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Creating a creative state of mind: Promoting creativity through proactive vitality management and mindfulness

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Abstract

Most research on employee creativity has been focused on relatively distal antecedents, such as personality or job characteristics, which has resulted in top-down organizational approaches to promote employee creativity. However, such approaches overlook the self-regulating potential of employees and may not explain intraindividual fluctuations in creativity. In the present research, we build on proactive motivation theory to examine how employees may promote their own creativity on a daily basis through the use of proactive vitality management (PVM). To better understand the PVM-creativity link, we zoom in on this process by examining the role of mindfulness as an underlying mechanism. In two daily diary studies, employees from the United States ($N = 133$ persons, $n = 521$ data points) and the creative industry in Germany ($N = 62$ persons, $n = 232$ data points) reported on their use of PVM and states of mindfulness for five consecutive workdays. Additionally, participants completed a daily creativity test (brainstorming task) in Study 1, whereas supervisors rated participants' daily creative work performance in Study 2. In both studies, multilevel analyses showed that daily PVM was positively related to

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creative performance through daily mindfulness, supporting our hypotheses. These replicated findings suggest that individuals may bring themselves in a cognitive, creative state of mind on a daily basis, emphasizing the importance of proactive behavior in the creative process.

KEYWORDS

attention, creativity, mindfulness, proactive vitality management, well-being

INTRODUCTION

Creativity is generally seen as a valuable phenomenon to promote innovation and growth in all aspects of life—artistically, personally, culturally, scientifically, and professionally. The constant desire and need to develop creative (i.e., new and useful) ideas regarding work procedures, services, and products can also be seen in today's competitive business environment (Harari et al., 2016; Unsworth & Parker, 2003). There is some debate on the origin of creativity; is there such a thing as a natural "creative genius" or, in contrast, could anyone possess a capacity to perform creatively to some extent? Scholars have been considering this matter for decades and have brought forth insights supporting both perspectives (Amabile, 1997). The present research is based on the idea that, although some people may generally perform more creatively than others, there is creative potential in all individuals (Amabile, 1997; Nijstad et al., 2010). Research has shown that organizations can deploy tactics to foster employee creativity, for example by providing a resourceful environment in which creativity is valued, encouraged, and facilitated (Hunter et al., 2007; Shalley & Gilson, 2004). Yet individuals do not perform equally creative at all times, and such relatively distal factors are less likely to predict intra-individual variations in creative performance. Moreover, researchers have theorized and shown the importance of individuals' self-regulatory and proactive behaviors in the creative process (Bakker et al., 2020; De Stobbeleir et al., 2011; Op den Kamp et al., 2018, 2020). Indeed, although top-down approaches can be effective, they implicitly identify individuals as "relatively reactive agents in the creative process who need to be motivated and led by others" (De Stobbeleir et al., 2011, p. 824). In reality, people often show self-initiated and anticipatory action aimed at changing either the situation or oneself (Unsworth & Parker, 2003), and it is suggested that individuals may be proactive agents in their own creative process too (De Stobbeleir et al., 2011; Grant & Parker, 2009; Op den Kamp et al., 2020).

Research indicates that physical and mental energy are essential to reach a state that is conducive to creativity (e.g., Binnewies & Wörnlein, 2011; Chen & Sengupta, 2014; De Dreu et al., 2012; Fredrickson, 2001; Kark & Carmeli, 2009; Op den Kamp et al., 2020). As proactive vitality management (PVM) involves intentionally and proactively managing our own physical and mental energy to promote optimal functioning (Op den Kamp et al., 2018), individuals may use it deliberately to bring themselves in such a state and, at that moment, elevate the quality of their own creative process. PVM has theoretically been positioned as an overarching behavioral construct encompassing the affective, cognitive, and physical components of vitality.

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Accordingly, using PVM may trigger multiple, intertwined processes that may subsequently promote creativity (cf. Lavrusheva, 2020; Op den Kamp et al., 2018; Ryan & Deci, 2008; Ryan & Frederick, 1997). Research has shown, for example, that work engagement may play a role in the mechanism underlying the link between PVM and creativity, primarily addressing the affective aspect of the process (Bakker et al., 2020). Based on the large body of literature on the role of (un)conscious processing in the creative process, we aim to dive deeper into the cognitive aspect of PVM and examine how it may translate into elevated creative performance on a daily basis. To this end, we focus on daily states of mindfulness as a potential underlying mechanism that may contribute to a better understanding of the PVM-creativity link.

As a mindful state is characterized by having a wide attentional breadth combined with a present-moment focus, it theoretically makes for an ideal cognitive state to elicit creativity (Dane, 2011). Indeed, previous studies have linked mindfulness to creativity (Lebuda et al., 2016), although inconsistent findings have been reported, resulting in a call for more studies on the value of mindful attention and awareness for creativity (Baas et al., 2014). While mindfulness—and its link to creativity—has often been examined at the person-level (i.e., as a trait-like variable), mindfulness is inherently concerned with varying levels of awareness and attention to ongoing events and experiences (Brown & Ryan, 2003). To better reflect this volatile process, we adopt a daily diary approach to investigate mindfulness as a *state* that fluctuates within persons, from situation to situation. This methodology provides more detailed and ecologically valid insights (cf. Hülsheger et al., 2013; Tuckey et al., 2018). Finally, our research contributes to the literature by addressing the call for studies on how individuals may *attain* a mindful state (cf. Dane, 2011; Hülsheger et al., 2018). While many scholars have focused on the mostly beneficial consequences of mindfulness, we propose that individuals may use PVM on a daily basis with the aim of achieving a state of mindfulness and, subsequently, a boost in their creative performance.

