



Benefiting from creative activity: The positive relationships between creative activity, recovery experiences, and performance-related outcomes

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Employees have limited personal time to engage in activities that enable them to recover from a demanding work environment and perform at a high level. To evaluate the importance of non-work creative activity, we conducted two studies that examine the relationships between non-work creative activity, recovery experiences, and performance-related behaviours at work. Study 1 included employees who provided self-rated performance-related outcomes, whereas Study 2 included employees with other-rated (co-workers and subordinates) performance-related outcomes. Creative activity was positively associated with recovery experiences (i.e., mastery, control, and relaxation) and performance-related outcomes (i.e., job creativity and extra-role behaviours). The mediating effects of recovery experiences were examined to better understand the underlying processes involved in the relationship between creative activity and performance-related outcomes. Creative activity was found to have both indirect effects and direct effects on performance-related outcomes, but the effects varied by the type of performance-related outcome. The results indicate that organizations may benefit from encouraging employees to consider creative activities in their efforts to recover from work.

Practitioner points

- Organizations should increase employee awareness of the benefits of creative activity on recovery. Many companies already provide information to employees regarding the importance of specific activities (e.g., eating habits, exercise) on physical health. Information on activities that influence recovery – a psychological health consequence – should be included in the informational resource provided to employees.
- Organizations may consider professional development opportunities for employees that involve creative activities while away from work. Creative activities are likely to provide valuable experiences of mastery and control, but may also provide employees experiences of discovery that uniquely influence performance-related outcomes. Opportunities used by large organizations, such as Zappos Inc., include employees bringing their artwork to work to decorate their offices. Other options include memberships to art studios, creative writing resources, and access to musical instruments.

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Most employees would likely agree that they highly value their personal time because of the opportunity to engage in activities that rebuild resources lost while working. To achieve a state of recovery or recovery experiences, employees engage in (or avoid) an array of activities (Sonnentag, 2003), such as playing sports, cooking, watching television, and engaging socially with others (Sonnentag & Zijlstra, 2006). There is increasing empirical evidence that recovery experiences from activities during one's personal time result in lower perceived job stressors and strain (Etzion, Eden, & Lapidot, 1998; Sonnentag & Fritz, 2007; Sonnentag, Kuttler, & Fritz, 2010), greater life satisfaction (Lounsbury & Hoopes, 1986), and improved job performance-related outcomes (Binnewies, Sonnentag, & Mojza, 2010; Fritz & Sonnentag, 2005; Fritz, Yankelevich, Zarubin, & Barger, 2010).

Although organizational researchers have explored many non-work activities associated with recovery experiences, no research has directly explored the effects of creative activity while away from work. The dearth of organizational research on the relationship between creative activities and employee recovery experiences is surprising because creative activity has often been believed by clinical and counselling psychologists to play a role in recovery from mental health issues, enrich one's life, increase personal well-being, and improve performance in other life domains (Baer, 2012; Griffiths & Corr, 2007; Ivcevic, 2007; Müllersdorf & Ivarsson, 2012; Richards, 1990). Personality theorists, such as Carl Rogers, have also expressed creativity as being an essential element to optimal human functioning (Rogers, 1963).

A better understanding of the importance of non-work creative activities on employee recovery experiences and performance-related behaviours will enable organizations to increase employee awareness of activities that are likely to facilitate effective recovery from work. Greater awareness of beneficial activities is essential because people are unable to spend all of their personal time on activities that have a recovery effect (Sonnentag, 2001). The current study builds off of the resources often associated with creativity to empirically examine how creative activities fit within the recovery experience model (Sonnentag & Fritz, 2007) that has recently dominated organizational research. Specifically, we examine the mediating effects of recovery experiences on the relationship between creative activity and performance-related outcomes.

Theoretical models

Conservation of resources theory (COR; Hobfoll, 1989), effort-recovery model (Meijman & Mulder, 1998), and theory of dynamic performance (Beal, Weiss, Barros, & MacDermid, 2005) are complementary theories that describe the importance of leisure activities on an employee's recovery from work and capability of expending effort towards work. COR (Hobfoll, 1989) is based on the assumption that people strive to obtain, retain, and protect their resources. In the context of the work environment, COR implies that the demands of the work environment threaten individual resources. In turn, individuals will strive to restore and protect their resources by investing resources into activities while away from work. The effort-recovery model (Meijman & Mulder, 1998) describes the behavioural, psychological, and physiological response to expending effort towards one's work. Overcoming work demands to accomplish tasks and be a high-contributing employee requires the use of valuable mental and physical resources, which result in resource depletion and a need for recovery (Sluiter, van der Beek, & Frings-Dresen, 1999). Recovery from work occurs when work demands are removed and the person can engage in activities that are very low in cognitive demands and allows the person to return to their

baseline level of functioning. Similarly, the theory of dynamic performance (Beal *et al.*, 2005) suggests that job performance depends upon whether the employee can allocate a maximum amount of resources to a task. To effectively regulate the allocation of resources during work, it is crucial for employees to restore and preserve resources during their off time.

Each of the models emphasizes the importance that leisure activities do not further deplete the resources necessary to complete one's job successfully. Rather, the resources expended to engage in leisure activities should either restore the resources lost during work or protect against further resource loss while an employee is not working. In sum, a leisure activity can positively affect performance-related behaviours at work if the leisure activity provides resources that are pertinent to resources necessary to complete the work behaviour. To understand the potential importance of creative activity on performance-related outcomes, it is necessary to identify the resources creative activity provides.

