the relationship between each indicator variable and its respective construct was statistically significant ($p < .01$), establishing the posited relationships among indicators and constructs, and thus, convergent validity (see Hair et al., 1998). We also tested two alternative factor analyzed models. First, we specified a two-factor model where

Table 1
Means, standard deviations (SD), and correlations.

	Mean	SD	1	2	3	4	5	6	7	8	9
Organization type (1 = Service)	–	–	–								
Gender (1 = Female)	–	–	.11	–							
Education	2.65	1.01	.18	.00	–						
Age	32.16	8.41	−.25**	−.19*	−.01	–					
Job tenure	3.38	4.07	−.25**	−.07	−.26***	.62***	–				
Job type (1 = Creative job)	–	–	−.23**	−.01	.20**	.12	−.08	–			
Leader–member exchange (LMX)	3.41	1.08	−.06	−.13	.12	.02	.01	.06	(.91)		
Feelings of energy	3.65	0.92	−.13	−.13	.10	.11	.01	.23**	.60***	(.96)	
Creative work involvement	3.36	0.72	−.20**	−.33***	.06	.11	.08	.25**	.30***	.56***	(.96)

Notes: $N = 193$, Alpha reliabilities appear in parentheses.
*$p \leq .05$.
**$p \leq .01$.
***$p \leq .001$.

observed items of employee perceptions of LMX and feelings of energy were loaded onto one latent factor and creative work involvement items on another latent factor. The results of this two-factor model generated the following fit indices: ($\chi^2/df = 3.60$; CFI = .83; IFI = .83; TLI = .79; RMSEA = .11). We also ran a one-factor model where all observed items loaded onto the same latent variable. The results of a one-factor model yielded the following fit indices ($\chi^2/df = 4.81$; CFI = .74; IFI = .75; TLI = .69; RMSEA = .14), indicating that the proposed three-factor model fits the data well and thus should be accepted.

4.2. Model comparisons and hypothesis tests

Employee perceptions of LMX, feelings of energy, and creative work involvement are multi-item latent constructs, and therefore we used maximum likelihood structural equation modeling (SEM) to test the model. We evaluated model fit using various fit indices and significance of the completely standardized path estimates (Joreskog & Sorbom, 1993; Bollen, 1989).

We first compared the hypothesized research model shown in Fig. 1 (which we will refer to as Model 1) with the same model with additional paths from LMX to creative work involvement (Model 2 depicted in Fig. 2). Thus, we compared the hypothesized mediated relationship (Model 1) to an alternative partially mediated relationship (Model 2) for these variables. These models were not significantly different (p = n.s.), suggesting that the addition of this path for partial mediation did not improve our modeling.

The results of the research model in Fig. 1 showed good fit with the data; a Chi-square of 472.2 with 333 degrees of freedom, and other goodness-of-fit statistics (CFI = .97; IFI = .97; TLI = .97; RMSEA = .04) were obtained. Values of .90 and above on TLI are desirable, and values of .95 or above on the CFI are considered strong evidence of practical significance. The value of .04 on RMSEA also provides strong evidence that the model fits the data well. Especially when considering the newly constructed latent variable of feelings of energy, this value is acceptable. The results of Model 2 in Fig. 2, which posited partial mediation, yielded similar goodness-of-fit statistics: Chi-square of 471.4 with 332 degrees of freedom; CFI = .97; IFI = .97; TLI = .97; RMSEA = .046. However, as shown in Fig. 2 the path from LMX to creative work involvement becomes non-significant when the mediator – feelings of energy – is specified (.33, $p < .001$ vs. .06, $p = .37$).

Next, we also compared Model 1 to an alternative non-mediated model (Model 3) in which the two independent variables (LMX and feelings of energy) directly affect creative work involvement. The overall fit of Model 3 was poorer than Model 1. A Chi-square of 515.8 with 333 degrees of freedom and other fit-of-indices (CFI = .96; IFI = .96; TLI = .95; RMSEA = .052) were obtained. We accordingly accepted the theoretical model, which is shown in Fig. 1, as the most parsimonious (Anderson & Gerbing, 1988).