THEORETICAL BACKGROUND

Research has shown that organizations can foster employee creativity by providing an environment that is fruitful for creativity. In such an environment, for example, attention may be given to personnel selection as well as job design (e.g., Oldham & Cummings, 1996; Unsworth et al., 2005), leadership styles (e.g., Hughes et al., 2018), organizational values and climate (e.g., Anderson et al., 2014; Goncalo & Staw, 2006), and team work and composition (e.g., Goncalo & Duguid, 2012; Hülsheger et al., 2009; Miron-Spektor et al., 2011; Paulus & Yang, 2000; Sung & Choi, 2012). Traditionally, such studies have primarily adopted a top-down perspective in which relatively distal predictors of creativity (i.e., factors that are relatively far away from the creative process) are examined as antecedents of creative performance. However, such factors are less likely to explain daily, intraindividual variations in creative performance. Indeed, while selecting employees on certain personality characteristics and providing favorable work conditions may certainly offer a fruitful basis for creativity to arise, it may not always be sufficient to elicit actual creativity. More specifically, even individuals who, for example, are open to new experiences, have a considerable amount of autonomy in their work, and who are surrounded by helpful and inspiring colleagues, do not achieve the same level of creativity every day. In line with this, we direct attention to the proposition that creativity research can benefit from an additional way to unleash creativity, namely the self-regulating potential of employees who proactively stimulate their own creativity on a daily basis (De Stobbeleir et al., 2011; Op

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den Kamp et al., 2020). In support of this perspective, research has shown that proactively seeking feedback helps individuals to perform more creatively (De Stobbeleir et al., 2011; Harrison & Dossinger, 2017). De Stobbeleir et al. (2011) hinted toward the potential role of other self-regulatory, goal-driven, and proactive behaviors in the creative process. In line with this, more recent studies have linked the use of PVM to creative performance (Bakker et al., 2020; Op den Kamp et al., 2018, 2020). In the current research, we dive deeper into the PVM process and examine how it may be used by individuals to create a favorable, cognitive mindset for creativity on a day-to-day basis.

Proactivity literature

The idea that individuals are not necessarily reactive creatures has been widely adopted in the stress and coping literature. Traditionally, the coping literature focused on how individuals react to and deal with stressors and threats. However, the notion that coping may not only involve the reactions to stressful past events but may also be aimed at anticipated events in the future has gained traction among scholars (Aspinwall, 2005; Aspinwall & Taylor, 1997; Schwarzer, 2000). Similarly, literature on proactive behavior in organizational settings suggests that people may adopt a proactive approach to achieve a different future (Parker et al., 2010). This "forward time perspective" is inherent to proactive motivation and behavior (Parker et al., 2010) and has also been emphasized in earlier research on PVM (Op den Kamp et al., 2018). Accordingly, working individuals may take an active role in how they approach their work by creating favorable situations and conditions (Crant, 2000). Such proactive behavior is inherently goal-directed—aimed at changing and improving the situation or oneself—and involves self-starting and future-focused action (Parker et al., 2006). These characteristics distinguish proactive constructs from conceptually related experiences and behaviors that are more reactive, top-down, or passive in nature (Crant, 2000). The literature has put forward multiple forms of proactive behavior, including but not limited to job crafting (Tims et al., 2012; Wrzesniewski & Dutton, 2001), feedback-seeking (De Stobbeleir et al., 2011), voice (LePine & Van Dyne, 1998), and, focal to the current research, PVM (Op den Kamp et al., 2018).

PVM

To achieve proactive goals, individuals can either change the self or the environment (i.e., locus of change; Parker et al., 2010). PVM, in contrast to most proactive behaviors investigated in organizational settings, involves behavior aimed at changing aspects of the self—or more specifically, one's own physical and psychological state—to achieve optimal functioning (De Bloom et al., 2020; Op den Kamp et al., 2018). In other words, PVM involves intentional behavior consciously aimed to feel vital in order to perform well at work. As a goal-directed construct, PVM may thus be contrasted with behaviors that are, for example, performed as a health routine—for example, exercising regularly—or as a reaction to fatigue, physiological needs, or even boredom—for example, recovery and microbreaks (Fritz et al., 2011; Op den Kamp et al., 2018; Sonnentag & Fritz, 2007). The perspective that individuals may proactively promote their own functioning, such as their creative performance, is also consistent with self-regulation theory, which focuses on how individuals "guide their own goal-directed activities and performance by setting their own standards and monitoring their progress toward these standards"

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(De Stobbeleir et al., 2011, p. 812; Vohs & Baumeister, 2004). Indeed, in order to succeed in such an individual, goal-driven process, people need to use their self-regulatory skills to develop, implement, and flexibly maintain planned behavior (Balkis & Duru, 2016; Wang et al., 2021; Zimmerman, 2000). Individuals may proactively employ a wide range of strategies to manage their vitality, of which the effectiveness and favorableness may vary between individuals and from moment to moment (Op den Kamp et al., 2018; Sonnentag & Fritz, 2007; Thayer et al., 1994). In this self-regulatory process, individuals must thus develop and implement strategies, and continuously monitor and evaluate what works best for them to achieve the desired results.