Creative activity and recovery experiences

Creative activity while away from work may be a leisure activity that provides employees essential resources to perform at a high level. Creativity has been debated either to be a process that involves the exploration of new cognitive pathways and connection of previously unrelated thoughts (Koestler, 1964) or as a product that is novel, appropriate, and surprising (Bruner, 1962). Regardless of the definition used, creativity can be diffused in a variety of daily activities, such as doing crafts, decorating a living environment, solving everyday problems, using humour, and structuring leisure time activities (Murdock & Ganim, 1993; Runco & Bahleda, 1986; Torrance, 1988). Creative activities are not limited to common conceptualizations of art, such as painting or music (Ivcevic, 2007). Because many activities have the potential for being creative for the actor, this study examines creative activities while away from work broadly (e.g., I engage in creative activity) without specific reference to a medium or type of creative act.

The notion that creative activity provides important resources to a person that can spill over into other life domains has received considerable attention by social and personality psychologists (Baer, 2012; Ivcevic, 2007; Kaufman & Baer, 2005; Mayer, 1999). Creative activity within a single domain is believed to provide resources that enrich one's life, increase personal well-being, and improve performance in other life domains (Baer, 2012; Ivcevic, 2007; Richards, 1990). Organizational researchers have recognized the importance of creative activity on recovery from work by including creative activity when assessing leisure activities in some cases. However, either the creative activity measure was not included in the analyses (Sonnentag, 2001) or creative activity was only one of several different activities within a scale assessing a broad range of leisure activities (Winwood, Bakker, & Winefield, 2007). Unfortunately, these efforts do not shed light onto specific benefits of creative activities on recovery experiences and the spillover to the work environment.

To evaluate recovery from work and resource acquisition, organizational researchers most often rely on assessing resource-laden experiences. Recovery experiences most commonly include mastery, control, detachment, and relaxation (Sonnentag & Fritz, 2007). Mastery (e.g., taking a class) is a recovery experience that is characterized by non-work activities that distract from the job and provide experiences of being challenged and the opportunity to learn new skills (Sonnentag & Fritz, 2007). Mastery experiences are likely to result in recovery because they may lead to the acquisition of several internal

resources such as skills, competencies, and self-efficacy (Hobfoll, 1989), as well as foster positive mood (Parkinson & Totterdell, 1999). Creative activity involves the use and development of domain-specific knowledge, skills, and abilities (Amabile, 1983), which is similar to a mastery experience. Writing poetry, for example, likely results in the development of one's lexicon or improvement of one's ability to articulate thoughts. Thus, both creative activity and mastery experiences likely provide valuable resources such as skills, abilities, and competency beliefs that may spill over into the workplace.

Control is characterized by a person's ability to choose an activity during leisure time (Sonnetag & Fritz, 2007). Experience of control during leisure time provides important resources of self-efficacy and feelings of competence. Experiences of controllability occur when people believe that they can influence outcomes (Byron, Khazanchi, & Nazarian, 2010). Because creative activity is often characterized by producing a unique outcome (Amabile, 1983), creative activity is likely to result in greater perceived control over outcomes. It is important to note that control is also believed to be a prerequisite to creative activity – providing a bidirectional relationship. Specifically, creative activity requires a sense of freedom from external constraints (Einstein, 1949). Thus, both creative activity and control experiences are likely to provide valuable resources such as competency beliefs.

Detachment from work is the process that allows an employee to mentally disengage his/herself from work (Sonnetag & Fritz, 2007). In other words, detachment is an employee's sense of being away from the work environment (Etzion *et al.*, 1998). For example, an employee who is inundated and pre-occupied with work emails and job activities while they are engaging in social activities is unlikely to be detached. Whereas mastery and control provide resources to an employee, detachment experiences may be best described as protecting the employee from additional resource loss. Creative activity involves becoming absorbed within the activity (Golann, 1963), which may enable a person to forget about other life domains that are irrelevant to the act, such as the work environment. Thus, creative activity and detachment may enable an employee to protect from further resource loss due to the work environment.

Relaxation is characterized by a state of low activation and increased positive affect (Stone, Kennedy-Moore, & Neale, 1995). Activities that may facilitate relaxation include walks through a beautiful area (Hartig, Evans, Jamner, Davis, & Garling, 2003), listening to music (Pelletier, 2004), or meditation (Grossman, Niemann, Schmidt, & Walach, 2004). Creative activity is believed to have a bidirectional relationship with positive affect (Frederickson, 2001). That is, using an alternative method to complete a task can result in positive affect (e.g., joy); positive affect can also enable a person to think more broadly and consider creative opportunities. Creative activity may also involve a cathartic release of intense negative emotions (Akinola & Mendes, 2008; Talerico, 1986). Although intense negative emotions are experienced during the creative activity, the cathartic release provides a positive affective state after the creative activity is completed. Thus, creative activity and relaxation are likely to provide valuable resources such as positive affect.

Although we expect positive relationships between creative activities and the four recovery experiences, it is important to note that direction of causality is inconclusive. Theoretical models on recovery experiences often describe leisure activities as a causal source to the underlying recovery experience, which in turn spills over into the work environment (Sonnetag, 2003; Sonnetag & Zijlstra, 2006). However, we recognize that recovery experiences and resources are needed to engage in creative activity. COR (Hobfoll, 1989) describes how people with greater amounts of resources are more

capable of acquiring additional resources and protecting from future resource loss. This process, which is described as a positive resource spiral, implies a bidirectional relationship between actions and resources. This study does not incorporate a longitudinal design to evaluate bidirectional relationships; we rely on prior theoretical models to describe a causal direction of leisure activities affecting recovery resources. In sum, we hypothesize that creative activity will be positively associated with mastery, control, detachment, and relaxation experiences because of the shared resources acquired or the protection of further resource loss.

Hypothesis 1: Creative activity will be positively associated with mastery, control, detachment, and relaxation experiences.