We also tested the mediating effect of feelings of energy on the relationship between LMX and creative work involvement. We followed Barron & Kenny (1986) and more recent guidelines stipulated in Kenny, Kashy, & Bolger (1998). To establish a mediation model, three basic conditions should be met: (1) establishing a significant relationship between the dependent variables and the independent variables; (2) establishing a significant relationship between the mediator and independent variables; and (3) showing that the significant relationship between the dependent variables and the independent variables becomes non-significant when the mediator is specified in the model. According to Kenny et al. (1998), a variable (M) mediates the relationship between an antecedent variable (X) and an outcome variable (Y) if (a) X is significantly related to Y; (b) X is significantly related to M; (c) after

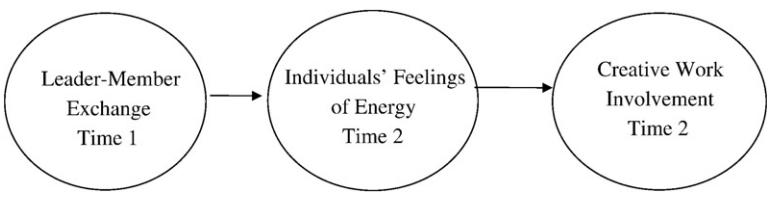

Fig. 1. The research model (Model 1).

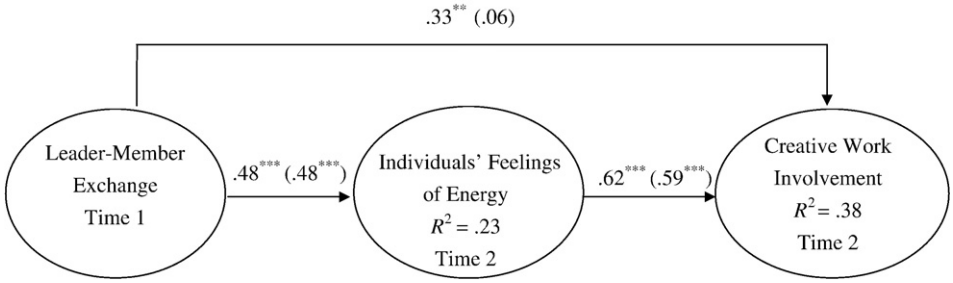

Fig. 2. Results of the hypothesized model (Model 2). Note: Standardized parameter estimates. $N = 193$. ***$p < .001$; **$p < .01$; *$p < .05$. This is a simplified version of the actual model. It does not show indicators, error terms, covariances, or exogenous factor variances. Beta coefficients in parentheses were for Model 2, including LMX, energy, creative work involvement and the control variables.

X is controlled for, *M* remains significantly related to *Y*; and (d) after *M* is controlled for, the *X*–*Y* relationship is zero. Kenny et al. (1998, p. 260) described these steps as "the essential steps in establishing mediation." The first step, they commented, "is not required, but a path from the initial variable to the outcome is implied if [the two middle steps] are met" (Kenny et al., 1998, p. 260). Furthermore, the last step is necessary only to show a complete mediation effect. Accordingly, we tested successive segments of our model by evaluating whether the four steps were met. Following MacKinnon, Lockwood, Hoffman, West, & Sheets (2002), we simultaneously tested the significance of both the path from an initial variable to a mediator and the path from the mediator to an outcome as this approach provides, relative to other approaches, the best balance of type I error rates and statistical power.

As described above, the mediation research model (Fig. 1) showed a better fit of the data than the alternative models. The findings, depicted in Fig. 2, indicate that the path from employee perceptions of LMX to creative work involvement became non-significant when the mediator – feelings of energy – was specified (.33, $p < .001$ vs. .06, $p = .37$). Hence, these results support Hypothesis 3, which posited that the relationship between employee perceptions of LMX and creative work involvement would be mediated by individuals' feelings of energy.