The various terminology used in the literature suggests that vitality is a rich and multifaceted concept, comprised of both physical and mental components that are interlinked with each other (Lavrusheva, 2020). PVM has been conceptualized accordingly—as comprising physical, affective, and cognitive components—and may thus trigger multiple, intertwined processes that may subsequently promote creativity (cf. Lavrusheva, 2020; Op den Kamp et al., 2018; Ryan & Deci, 2008; Ryan & Frederick, 1997). In support of this theoretical framework, studies indicate that people need physical and mental energy for creativity to flourish, as physical and mental energy promote active involvement in creative behavior, and facilitate relevant steps in the creative process, such as directing attention toward relevant stimuli or thinking flexibly (e.g., Fredrickson, 2001; Kark & Carmeli, 2009; Nijstad et al., 2010). The link between PVM and creativity has been theorized and evidenced in earlier studies (Op den Kamp et al., 2018, 2020). In a closer investigation of the aforementioned underlying processes, Bakker et al. (2020) showed that the relationship between weekly PVM and creativity was mediated by work engagement (i.e., a positive, affective-motivational state of fulfillment; Schaufeli et al., 2006), thus addressing primarily the affective side of the process. However, an important part of the process may also be cognitive in nature. Indeed, it has been suggested that creativity is inherent to cognitive functioning and that noncognitive factors may impact creativity through their influence on human cognition (Nijstad et al., 2010; Ward et al., 1999). Therefore, the current research aims to focus on an alternative mechanism underlying the link between PVM and creativity by investigating the role of mindfulness.

A state of mindfulness

Mindfulness can be defined as a state of "attention to and awareness of present events and experiences" (Brown et al., 2007, p. 212), and can be contrasted with states and feelings of carelessness, mind wandering, and being on automatic pilot (cf. Brown & Ryan, 2003). The body of literature on mindfulness is quite extensive and comprises various streams of research, including Eastern literature and philosophy, clinical psychological research, and, more recently, studies on the role of mindfulness within organizations (for a review, see Good et al., 2016). Overall, research suggests that "being mindful" is positively related to favorable personal and professional outcomes. For example, a recent meta-analysis (Mesmer-Magnus et al., 2017) indicates that trait mindfulness relates positively to mental health, emotional regulation, and confidence and relates negatively to stress. Moreover, trait mindfulness relates positively to higher job satisfaction and performance and negatively to burnout and work withdrawal. Various studies have also shown a positive association between trait mindfulness and mental and physical well-being (e.g., Brown & Ryan, 2003; Mesmer-Magnus et al., 2017). In addition, even though studies on *state* mindfulness are relatively scarce, Brown and Ryan (2003) found that people felt more

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positive during states of mindfulness within the day. Theoretically, mindfulness may help people to feel healthier—both physically and mentally—especially when practiced regularly. However, higher levels of physical and mental energy may also, subsequently, help people to be more mindful and direct their attention toward present events and experiences (cf. Hülsheger et al., 2018; Tuckey et al., 2018). In line with this, we argue that PVM may relate to the emergence of a mindful state in more ways than one.

PVM involves an intentional, goal-driven process in which individuals manage valuable resources to achieve work goals by promoting favorable physical and mental states. On the days a person uses more PVM, they may have a higher capacity to be mindful. First of all, the cognitive resources generated or freed up by PVM—for example, by taking the initiative to listen to relaxing music or by intentionally going for a walk to clear one's head, or by proactively shutting of one's phone and e-mail for a while to be able to focus—may make it much easier to achieve a mindful state. This is because mindfulness requires attentional and cognitive resources that in practice are often scarce (Suelmann et al., 2018). In addition, PVM may provide the physical and mental energy needed to achieve and sustain a mindful state. Indeed, when individuals feel tired, they are less likely to attain mindfulness (Suelmann et al., 2018). Along similar lines of thought, Hülsheger et al. (2018) found that fatigue in the morning was negatively related to subsequent mindfulness states, a finding explained by the idea that people need physical and mental energy to be mindful and engage in effortful attention regulation. Finally, mindfulness may be defined as a state of consciousness in which attention is focused on present-moment phenomena occurring both externally and internally (Dane, 2011). When individuals are intentionally and actively involved in how they feel and how they can mobilize their physical and mental energy, they may automatically become more aware and attuned to such phenomena and cues (i.e., be mindful).

Hypothesis 1. Daily proactive vitality management is positively related to daily mindfulness.