Creative activity and performance-related outcomes

Creative activity is likely to be associated with performance-related outcomes in part due to the expected relationship with recovery experiences. That is, we believe that creative activity provides recovery experiences (see Hypothesis 1) that can be subsequently transferred to performance-related behaviours in the workplace. As noted in COR, effort-recovery model, and the theory of dynamic performance, employees engage in activities that help them acquire and protect resources, which in turn help them put effort towards tasks in a demanding work environment. Creative activities in a specific life domain (e.g., non-work) are likely to spill over into behaviours in other life domains (Ivcevic, 2007). The positive spillover is believed to occur when the resources (e.g., skills) acquired from a creative activity in one domain are also relevant to the other life domain. Indeed, daily creative activity is believed to be used by people to help solve problems a person is experiencing in other aspects of life (Richards, 1990). In other words, employees may engage in creative activity in an effort to cope with the job. If we presume that creative activity leads to the acquisition or protection of resources (Hypothesis 1), it is necessary to establish that recovery experiences will affect performance-related outcomes.

Several performance-related outcomes have been empirically examined in relation to recovery experiences, such as performing duties prescribed in one's job description (task performance), effort expenditure towards tasks (Fritz & Sonnentag, 2006), proactive behaviour (Fritz *et al.*, 2010), active learning, job creativity (de Jonge, Spoor, Sonnentag, Dormann, & van den Tooren, 2012), and performing duties not prescribed in one's job description (extra-role performance; Binnewies *et al.*, 2010). In general, recovery experiences are positively associated with performance-related outcomes, but the effects vary between studies. Inconsistent relationships are commonly found with task performance; relationships vary between non-significant (Binnewies *et al.*, 2010; Sanz-Vergel, Demerouti, Bakker, & Moreno-Jiménez, 2011), significant positive correlations (Shimazu, Sonnentag, Kubota, & Kawakami, 2012), and a curvilinear relationship (Fritz *et al.*, 2010).

Recovery experiences are likely to have more consistent relationships with performance-related outcomes that are more volitional. Employees commit resources to performance behaviours most valued by an organization (Mangos, Steele-Johnson, LaHuis, & White, 2007), which is likely task performance. As a result, effective recovery experiences are likely to determine whether an employee has a surplus of resources to commit to less valued behaviours. Job performance is a multidimensional construct that includes both task performance and volitional behaviours such as organizational citizenship behaviours (OCB) and job creativity (Campbell, 1990). OCB (Lee & Allen,

2002) are the extra-role behaviours; employees engage in that are not explicitly part of their job description, which include praising the organization, helping co-workers with tasks or problems, and building and preserving interpersonal relationships (Podsakoff, MacKenzie, Paine, & Bachrach, 2000; Van Dyne & LePine, 1998). Job creativity is the act of taking risks and thinking of alternative solutions to work problems (Zhou & George, 2001).

Recovery experiences are significantly related to OCB and taking initiative (Binnewies *et al.*, 2010). Similarly, recovery experiences are associated with effort expenditure 2 weeks after vacation (Fritz & Sonnentag, 2006). There is less research directly examining the relationship between recovery experiences and job creativity. No relationship is found between detachment and job creativity (de Jonge *et al.*, 2012), but other recovery experiences were not assessed. The generally positive relationship between recovery experiences and performance-related outcomes leads us to expect that creative activity will be positively associated with performance-related outcomes through the mediating processes of recovery experiences.

Creative activity may also have a direct effect on performance-related outcomes because of the acquisition and protection of resources not captured within the current recovery experience model. Creative activity is likely to result in a discovery experience, which can result in resource gain and protection from further resource loss. Creative activity involves a change in perspective through the act of discovery (Amabile, 1983; Csikszentmihalyi, 1997). Similarly, creative activity may lead to the experience of increased intrinsic motivation (Csikszentmihalyi, 1997), which is the enjoyment of an activity because of an opportunity to explore and actualize a person's potential (Ryan & Deci, 2000). The experience of discovery and intrinsic motivation is not fully captured within the recovery experience model despite self-enhancement and growth being recognized as a resource within COR (Hobfoll, 1989). That is, discovery and intrinsic motivation may lead to personal resources (e.g., self-esteem, self-efficacy) and protect from future resource loss by changing one's perception of future tasks. A greater sense of control can be associated with a change in perspective (Lazarus & Folkman, 1984), but the perceptual shift will not necessarily involve the act of discovery that is at the core of creativity. A similar argument can be made for mastery, which does not necessarily involve the act of discovery.

Job creativity and OCB are likely to require resources associated with discovery experiences and intrinsic motivation. Job creativity requires a willingness to behave differently from one's behavioural script and identifying new ways to complete tasks (Zhou & George, 2001). Engaging in OCB is also linked to intrinsic motivation. For example, employees were more willing to act on a desire to help others when they were high in intrinsic motivation (Grant, 2008). Because creative activity is likely to lead to unique resource acquisition and protection through discovery experiences, we expect creative activity to be positively associated with performance-related outcomes and the relationship will be partially mediated by recovery experiences.

Hypothesis 2: Creative activity will be positively associated with performance-related outcomes (i.e., job creativity, OCB).

Hypothesis 3: The relationship between creative activity and performance-related outcomes (i.e., job creativity, OCB) will be partially mediated by recovery experiences.