4.3. Additional analyses

We also contrasted the model across jobs that required more and less creativity. To test these potential differences we created a dummy variable (1 = more creative job and 0 = less creative job). Results indicated significant differences across job categories with respect to creative work involvement. More creative job holders were significantly more involved in creative work than less creative job holders ($F = 12.21$, $p < .01$). Next, we split the data set into two sets: one contained the more creative job holders ($N = 55$) and the other included the less creative job holders. We analyzed our hypothesized mediation model using the above mentioned guidelines in Barron & Kenny (1986) and Kenny, Kashy, & Bolger (1998).

In the more creative job data set we found a positive relationship between employee perceptions of LMX and feelings of energy ($\beta = .44$, $p < .01$). The relationship between feelings of energy and creative work involvement, after the mediator (feelings of energy) was controlled for, was marginally significant ($\beta = .29$, $p = .07$). In the less creative job data set, employee perceptions of LMX were significantly and positively associated with feelings of energy ($\beta = .65$, $p < .001$). The relationship between feelings of energy and creative work involvement, after the independent variable (LMX) was controlled for, was significant and positive in sign ($\beta = .59$, $p < .001$). The relationship between LMX and creative work involvement became non-significant after the mediator was specified in the regression equation ($\beta = .34$, $p < .001$ vs. $\beta = -.05$, $p = .61$). These findings indicate that compared to more creative job holders, feelings of energy are more highly related to creative work involvement for organizational members who hold jobs that require a relatively low level of demand to engage in creative work.

5. Discussion

In this study, we examined how employee perceptions of leader–member exchange (LMX) were related to employee energy and creative involvement at work. The findings indicate that leader–member exchange was positively associated with feelings of energy in employees, which, in turn, was related to a high involvement of employees in creative work.

5.1. Theoretical implications

Our study contributes to the literature in several ways. First, we responded to Mumford et al.'s (2002) call for further research to examine what is involved in leading creative people. Second, we addressed the need to better understand a challenge leaders face — how to motivate employees to engage in creative work (Carmeli & Schaubroeck, 2007; Mumford et al., 2002). Third, we elaborated on the role of employee energy that can result from high LMX relationships in motivating employees to engage in creative tasks. In line with Tierney et al.'s (1999) observation that future research on creativity should focus on ways interpersonal relationships augment creativity at work, we sought to provide insights as to how employee perceptions of high-quality LMX relationships may affect their creative involvement at work.

One contribution of this study is our focus on creative work involvement as opposed to creative output. Job involvement has been a key subject of inquiry, attracting research attention to the antecedents and consequences of being engaged in a job (Brown, 1996). Creativity research has tended to examine creativity as an outcome. Our study sheds light on the way high-quality relationships between leaders and followers and feelings of energy can encourage employees to become involved in creative work.

We found that employee perceptions of a supportive, high-quality relationship between themselves and their leaders were related to the energy needed for employees to engage in creative tasks and for creativity to emerge. Data analysis revealed an intervening variable that helps account for the complex relationship between leadership (LMX) and creativity. Current research has tended to presume a direct relationship between LMX and creativity (Scott & Bruce, 1994; Van Dyne, Jehn, & Cummings, 2002). However, these scholars and others have also noted the complexity in the LMX-creativity linkage and the need to study intervening variables in order to better explain how LMX leads to creativity at work (Tierney et al., 1999).

We also drew on the socially embedded Model of Thriving and Quinn's model of energizing employees via interpersonal connections to suggest that the connectedness between leader and follower may generate feelings of vigor, energy and excitement that are necessary for creative work. As the CEO of Weston Solutions said: "Energy can make all the difference between whether you know you are going to have greatness, mediocrity, or failure" (in: Dutton, 2003, p. 7). Because creativity is an extraordinary and mentally demanding behavior, people need to feel aroused and energized to perform work tasks creatively. To the best of our knowledge, this is perhaps the first empirical study to establish the relationship between energy and creative work involvement. It corroborates previous research on the affect-creativity cycle that shows a nurturing and reinforcing link between positive affect and creative activities (Amabile et al., 2005).