Mindfulness in the creative process

A mindful state may promote creative performance on a daily basis due to several characteristics associated with mindfulness. The dual pathway model of creativity suggests that creativity is a function of cognitive flexibility and persistence (Nijstad et al., 2010). In line with this well-established theory, mindfulness has been shown to involve and promote cognitive and attentional flexibility, which enables deliberate shifting of one's focus of attention from one object or experience to another (Bishop et al., 2004; Glomb et al., 2011; Moore & Malinowski, 2009). Moreover, as mindfulness promotes alignment between goals and values, mindful states are associated with greater persistence (Glomb et al., 2011). Another important feature of mindfulness is its association with higher levels of attention and working memory capacity (e.g., Brown & Ryan, 2003; Glomb et al., 2011), which can contribute to the generation of new and original ideas. Working memory capacity promotes the creative process because it enables sustained attention focused on the task and prevents undesirable mind wandering (De Dreu et al., 2012). In contrast, *reduced* attention capacity impairs creative problem solving and leads to narrowed or stereotypical thinking (cf. Elsbach & Hargadon, 2006; Gilbert & Hixon, 1991).

Being mindful may also help individuals to perform more creatively because it involves a wide attentional breadth and increased awareness of internal and external stimuli (e.g., Brown

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et al., 2007; Dane, 2011), which may serve as relevant cues or pieces of information that promote the creative process. Finally, mindfulness may facilitate de-automatization, a process involving the discontinuation of automatic mental operations (Kang et al., 2013). The present-moment orientation and higher level of awareness that are characteristic of a mindful state help to inhibit habitual and automatic evaluations and routines and facilitate flexible and adaptive responses to events. Consequently, a mindful state may help one to overcome dominant, but uncreative, responses and open up possibilities for fresh, creative ones (cf. Bishop et al., 2004; Brown et al., 2007; Ostafin & Kassman, 2012).

> **Hypothesis 2.** Daily mindfulness is positively related to daily creative performance.

In the present research, we emphasize the importance of a proactive approach of working individuals in shaping their own work experiences (cf. Grant & Parker, 2009). People may proactively manage their vitality when they feel the need to, for example, in anticipation of challenging and busy workdays, or when pursuing creative endeavors (cf. Op den Kamp et al., 2020). We argue that the use of PVM will help individuals to reach a mindful state at work, which, in turn, relates to higher levels of creative performance. Thus, we propose that mindfulness functions as an explanatory mechanism underlying the link between daily PVM and creative performance.

> **Hypothesis 3.** On a daily basis, proactive vitality management is positively related to creative performance through a state of mindfulness.

STUDY 1

In Study 1, we test our hypotheses among working individuals using a quantitative diary study spanning five workdays. This approach advances earlier studies on the link between mindfulness and creativity, which were often cross-sectional in nature and/or employed student samples (for a meta-analysis, see Lebuda et al., 2016). Moreover, we use a general measure of daily creativity (i.e., a brainstorming task) that has often been used in previous studies to enable comparisons between our results and earlier findings. Finally, we extend previous research by focusing on an additional explanatory mechanism between proactive behaviors, such as PVM, and creative performance. Whereas Bakker et al. (2020) addressed the affective side of the process by advancing work engagement as a mediating mechanism, we aim to broaden our understanding of the PVM-creativity link by focusing on the cognitive aspect of the process. To support our investigation and the added value of the proposed cognitive mechanism, we included work engagement as a control variable in our analyses in Study 1.

METHOD

Procedure and participants

Participants were recruited via Amazon Mechanical Turk (MTurk), and were paid for their participation through this platform. To ensure high-quality data, one criterion was that participants had

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to have a good "reputation" on MTurk (i.e., above 95% approval ratings), which represents the quality of past responses and data entries in the system (cf. Peer et al., 2014). Several studies have shown that data collected through the MTurk platform are reliable and valid (e.g., Buhrmester et al., 2011; Peer et al., 2014). In the introductory message, participants were explained that the study aimed to gain insights on their daily work experiences and well-being through five daily surveys. Participants were instructed to fill out each questionnaire at the end of each working day, over the course of five consecutive workdays, requiring full-time work for participation. We asked participants to fill in their MTurk ID at the beginning of each daily survey to be able to match their responses across the 5 days. In total, 133 participants signed in to participate in our study, who eventually filled out 521 daily questionnaires in total (3.92, on average). Participants' mean age was 36.26 (SD = 10.57), and 52% of the sample was male. Of all participants, 65% held a college or university degree. Participants worked on average 41.64 h per week (SD = 6.82) in a wide range of professions and sectors, including computer and electronics (18.6%), retail (14.7%), finance and insurance (10.9%), education (6.2%), entertainment and recreation (6.2%), healthcare (5.0%), government and public administration (4.7%), hotel and food services (4.7%), or other sectors such as transportation, real estate, agriculture, and construction. The majority (74%) had a permanent employment contract (versus being a business owner or having a temporary contract), and 47% was employed in a position that involves the supervision of other employees.