Method

Sample and procedure

Study 1

Participants were recruited using the StudyResponse Project (The StudyResponse Project, n.d.). The StudyResponse Project database consists of over 80,000 people who are willing to be participants in online questionnaire-based research and has been used to recruit participants in several published studies (Bowling & Eschleman, 2010; Judge, Ilies, & Scott, 2006; Piccolo & Colquitt, 2006). In this study, participants were compensated with 10 dollars in gift cards to an online store. Data were collected in two waves separated by approximately 1 month. Creative activity, recovery experiences, and openness to experience were assessed in Wave 1, whereas performance-related outcomes were assessed in Wave 2. A total of 83% of the people ($N = 341$) to whom the survey was originally sent responded and provided useable data for both waves. Participants held a wide variety of occupations within the United States (e.g., 30% managerial, 10% education, 8% accounting, 6% administration support), worked an average of 40 hr per week, had an average job tenure of 10 years, and were an average of 37 years old, and 50% were women.

Study 2

Study 2 was conducted to replicate the findings of Study 1 using subordinate and co-worker ratings of performance-related outcomes in an applied setting. We obtained data of 92 active duty captains from the United States Air Force who were required to participate in an incentivized 6-week leadership development programme. All Air Force captains are required to participate in the leadership development programme prior to their promotion as part of their career progression. Captains complete a survey prior to entering the programme, which includes demographic information. The researchers included an assessment of creative activity and recovery experiences within this survey with the note that the information would not be used as part of their evaluation within the programme. Performance assessments of the captains were also obtained for programme evaluation purposes. To evaluate performance, the training programme contacted randomly selected subordinates and co-workers of the participating captains via email and ensured participants that the performance evaluations would remain confidential and only reported in an aggregate feedback format to the captain being rated. The specific job responsibilities of an Air Force captain varied because of organizational placement. However, top-performing captains in all placements are expected to acquire skills in creative performance and OCB, as these skills are important for their rise in rank to major. In addition, because Air Force officers generally change positions and roles every 2 years, captains are expected to be highly adaptable and to solve problems they have not previously encountered. Thus, feedback on the performance criteria assessed in Study 2 is highly valued by participating captains. The sample was 73% men and an average age of 31 years. All participants had a bachelor's degree, and 88% had some form of graduate school experience.

Measures

Recovery experiences

Participants in both Study 1 and Study 2 rated how often they had several recovery experiences during their personal time over the past 30 days. The response options were

on a 5-point scale and ranged from (1) 'rarely' to (5) 'very often'. Mastery (e.g., 'I learned new things'), control (e.g., 'I decided my own schedule'), detachment (e.g., 'I forgot about work'), and relaxation (e.g., 'I kicked back and relaxed') were each assessed with four items from the Recovery Experiences Questionnaire (Sonnetag & Fritz, 2007). The alpha reliabilities for recovery experiences ranged from .90 to .95 and .87 to .96 for Study 1 and Study 2, respectively.

Creative activity

We piloted nine items amongst 250 people working at least 20 hr per week to develop the creative activity measure. Three items were selected that showed adequate psychometric properties and face validity. Participants in both Study 1 and Study 2 rated how often they had engaged in creative activity during their personal time over the past 30 days. Response options were on a 5-point scale and ranged from (1) 'rarely' to (5) 'very often'. The three items for non-work creative activity were the following: 'I took part in creative tasks', 'I used the time to explore my creative side', and 'I expressed myself creatively'. The alpha reliabilities for creative activity were .94 and .88 in Study 1 and Study 2, respectively.

Performance-related outcomes

For both Study 1 and Study 2, performance-related outcomes were examined using assessments of job creativity and OCB. Study 1 included self-ratings of performance-related outcomes. Study 2 included ratings from subordinates ($n = 49$) and co-workers ($n = 43$). Participants rated how often they (Study 1) or their supervisor/co-worker (Study 2) engaged in the behaviours at work over the past 30 days. Response options were on a 5-point scale and ranged from (1) 'rarely' to (5) 'very often'. Measures of job creativity (Zhou & George, 2001), OCB directed interpersonally (OCB-I), and OCB directed towards the organization (OCB-O; Lee & Allen, 2002) included 8 items each. The job creativity measure (e.g., 'Come up with creative solutions to job problems') had an alpha reliability of .92 and .68 for Study 1 and Study 2, respectively. The OCB-I measure (e.g., 'Go out of the way to make others at work feel welcome') had an alpha reliability of .93 and .76 for Study 1 and Study 2, respectively. The OCB-O measure (e.g., 'Defend the organization when other employees criticize it') had an alpha reliability of .91 and .89 for Study 1 and Study 2, respectively.

Personality

Study 1 included an assessment of openness to experience that was used as a control variable. Because creativity and personality may be closely linked (Amabile, 1983; Feist, 1998), it is important to control for one's disposition to engage in creative activity when exploring the relationship between creative activities in multiple life domains. Openness to experience was selected as a control variable because it is the strongest predictor of creativity amongst the five-factor model personality traits (Feist, 1998). Openness to experience was assessed during Wave 1 using the average of four items (Donnellan, Oswald, Baird, & Lucas, 2006) on a 7-point scale from strongly disagree (1) to strongly agree (7). An example item is 'I believe in the importance of art'. The alpha reliability for the openness scale was .78.

Results

Model building

Confirmatory factor analyses were conducted using the larger sample in Study 1. Two fit statistics were used to determine model fit, the root mean square residual (SRMR), and the comparative fit index (CFI) as per Hu and Bentler (1999), although the chi-square and root mean square error of approximation (RMSEA) are also reported. We ran an 8-factor confirmatory factor analysis with creative activity, each recovery experience, job creativity, OCB-I, OCB-O, and openness items loading onto distinct, but covarying, latent factors. The model had adequate fit with $\chi^2(413, N = 341) = 990.60$, $p < .001$, SRMR = .06, CFI = .94, and RMSEA = .06. We also compared the 8-factor model with different models that had the creative activity items load onto one of the remaining factors. No other model tested had adequate fit. For example, the second best-fitted model had creative activity items loading onto the same latent factor as openness, but fit the data worse than the 8-factor model, $\Delta\chi^2(\Delta df = 6) = 391.16$, $p < .05$.