It is also of interest that we found that feelings of energy were particularly important to creative work involvement when the job was one that demanded less creativity (i.e., less complex jobs such as inventory clerk, bank teller, security officer, production employee). In job contexts that themselves are less dynamic or stimulating, leaders may need to pay special attention to the importance of inducing energy when creative problem-solving is required, although more research is needed on intervening variables.

5.2. Managerial implications

Previous research that studied the influence of leadership on creativity noted the importance of supportive leadership (e.g., Tierney & Farmer, 2004). Supportive leadership is likely to augment high-quality leader–member relationships. However, LMX seems to have a more positive effect on less creative people (Tierney et al., 1999). This was confirmed in part by our findings of greater importance of energy for individuals in less creative jobs. This implies that organizations may need to understand that employees vary in their needs for quality relationships with their supervisors and thus directing more supportive leadership toward less creative people might help encourage them to engage in creative activities.

In addition, our study shows that employee perceptions of LMX are a mechanism that may work indirectly, through feelings of energy, to influence individuals to engage in creative work tasks. Managers should not expect a direct influence of LMX on creativity. Rather, it is important to understand that LMX serves as an important mechanism to nurture positive feelings such as energy, which in turn are more likely to result in creative activities. Because energy seems to be highly related to creativity, organizations should invest more efforts, not only to reach an optimal level of employee energy, but also to sustain it. This clearly is a major challenge for leaders because it may require changes in the organization's structure and context.

Finally, previous research has pointed to the importance of creative self-efficacy (e.g., (Carmeli & Schaubroeck, 2007; Tierney & Farmer, 2002, 2004) for creativity to emerge. Our study pinpoints the importance of energy as the feeling of being capable of and eager to engage in a particular behavior or undertake a task (Dutton, 2003; Quinn & Dutton, 2005). A fruitful way to foster creativity is to nurture and maintain an optimal level of energy because creativity is a very demanding activity in terms of time and motivation (Amabile, 1983). It therefore needs to be directed effectively (Welbourne et al., 2005). It may be especially critical in times of stress, change, and pressure to create, to have a high-quality relationship with one's boss to help employees stay motivated and energized. A supportive and considerate supervisor, one whom the employee believes looks out for his or her best interests, can help keep employees energized in creative tasks.

5.3. Limitations

Several limitations in the current study warrant caution in interpreting the findings. Although our data were collected at two points in time, one cannot claim causal relationships. The research data and design did not allow us to test the causal direction between leader–member exchange, feelings of energy, and creative work involvement. Future studies should use experimental and longitudinal designs to better understand the proposed casual leadership–creativity relationships. We also used a self-report measure of creative work involvement rather than actual measures of creative output. However, we believe there is relevance to "creativity" in this measure. Individuals were asked whether they tried out new ideas, generated revolutionary ideas, found new uses for existing methods or equipment, etc. We believe that this provides a good measure of creative behavior. This is further supported by analyses where we separated our data into two groups based on the jobs that we believed required more and less creativity. For example, software engineer, marketing manager, chemical analyst and physician, were considered jobs that required more creativity while banker, maintenance employee, accountant, bank teller, inventory clerk required less creativity. When we compared the two groups, those in the group that we categorized as requiring more creativity also reported higher degrees of creative work involvement.

Our 1998 measure of LMX was updated to include a 12th item which we missed. We do not, however, believe our measure was seriously affected by this omission. In addition, using single source data may be associated with common method errors. However, we attempted to mitigate this limitation by collecting data about the leader–member exchange at one time and data on energy and creative work involvement at another point in time. Our measurement model and results of confirmatory analysis and numerous other tests of the influence of common method bias suggest that common method errors, though they may exist, are not severe. Finally, we need to acknowledge that creative work is hard as it involves active processing. Thus, while LMX is an essential mechanism for inducing energy to become involved in creative work, one should consider other potential (work and non-work) explanatory variables that have not been considered in this study.