Measures

PVM

We used the eight-item PVM scale developed by Op den Kamp et al. (2018). The instructions prepared participants to respond to statements about their proactive behavior toward their work. More specifically, participants were asked to report on the extent to which they had proactively managed their vitality to promote their work that day. Example items are: "Today, I made sure that I felt energetic during my work" and "Today, I motivated myself" (1 = *totally disagree*, 7 = *totally agree*). The average Cronbach's alpha over the 5 days was .96.

Mindfulness

The state version of the Mindful Attention and Awareness Scale (MAAS; Brown & Ryan, 2003) was used to measure mindfulness. The MAAS was created to assess mindfulness in the general population in samples that do not have experience with meditation or other mindfulness trainings. The five-item state version of the scale we used was validated by Brown and Ryan (2003), and suits the context and daily nature of the present study. An example item is: "Today, I found myself doing things without paying attention" (1 = *strongly disagree* to 7 = *strongly agree*; reversed scored). The average Cronbach's alpha over the five days was .95.

Creative performance

We used a brainstorming task that is conceptually based on the classical Alternate Uses Task (AUT; Guilford, 1967) to measure creative performance. Each day, participants were asked to come up with as many as possible alternative uses for a common object in 2 min. The object

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varied over the 5 days as follows: "brick" on Monday, "rope" on Tuesday, "tin can" on Wednesday, "knife" on Thursday, and "sock" on Friday. For each object, we counted the number of ideas generated by the participants (i.e., *fluency*) and originality (the extent to which the ideas are unusual and novel) on a scale from 1 (*not original*) to 5 (*highly original*). To assess reliability of the originality ratings, a second coder rated the ideas generated on Monday (for "brick") and Friday (for "sock"). The interrater agreement was high, as indicated by intraclass correlation (ICC) coefficients of .90, $p < .001$ and .91, $p < .001$, respectively (Cicchetti, 1994).

Work engagement

We used the adapted version (Breevaart et al., 2012) of the nine-item Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006) to measure daily work engagement. Example items are "Today at work, I felt bursting with energy" (vigor), "Today, I was inspired by my job" (dedication) and "Today, I was immersed in my work" (absorption) (1 = *totally disagree*, 7 = *totally agree*). The average Cronbach's alpha over the 5 days was .96.

Strategy of analysis

In our data, daily measurements were nested within persons. Therefore, we tested our hypotheses using multilevel analysis (HLM 7.01 software; Raudenbush et al., 2013). For each variable, we calculated the ICC in order to obtain the percentage of variance that can be attributed to the within-person level. The resulting percentages (i.e., 65% for originality, 41% for fluency, 44% for mindfulness, and 31% for PVM) justified the use of a multilevel design. The outcome variables (i.e., fluency and originality) and the control variable "time" remained uncentered, while PVM and mindfulness were centered at each individual's mean value (Ohly et al., 2010). To take into account the potential carry-over effects of one's prior level of mindfulness and creativity, we created lagged variables and performed a more stringent test by including these previous-day measures of the mediator (i.e., mindfulness) and outcomes (i.e., fluency and originality) in our analyses. In the multilevel analyses with either fluency or originality as the outcome, we first entered the control variables time and work engagement and the lagged variable of the respective outcome (Model 1). In the next step, we entered mindfulness (Model 2). In addition, we tested the indirect effect of PVM on creative performance through mindfulness using the Monte Carlo method for assessing multilevel mediation (Preacher & Selig, 2010). To ensure robustness of our findings, we followed the recommendation to also test our hypotheses without including any control variables (Becker et al., 2016). Without the control variables, the results supported our hypotheses in the same way—there were no differences in the direction or significance of the resulting relationships.[1]

RESULTS AND DISCUSSION

Descriptive statistics

Means, standard deviations, and correlations between the variables in Study 1 can be found in Table 1.

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TABLE 1 Descriptive statistics and within-person correlations, Study 1

Variables	M	SD	1	2	3	4	5
1. PVM	4.83	1.49	-				
2. Mindfulness	5.27	1.44	.54**	-			
3. Fluency of ideas	5.30	2.85	−.04	−.13**	-		
4. Originality of ideas	4.27	1.53	.22**	.16**	.45**	-	
5. Work engagement (control)	4.10	1.53	.59**	.47**	−.11*	.11*	-

Note: $N = 133$ persons and $n = 521$ observations. PVM = proactive vitality management.
*$p < .05$. **$p < .01$.

Multilevel confirmatory factor analyses

Prior to testing our hypotheses, we conducted a multilevel confirmatory factor analysis (MCFA) using Mplus software (Muthén & Muthén, 1998–2012). The aim of the MCFA was to examine the measurement model and check for construct validity and independence of our variables, as well as to test thoroughly whether we could empirically distinguish the predictor in our model (PVM) from the mediator (mindfulness).

We modeled both the within- and between-person covariance matrices simultaneously and included latent factors for PVM (eight items) and mindfulness (five items). The outcome variables originality and fluency are both represented by singular indicators (i.e., scores) and were thus included in the model as observed variables. This multilevel model, in which all items of the variables in our model loaded on their respective latent factors, fit the data well (CFI = .96, TLI = .96, RMSEA = .04, SRMR within = .05, SRMR between = .06). In addition, all factor loadings were significant ($p < .001$). Finally, this model fit the data significantly better than an alternative model in which the items of PVM and mindfulness loaded on one overall latent factor ($\Delta\chi^2 = 879.80$, $\Delta df = 6$, $p < .001$). Taken together, these results show that, besides theoretically, PVM can also empirically be distinguished from daily mindfulness.