We used structural equation modelling to assess the mediating effects of recovery experiences on the relationship between creative activities and performance-related outcomes. Separate mediation models were tested for each of the performance-related outcomes. Structural paths were added from creative activity to each recovery experience and from each recovery experience to the performance-related outcome. The partial mediation model also included a structural path from creative activity to the performance-related outcome, whereas the full mediation model constrained this path to be zero. We used a chi-squared difference test to determine whether the partial mediation or full mediation model fit the data best. For both Study 1 and Study 2, partial mediation models were selected for the job creativity and OCB-I models, whereas full mediation model was selected for OCB-O.

In regard to Study 1, a measurement model with covarying latent variables was examined prior to building partial and full mediation models. In an attempt to control personality influences of creativity, openness to experience was allowed to covary with all variables in the structural models. The measurement models fit the data adequately for the job creativity model, $\chi^2(442, N = 341) = 1066.09$, $p < .01$, SRMR = .06, CFI = .93, RMSEA = .06, OCB-I model, $\chi^2(442, N = 341) = 1036.43$, $p < .01$, SRMR = .06, CFI = .93, RMSEA = .06, and OCB-O model, $\chi^2(442, N = 341) = 1001.66$, $p < .01$, SRMR = .06, CFI = .94, RMSEA = .06. The partial mediation model had adequate fit for job creativity, $\chi^2(442, N = 341) = 1066.09$, $p < .01$, SRMR = .06, CFI = .93, RMSEA = .06, and fit the data better than the full mediation model, $\Delta\chi^2(\Delta df = 1) = 14.32$, $p < .01$. The partial mediation model had adequate fit for OCB-I, $\chi^2(442, N = 341) = 1036.43$, $p < .01$, SRMR = .06, CFI = .93, RMSEA = .06, and fit the data better than the full mediation model, $\Delta\chi^2(\Delta df = 1) = 4.56$, $p < .05$. A full mediation model was used for OCB-O, $\chi^2(443, N = 341) = 1002.74$, $p < .01$, SRMR = .06, CFI = .94, RMSEA = .06, because it was more parsimonious than the partial mediation model with no difference in fit, $\Delta\chi^2(\Delta df = 1) = 1.08$, $p > .05$.

In regard to Study 2, the measurement models fit the data adequately for the job creativity model, $\chi^2(120, N = 92) = 290.01$, $p < .01$, SRMR = .05, CFI = .95, RMSEA = .05, OCB-I model, $\chi^2(120, N = 92) = 305.58$, $p < .01$, SRMR = .06, CFI = .94, RMSEA = .06, and OCB-O model, $\chi^2(120, N = 92) = 286.97$, $p < .01$, SRMR = .06,

Table 1. Descriptive statistics, reliabilities, and correlations for Study 1 variables

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
Recovery													
1. Mastery	2.98	1.09	(.93)										
2. Control	3.72	0.98	.41**	(.92)									
3. Detachment	2.98	1.14	.11*	.40**	(.90)								
4. Relaxation	3.38	1.12	.34**	.61**	.65**	(.95)							
5. Creative Activity	2.95	1.18	.71**	.41**	.05	.22**	(.94)						
Performance-Related Outcomes													
6. Job Creativity	3.03	0.93	.32**	.07	-.21**	-.08	.40**	(.92)					
7. OCB-Interpersonal	3.15	0.85	.22**	.08	-.13**	.03	.25**	.50**	(.93)				
8. OCB-Organizational	2.94	0.95	.22**	.16**	-.20**	.03	.23**	.55**	.62**	(.91)			
Demographics and Personality													
9. Age	37.93	10.88	.10*	.13*	-.01	.10	.07	.02	.04	.16*	–		
10. Gender	1.49	0.50	-.03	.08	.13*	.08	-.01	-.02	.03	.05	-.06	–	
11. Openness	5.01	1.24	.31**	.26**	-.03	.13*	.30**	.25**	.19**	.25**	.07	-.02	(.78)

Note. N = 341. Uncorrected correlations are presented below the diagonal. Alpha reliabilities are presented on the diagonal in parentheses. Female = 1, male = 2. *p < .05; **p < .01.

CFI = .95, RMSEA = .06. The partial mediation model had adequate fit for job creativity, $\chi^2(120, N = 92) = 290.01, p < .01$, SRMR = .05, CFI = .95, RMSEA = .05, and fit the data better than the full mediation model, $\Delta\chi^2(\Delta df = 1) = 6.08, p < .05$. The partial mediation model had adequate fit for OCB-I, $\chi^2(120, N = 92) = 305.58, p < .01$, SRMR = .06, CFI = .94, RMSEA = .06, and fit the data better than the full mediation model, $\Delta\chi^2(\Delta df = 1) = 4.84, p < .05$. A full mediation model was used for OCB-O, $\chi^2(120, N = 92) = 287.02, p < .01$, SRMR = .06, CFI = .95, RMSEA = .05, because it was more parsimonious than the partial mediation model with no difference in fit, $\Delta\chi^2(\Delta df = 1) = 0.05, p > .05$.

Creative activity and recovery experiences

Study 1 descriptive statistics and correlations are presented in Table 1, while standardized path coefficients are presented in Figure 1. Study 2 descriptive statistics and correlations are presented in Table 2, while standardized path coefficients are presented in Figure 2.