5.4. Suggestions for future research

The study also provides some interesting avenues for future research. First, leaders can encourage creativity in the workplace using various tactics and behaviors. Certainly, there are other facets of leadership that foster creative activities (e.g., openness). Hence, one fruitful avenue for future research may be to identify a construct of creative leadership. That is, what are the dimensions of leadership required to promote creative work that are unique to these job demands? Second, although important progress has been made in this field, more studies are needed to fully understand the complex relationship between leadership and creativity. For example, how leaders create a context for creativity, the conditions in which creative behaviors are encouraged, and the kind of support creative people need to be motivated to engage in creative tasks are some key research questions that warrant future research attention. Third, we considered employee perceptions of LMX as an important mechanism for encouraging creative activities. However, future research should examine other dimensions of leader–member relationships that have the potential to encourage creativity. One possible way is to more carefully draw upon research on high-quality interpersonal relationships at work such as connectivity, positive regard and emotional carrying capacity (Dutton, 2003; Dutton & Heaphy, 2003; Dutton & Ragins, 2007). Fourth, future research should pursue longitudinal studies to capture how changes in energy level affect individual involvement in creative behaviors. Although we do not consider energy as a mood state, we do need to gain a better understanding of energy changes and factors that may influence such changes such as stress or conflict and how they affect creative activities. Fifth, although there is ample research that has addressed the linkage between job involvement and work behaviors and outcomes, future studies need to examine this assumption and the various factors that may weaken or strengthen this relationship. Finally, research should address the levels of energy optimal for sustained creative work involvement. Is it possible that high energy sustained over time results in burnout and ultimately depletes creative work involvement?

5.5. Conclusions

In an ever more turbulent environment where creativity becomes imperative for the future development of organizations and innovation (Amabile, 1988), leaders are confronted with a key challenge — how to motivate their employees to engage in creative work tasks.

While we have begun to shift the focus from a negative perception of leaders who impede employee creativity (Mumford et al., 2002) to a more positive outlook on ways leaders can encourage followers to engage in creative work and display creativity, research has thus far been limited. Our study highlights the complex process in which leadership style is related to creative work involvement and suggests the possibility of a sequential relationship among leader–member exchange, feelings of energy, and creative work involvement.

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Appendix A

In order to assess the effects of common method bias we did the following. First, we collected the independent variable at one point in time and both the mediator and the dependent variables at another point in time with a lag of two weeks between Time 1 and Time 2. This reduces the potential bias associated with collecting data at one point in time. Second, because the mediator (individual's feelings of energy) and the dependent variable (creative work involvement) were collected at the same point in time, we used a confirmatory factor analysis (CFA) to compare two models: 1) a one-factor model with all observed items of both the mediator variable and the dependent variable loaded onto one latent variable, and 2) a two-factor solution where all observed items of the mediator variable were specified to one latent variable and all observed items of the dependent variable were specified to another latent variable. The results of a one-factor solution yielded the following fit indices: a Chi-square of 690 with 112 degrees of freedom, and other goodness-of-fit statistics (CFI = .79; IFI = .80; TLI = .72; RMSEA = .16). The results of a 2-factor model showed much better fit with the data, yielding the following fit indices: a Chi-square of 272.1 with 111 degrees of freedom, and other goodness-of-fit statistics (CFI = .94; IFI = .94; TLI = .92; RMSEA = .08). This suggests that in the current study potential biases associated with collecting data for the mediator and dependent variable from a single source at one point in time are not likely to be severe.