Hypotheses testing

Hypothesis 1 stated that daily PVM is positively related to daily mindfulness. Results of the multilevel analyses showed that participants indeed experienced more mindfulness on days that they proactively managed their vitality ($\gamma = .68$, SE = .07, $p < .01$). These findings provide support for Hypothesis 1. We proceeded by testing Hypothesis 2, which stated that daily mindfulness relates positively to daily creative performance. To correct for possible effects of the number of ideas (fluency) on the originality ratings of the ideas, we controlled for fluency in the analyses with originality as the outcome variable. Daily mindfulness was not significantly related to the number of ideas (fluency) on the daily brainstorming task ($\gamma = .07$, SE = .16, $p = .666$) but it was positively and significantly related to the originality of those ideas ($\gamma = .24$, SE = .08, $p < .01$; see Table 2). Moreover, the findings indicated that mindfulness explained additional variance in originality over and above the variance explained by work engagement. Overall, these findings provide partial support for Hypothesis 2.

Finally, we used the Monte Carlo method (Preacher & Selig, 2010) to examine the hypothesized role of mindfulness as an explanatory mechanism underlying the link between PVM and

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TABLE 2 Results of multilevel analyses, Study 1 (outcome = creative performance: fluency and originality)

	Fluency				Originality			
	Model 1		Model 2		Model 1		Model 2	
Variables	γ	SE	γ	SE	γ	SE	γ	SE
Intercept	5.43**	.37	5.54**	.36	4.30**	.19	4.33**	.20
Time (weekday)	−.05	.09	−.05	.09	−.01	.04	−.01	.05
Fluency					.35**	.05	.36**	.04
Lagged fluency	.62**	.04	.62**	.05				
Lagged originality					.06	.04	.08*	.04
Work engagement	−.40*	.18	−.44	.22	.31**	.08	.16	.09
Mindfulness			.07	.21			.24**	.08
Pseudo ΔR^2	14%		1%		23%		5%	

*$p < .05$. **$p < .01$.

creative performance. Significant indirect effects are indicated by confidence intervals that do not include zero. In line with the former findings, the results showed an insignificant indirect effect of PVM on fluency through mindfulness (−.07, CI 95% [−.20, .05]) and a positive indirect effect of PVM on originality through mindfulness (.11, CI 95% [.01, .19]). These findings provide partial support for Hypothesis 3. Overall, the results show that proactively managing physical and mental energy for work relates positively to daily states of mindfulness, which related positively to the originality of ideas. For an overview of the results from Study 1, see Figure 1.

STUDY 2

The findings from Study 1 suggested that a proactive, goal-oriented approach regarding one's own physical and mental energy may help employees in various sectors to be more mindful and to produce ideas that are more creative. In Study 2, we aimed to replicate these findings in a daily diary study among working people in the creative industry, who are evaluated on their daily creative output by their supervisors. In order to achieve a constructive replication study (Köhler & Cortina, 2021), Study 2 thus involves a sample highly relevant for an examination of creative performance, along with the use of a more "context-specific" measure of creative work performance. In addition, we take a critical look by taking into account the potential influence of the work environment on creative performance by controlling for job characteristics that may be of influence in the PVM—creativity process (Köhler & Cortina, 2021).

METHOD

Procedure and participants

Data collection took place in Germany. The sample consisted of 62 employees from 13 creative agencies in northern Germany, ranging in size from small ones (<10 employees) to some bigger

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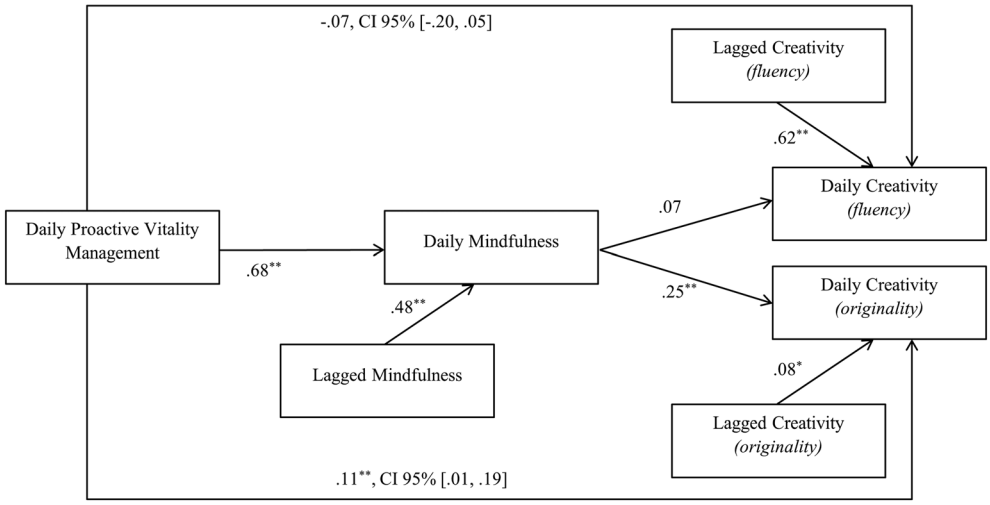