Partial support was found for Hypothesis 1, which predicted that creative activity is positively associated with mastery, control, detachment, and relaxation experiences. In regard to Study 1, creative activity was positively associated with mastery ($\beta = .71$,

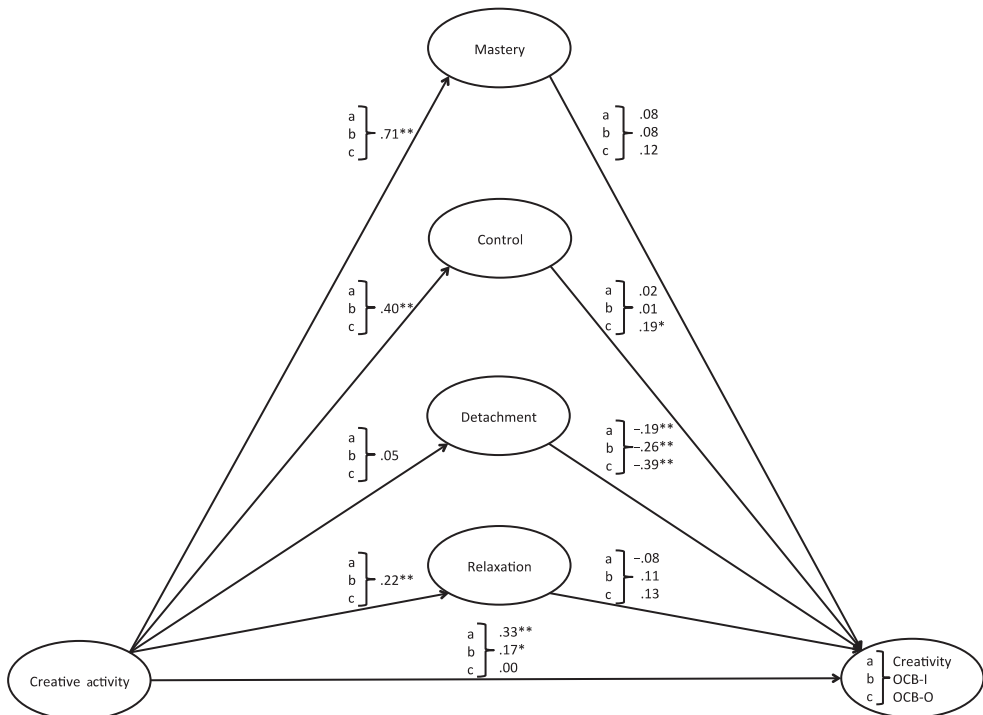


Figure 1. Study 1 mediating the effects of recovery experiences on the relationship between creative activity and performance-related outcomes. Standardized path coefficients are presented for three models. a = Model included job creativity. b = Model included OCB-I. c = Model included OCB-O. The path coefficients between creative activity and each recovery experience were the same for all three models. Openness to experience was included as control variable, but not displayed in the figure.

Table 2. Descriptive statistics, reliabilities, and correlations for Study 2 variables

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
Recovery												
1. Mastery	3.37	0.94	(.87)									
2. Control	3.84	0.93	.51**	(.90)								
3. Detachment	2.33	1.03	.07	.17	(.91)							
4. Relaxation	3.04	1.14	.42**	.46**	.49**	(.96)						
5. Creative Activity	2.69	1.15	.41**	.46**	-.05	.23**	(.88)					
Performance-Related Outcomes (Other-Rated)												
6. Job Creativity	2.29	0.87	.12	.08	.00	-.10	.25*	(.68)				
7. OCB-Interpersonal	3.06	0.87	.16	.13	-.01	.21*	.25*	-.21*	(.76)			
8. OCB-Organizational	3.05	0.71	.28**	.24*	-.12	.14	.29**	.09	.65**	(.89)		
Demographics												
9. Age	30.66	3.81	-.17	-.18	.18	-.14	-.11	.15	-.15	-.10	–	
10. Gender	1.77	0.42	.08	.01	.08	.18	-.19	-.24*	-.06	.04	-.13	–

Note. N = 92. Uncorrected correlations are presented below the diagonal. Alpha reliabilities are presented on the diagonal in parentheses. Female = 1, male = 2. *p < .05; **p < .01.