In addition, we tested for the influence of a method-related factor using a structural equation approach outlined by Williams & Anderson (1994) and recently used in several studies (e.g., Rafferty & Griffin, 2004; Carmeli & Schaubroeck, 2007). A congeneric measurement model with the three factors included in our hypotheses was first tested. In this model, the items were observed variables loading onto their respective latent variables, and these latent variables were not permitted to co-vary. The fit of this model was quite good. A Chi-square of 596.8 with 335 degrees of freedom, and other goodness-of-fit statistics (CFI = .95; IFI = .95; TLI = .94; RMSEA = .06) were obtained. All the observed variables loaded acceptably onto their corresponding latent variables, with standardized loading parameter estimates ranging from .59 to .91 that were statistically significant ($p<.01$). Next, we examined two alternative measurement models that are plausible based on the notion that common method variance should interact with common content on the questionnaire. The second, more parsimonious measurement model specified the independent and mediator variables (LMX and individual's feelings of energy) as loading onto one latent variable, and creative work involvement loading onto the second latent variable. These latent variables were not permitted to co-vary. This model did not provide a good fit to the data. A Chi-square of 1209.8 with 336 degrees of freedom, and other goodness-of-fit statistics (CFI = .83; IFI = .83; TLI = .79; RMSEA = .11) were obtained. Finally, we tested a third measurement model in which all items were specified to load on a single latent variable. This provides in essence the one-factor test advocated by Podsakoff et al. (2003). This model also did not provide a good fit to the data. A Chi-square of 1623 with 337 degrees of freedom, and other goodness-of-fit statistics CFI = .74; IFI = .75; TLI = .69; RMSEA = .14), were obtained. The clearly better fit of the congeneric (3-factor) measurement model analyses indicates that the composite variables we used have acceptable discriminant validity.

The second set of SEM analyses examined the influence of common method variance more directly, using the method outlined by Williams & Anderson (1994). Their approach analyzes the effect of a theoretically unrelated "marker" variable that may be expected to explain shared variance attributable to the common method. The latent variable(s) used for the marker is (are) specified to have direct effects on all observed variables in the theoretical model. For the marker variable, we used three items that measured trust. We expected that common method variance among LMX, individual's feelings of energy, and creative work involvement could be quite effectively captured by this marker, because it should share any common tendency with these variables to present one's perceptions of exchange with his or her manager, energy level and engagement in creative work. Following Williams and Anderson, the substantive variables were specified as a linear model, with the LMX variable influencing feelings of energy, and feelings of energy, in turn, influencing creative work involvement. The "trust" marker was not allowed to correlate with any other latent variables. The effect of this marker latent variable on all observed variables was estimated. To estimate this model (Model A), the effects of the marker latent variable on the observed variables were specified in the matrix that specifies loadings of observed variables onto latent variables. Williams and Anderson referred to this first model as "Model 1." The fit of this model was quite good; a Chi-square of 537.4 with 389 degrees of freedom, and other goodness-of-fit statistics CFI = .97; IFI = .97; TLI = .97; RMSEA = .04), were obtained. The marker latent variable was significantly related to all observed variables (i.e., the coefficient divided by its standard error was greater than 2.0). This suggests the possibility of a common method effect.

However, the real test is to determine whether this set of effects across the observed variables influences the structural parameters of the hypothesized model. To test this, we examined two additional models. The model William and Anderson called "Model 6" fixed the effects of the marker latent variable to zero. We refer to this as Model B. The fit of this model was substantially poorer than Model A (CFI = .91; TLI = .97, RMSEA = .075, Chi-square = 890, $df = 417$). Then Model B was re-estimated, this time fixing the beta coefficients associated with the structural model to equal the values obtained in Model A. This model (Model C; analogous to "Model 2" in Williams & Anderson's (1994) paper) did not provide a substantially inferior fit when compared to Model B (A Chi-square of 700.8 with 334 degrees of freedom, and other goodness-of-fit statistics CFI = .92; IFI = .93; TLI = .91; RMSEA = .07), were obtained). This suggests that while there is likely some shared common method variance, it did not appreciably influence the hypothesized effects. Considering these tests and other research indicating that common method/source bias is either overstated (Spector, 2006) or rarely strong enough evidence to invalidate research findings (Doty & Glick, 1998), common method bias in this study is not likely to be a major problem.

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