FIGURE 1 Overview of the findings from Study 1. Note. *$p < .05$, **$p < .01$

ones with approximately 50 employees. Work tasks of the participants ranged from activities such as designing magazine layouts, advertisements, commercials, and webpages, to counseling services for customers (suggesting and conceptualizing creative design solutions, such as advertising campaigns) and administrative tasks. The agencies were approached by a graduate student via phone or e-mail with information about the study and the request for their participation. To encourage participation, the creative agencies were offered to receive a data report after completion of the study. Data was collected online, using the Questback platform. Participants received daily links to the surveys via e-mail, which they could fill out via their smartphone or computer. They were instructed to fill in the surveys each day between 6 p.m. and 12 p.m. To be able to match their daily entries, participants filled out a predefined code in each survey. Which supervisor would be most suitable to rate which employee—that is, in terms of how closely they worked together—was discussed prior to the study. The creative performance ratings of the supervisors were matched with the employee data with the use of the same predefined codes provided to the supervisors by the participating employees.

Of the total sample, 58.1% were female. On average, participants were 32.9 years old (SD = 9.3) and had 10.3 years of work experience (SD = 9.3). Of the participants, 50% had obtained a middle or high school degree, whereas the other 50% had finished college or university. The majority of the sample held a permanent position (72.6%) as opposed to a temporary contract. Participants were asked to fill out the daily surveys at the end of each workday throughout the course of one typical work week. In total, the 62 participants filled out 232 daily surveys (3.74 on average). Through means of the personal code participants filled in at the beginning of each survey, we were able to match their daily responses. In case there was no pre-existing German version of the measurement instruments available, we translated the items to German using back-translation.

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Measures

PVM

We measured daily PVM with the same instructions and items as in Study 1. The average Cronbach's alpha over the 5 days was .89.

Mindfulness

We measured state mindfulness with the same scale as in Study 1, this time using the German version of the scale (Michalak et al., 2008). The average Cronbach's alpha over the 5 days was .90.

Creative work performance

Supervisors of the participants assessed daily creative work performance with five items from the creativity scale of Tierney et al. (1999), adjusted to the daily level. Four items were dropped from the original scale because they either were not applicable to the work tasks of the participants in the current sample or did not capture creative behavior that occurs every day (e.g., "generated ideas revolutionary to our field"). Examples of the items that were used in the study are: "Today, this employee tried out new ideas and approaches to problems" and "Today, this employee generated novel, but operable work-related ideas" (1 = *strongly disagree*, 7 = *strongly agree*). The average Cronbach's alpha over the 5 days was .83.

Control variables

We included workload and job autonomy into our investigation as control variables, as both these job characteristics have been shown to predict creativity (e.g., Binnewies & Wörnlein, 2011; Ohly & Fritz, 2010). In addition, higher levels of job autonomy may provide an individual with more opportunities to engage in preferential strategies of PVM on a daily basis. Moreover, individuals may use PVM on a daily basis to deal with higher levels of workload. Furthermore, daily workload may impact daily levels of creative work performance. Working in the creative industry may require one to perform creatively in general (i.e., general creativity requirement; Unsworth et al., 2005), but daily fluctuations in workload may represent the relative necessity to display creativity on particular days (i.e., daily creativity requirement). We measured job autonomy and workload on a daily basis using three items for each variable developed by Bakker et al. (2004), based on Karasek's (1985) job content instrument. An example item for job autonomy is "Today, I could decide by myself how to execute my work" (1 = *totally disagree*, 5 = *totally agree*). The average Cronbach's alpha for job autonomy was .86. An example item for workload was "Today, I had to work very fast." The average Cronbach's alpha for workload was .94.

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Strategy of analysis

In Study 2, we used a similar analytical approach as described in Study 1. The data in Study 2 again comprised a multilevel structure but this time with three levels: Workdays nested within persons who were, in turn, nested within different agencies/organizations. Therefore, we added an extra level in our multilevel model, and we calculated the proportion of variance explained by the within-person level with reference to level 2 (person) and level 3 (agency). The findings supported our multilevel approach, with percentages of 51% for mindfulness, 59% for PVM, and 48% for the supervisor ratings of creative work performance. Throughout the analyses, all daily variables except time and the outcome variable were centered at each individual's mean value (Ohly et al., 2010). To take into account the potential carry-over effects of one's prior level of mindfulness and creativity, we created lagged variables and performed a more stringent test by including these previous-day measures of the mediator (i.e., mindfulness) and outcomes (i.e., creative work performance) in our analyses. As the control variable job autonomy did not relate significantly to the outcome or the predictor in our model, we dropped it from further analyses. Similar to Study 1, we also tested our hypotheses without including any control variables (Becker et al., 2016). Without the control variables, the results supported our hypotheses in the same way—there were no differences in the direction or significance of the resulting relationships.