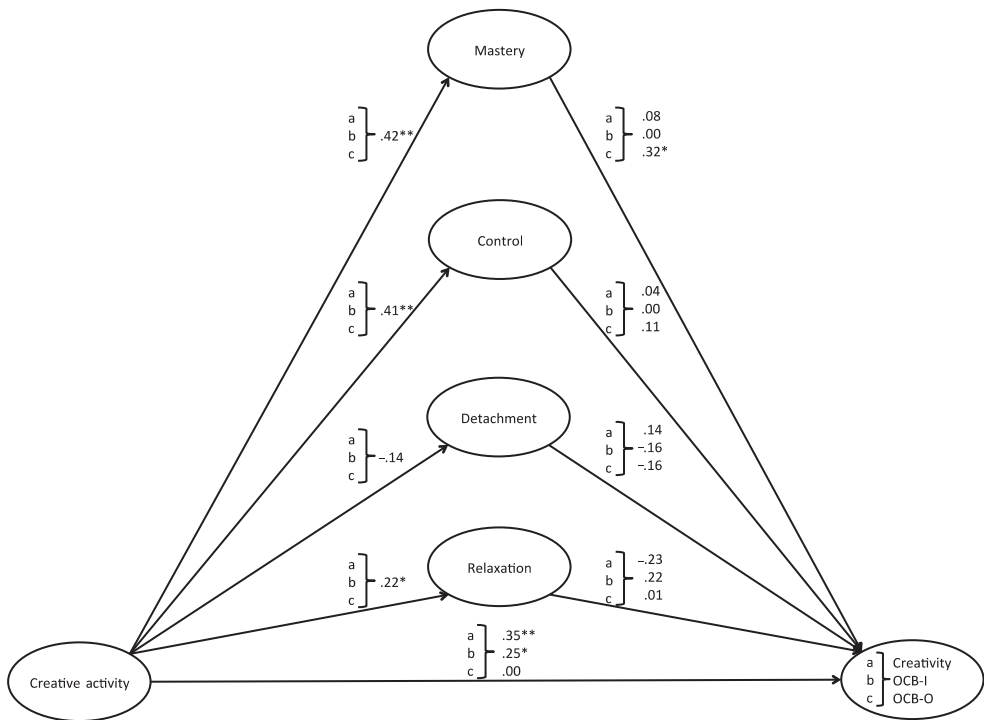


Figure 2. Study 2 mediating the effects of recovery experiences on the relationship between creative activity and performance-related outcomes. Standardized path coefficients are presented for three models. a = Model included job creativity. b = Model included OCB-I. c = Model included OCB-O. The path coefficients between creative activity and each recovery experience were the same for all three models.

$p < .01$), control ($\beta = .40, p < .01$), and relaxation ($\beta = .22, p < .01$), but not associated with detachment ($\beta = .05, p > .05$). The same pattern of results was found using data from Study 2. Creative activity was positively associated with mastery ($\beta = .42, p < .01$), control ($\beta = .41, p < .01$), and relaxation ($\beta = .22, p < .01$), but not associated with detachment ($\beta = -.14, p > .05$).

Creative activity and performance-related outcomes

Full support was found for Hypothesis 2 as creative activity was positively associated with all three performance-related outcomes in both Study 1 and Study 2. Partial support was found for Hypothesis 3 because the positive relationships between creative activity and performance-related outcomes were not consistently mediated by recovery experiences. In regard to Study 1, creative activity had positive direct effects on job creativity ($\beta = .33, p < .01$) and OCB-I ($\beta = .17, p < .05$), but these relationships did not include indirect effects through recovery experiences. No direct effects were present for creative activity on OCB-O because a full mediation model fit the data best, but an indirect effect of creative activity on OCB-O was found through control experiences. Specifically, creative activity was positively associated with control ($\beta = .40, p < .01$), which in turn was positively associated with OCB-O ($\beta = .19, p < .05$).

A similar pattern of results was found for Study 2. Creative activity had a positive direct effect on job creativity ($\beta = .35, p < .01$) and OCB-I ($\beta = .25, p < .05$), but these relationships did not include indirect effects through recovery experiences. No direct effects were present for creative activity on OCB-O because a full mediation model fit the data best, but an indirect effect of creative activity on OCB-O was found through mastery experiences. Specifically, creative activity was positively associated with mastery ($\beta = .42, p < .01$), which in turn was positively associated with OCB-O ($\beta = .32, p < .05$). In sum, creative activity had direct effects on job creativity and OCB-I and an indirect effect on OCB-O.

Discussion

Creative activity and recovery experiences

The current study examined mediating effects of recovery experiences on the hypothesized relationship between creative activity and performance-related outcomes. Based on COR, effort-recovery model, and theory of dynamic performance, creative activities were expected to increase the acquisition of resources or help protect from further resource loss. In turn, the acquisition and protection of resources would enable employees to engage in more performance-related behaviours. Partial support was found for Hypothesis 1, which predicted creative activity to have positive relationships with recovery experiences. Similar results were found in both Study 1 and Study 2. Creative activity was positively associated with mastery, control, and relaxation experiences, but not significantly associated with detachment.

The positive relationships with recovery experiences are likely because creative activity provides the acquisition of resources, such as the development of skills (Amabile, 1983), beliefs of influencing outcomes (Byron *et al.*, 2010), and the experience of positive affect (Frederickson, 2001). The non-significant relationships between creative activity and detachment were surprising because creative activity involves absorption into the task (Golann, 1963). These results indicate that creative activities are not likely used to protect from further resource loss by detaching from work. Rather, people may choose to engage in creative activities that are similar to experiences at work, which prevents detachment because of the shared knowledge, skills, and abilities. A wedding photographer, for example, may engage landscape photography as a creative activity. The non-significant relationship between creative activity and detachment may also be because creative activities are used as a cathartic release of work strain. An employee may play/write songs, for example, that describe the demands or strain experienced during work. Overall, the results indicate that creative activities are associated with several recovery experiences and likely an important activity in the employee recovery process.

Creative activity and performance-related outcomes

Creative activity was expected to be positively associated with performance-related outcomes, in part due to the mediating effects of recovery experiences. A similar pattern of results was found in both Study 1 and Study 2. Consistent with Hypothesis 2, employees who reported greater levels of creative activity were also rated (by themselves and others) as higher in job creativity, OCB-I, and OCB-O. However, only partial support for Hypothesis 3 was found because the positive relationships were not consistently mediated by recovery experiences. The underlying processes for these positive

relationships varied by performance-related outcome. Specifically, creative activity had direct effects on job creativity and OCB-I, but no indirect effects through recovery experiences. Creative activity had indirect effects on OCB-O through a single recovery experience, but no direct effects. Although the results do not fully support our hypothesis, there is considerable consistency across the two studies.

The direct effects of creative activity on job creativity and OCB-I are likely because creative activity provides a unique recovery experience not accounted for by the current recovery experience model. Creative activity may provide an experience of discovery and growth, which includes the discovery of new cognitive pathways (Amabile, 1983; Csikszentmihalyi, 1997; Ivcevic, 2007; Sarnoff & Cole, 1988) and intrinsic motivation (Csikszentmihalyi, 1997). The presence of only direct effects for job creativity and OCB-I indicates that these performance-related behaviours are most affected by the unique resources associated with creative activities rather than the common recovery experiences.

The consistent lack of direct effects for OCB-O is a surprising finding. Study 1 and Study 2 differed in the mediating recovery experience, but were consistent in that only one recovery experience fully mediated the effects of creative activity. Control was the mediating recovery experience in Study 1, whereas mastery was the mediating recovery experience in Study 2. This may be because mastery and control share many of the same resources acquired (e.g., self-efficacy), as indicated by the moderately strong correlation between the two variables. The consistent lack of direct effects of creative activity on OCB-O indicates that the unique resources associated with creative activity (e.g., discovery experiences and intrinsic motivation) are not essential to engaging in OCB-O. Employees targeting an organization with OCB may have different motives compared to when OCB target co-workers. Employees seeking to help an organization, for example, may engage in the behaviours instrumentally (e.g., to obtain a promotion) rather than for intrinsic purposes of learning and growth. Instrumentality is believed to influence OCB (Haworth & Levy, 2001; Organ, Podsakoff, & MacKenzie, 2006), but there is no prior research examining whether instrumentality is more likely in OCB-O compared with OCB-I. Overall, creative activity was consistently associated with performance-related outcomes, but the current recovery experience model may not always account for these positive relationships. Creative activity may provide a discovery experience that leads to the acquisition and protection of resources. The unique resources, in turn, influence some performance-related outcomes.

Future research and limitations

Although organizations may benefit from fostering creative activity amongst their employees, additional research is needed to understand why creative activity is associated with high ratings of performance-related outcomes. To address this limitation, future research should examine effects of creative activity on other outcomes (e.g., task performance, state of feeling recovered, energy, effort) and control for other potentially relevant individual difference antecedents. Also, it is important for future researchers to empirically identify the unique experience associated with creative activity to better understand the underlying processes involved in the relationship between creative activity, recovery experiences, and performance-related outcomes. Although we expected creative activity to be associated with performance-related outcomes, we did not expect recovery experiences to have inconsistent or negative (i.e., detachment) associations with performance-related outcomes. These findings indicate that the

resources acquired through creative activity may be more transferable across life domains than mastery, control, detachment, and relaxation experiences. Mastery, for example, may result in a new set of skills and task-specific self-esteem, but these new skills may not be useful in the job environment. Creative activities, on the other hand, may result in a cognitive shift from discovery that is less domain specific. Unfortunately, the current study is limited in not assessing a discovery experience variable as a potential mediator.

Another explanation for the consistent positive relationships between creative activity and performance-related outcomes is due to a methodological limitation. It is possible that creative activity has more long-term effects than other recovery experiences. Several researchers have proposed that recovery experiences may have the strongest effect immediately following the recovery experiences (Sonnetag & Natter, 2004; Trougakos, Beal, Green, & Weiss, 2008; Westman & Eden, 1997). As a result, the consistent findings for creative activity may not be found when examining the predictive validity over time (e.g., experience sampling). Future research should examine the effects of creative activity and recovery experiences longitudinally over various time frames.

Longitudinal research will also enable researchers to more accurately infer the direction of causality between creative activity and the other study variables. Although leisure activities are generally believed to lead to a state of recovery and a change in work variables (Sonnetag, 2003; Sonnetag & Zijlstra, 2006), it is possible that recovery experiences enable a person to engage in more creative activities. For example, people with more control over their leisure schedules may be able to choose a creative activity. Similarly, it is possible that employees with higher ratings of job creativity and OCB have the resources and abilities to engage in creative activity, which implies a causal effect from performance-related outcomes to creative activity. The use of a quasi-experimental or experimental design may also enable researchers to better infer causality. Future research should examine whether manipulations of creative activity can result in changes in recovery experiences or performance-related outcomes. Researchers, for example, may recruit participants whom are about to begin a craft/art workshop during their personal time, which is likely to provide an increase in creative activity. Alternatively, researchers may pay participants to engage in more creative activities. We caution against this later strategy as it may influence the discovery experience and intrinsic motivation of the creative activity, which may be vital to the relationship between creative activity and performance-related outcomes. The need for experimental research with non-work activities and recovery experiences will not only test the generalizability of the findings but also improve the practical implications for organizations. More specifically, experimental research involving a manipulation of recovery strategies will enable organizations to become more confident in designing programmes that are likely to foster a specific recovery experience.

Practical implications

The current study has important practical implications for organizations: programme development, programme evaluation, and employee awareness. Unfortunately, developing and evaluating organizational programmes to foster recovery experiences has received little research (Hahn, Binnewies, Sonnetag, & Mojza, 2011). Organizations may consider implementing programmes that encourage creative activity. Large organizations, such as Zappos Inc., incorporate employee artwork into office decorations. Other similar activities commonly found in organizations include food cook-offs, cross-discipline education opportunities, and costume contests during holidays. A more cost-effective and

less intrusive approach for organization is to inform employees that creative activity may help them recover from the workplace. Employees are unable to spend all of their personal time on activities that help them recover from work (Sonnetag, 2001) so greater awareness of the most beneficial activities is likely to be well received by employees. Increasing employee awareness also enables the organization to avoid directly interfering with their employees' private life.

Summary

Two studies on recovery experiences and performance-related outcomes were conducted using varying methodological approaches. Creative activity was found to be positively associated with mastery, control, and relaxation experiences. In addition, creative activity was consistently associated with performance-related outcomes. The processes underlying this relationship were examined by testing the mediating effects of recovery experiences. Creative activity had unique direct effects on job creativity and OCB-I after accounting for potential mediating effects of recovery experiences. Creative activity did not have unique direct effects on OCB-O, but did have indirect effects through recovery experiences (either mastery or control). These results indicate that the current recovery experience model does not account for all underlying experiences involved in creative activity.

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