RESULTS AND DISCUSSION

Descriptive statistics

Means, standard deviations, and correlations between the study variables can be found in Table 3.

Multilevel confirmatory factor analyses

Similar to Study 1, we conducted MCFAs to examine the measurement model and check for construct validity and independence of our variables, as well as to test thoroughly whether we could empirically distinguish the predictor in our model (PVM) from the mediator (mindfulness). We modeled both the within- and between-person covariance matrices simultaneously

TABLE 3 Descriptive statistics and within-person correlations, Study 2

Variables	M	SD	1	2	3	4	5
1. PVM	4.49	1.18	-				
2. Mindful attention	5.37	1.39	.21**	-			
3. Creative work performance (supervisor)	4.95	1.04	.16*	.22**	-		
4. Workload (control)	4.48	1.84	.32	.13*	.11	-	
5. Job autonomy (control)	5.20	1.36	.31**	.23**	.06	−.07	-

Abbreviation: PVM, proactive vitality management.
*$p < .05$. **$p < .01$.

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and included latent factors for PVM (eight items), mindfulness (five items), and creative work performance (five items). The fit of the multilevel model in which all items of the variables in our model loaded on their respective latent factors was reasonable (CFI = .91, TLI = .89, RMSEA = .05, SRMR within = .08, SRMR between = .13). Furthermore, all factors had significant factor loadings ($p < .001$). In addition, this model fit the data significantly better than an alternative model in which the items of PVM and mindfulness loaded on one factor ($\Delta\chi^2 = 153.56$, $\Delta df = 4$, $p < .001$). Overall, these results show that besides theoretically, PVM can also be distinguished from daily mindfulness empirically.

Hypotheses testing

Hypothesis 1 stated that daily PVM is positively related to daily states of mindfulness. Results of the multilevel analysis were in support of this hypothesis ($\gamma = .42$, SE = .08, $p < .01$). Hypothesis 2 stated that daily mindfulness is positively related to daily creative work performance. In support of this hypothesis, the multilevel results showed a positive relationship between daily mindfulness and creative work performance as assessed by supervisors ($\gamma = .17$, SE = .08, $p < .05$; Table 4). Finally, in line with Hypothesis 3, there was a positive indirect effect of PVM on creative work performance through mindfulness (.12, CI 95% [.02, .18]).

Summing up, the results show that daily PVM related to daily mindfulness, which, in turn, related to higher levels of creative work performance. Overall, we were thus able to replicate the findings of Study 1 in this new study. For an overview of the results of Study 2, see Figure 2.

GENERAL DISCUSSION

In the present research, we aimed to integrate the proactivity, mindfulness, and creativity literatures to describe a process in which individuals may proactively promote their own creativity on a daily basis by purposefully managing their vitality for work and thereby altering their state of mind. Replicated findings from two daily diary studies among working individuals largely supported our hypotheses, emphasizing the added value of a proactive approach in the creative process. In what follows, we will discuss the theoretical contributions of our research.

TABLE 4 Results of multilevel analyses study 2 predicting supervisor-ratings of creative work performance

	Model 1		Model 2	
Variables	**γ**	**SE**	**γ**	**SE**
Intercept	4.79**	.12	4.80**	.12
Time (weekday)	.11*	.04	.12**	.04
Workload	.07	.07	.14	.08
Lagged creative work performance	.39**	.07	.34**	.07
Mindful attention			.17*	.08
Pseudo ΔR^2	20%		7%	

*$p < .05$. **$p < .01$.

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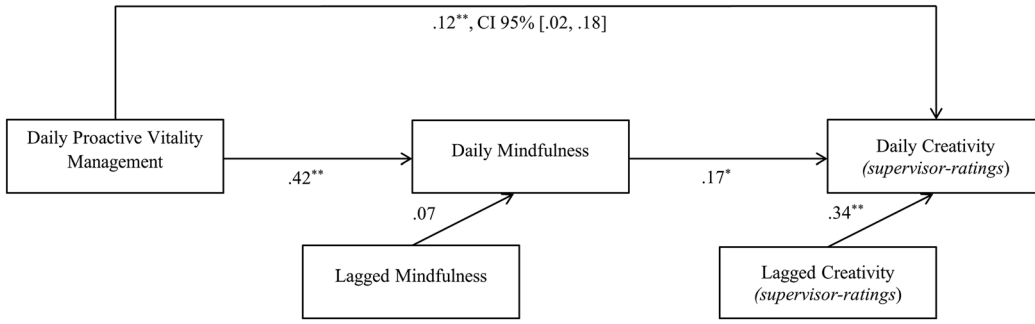

FIGURE 2 Overview of the findings from Study 2. Note. *$p < .05$, **$p < .01$

Theoretical contributions

The creativity literature is quite extensive, and scholars have provided many insights into factors that may either benefit or harm creative performance. Traditionally, creativity studies have employed top-down perspectives and a focus on distal predictors of creativity that are relatively far away from the creative process, such as personality and job characteristics (e.g., Anderson et al., 2014; Shalley & Gilson, 2004). However, such factors are less likely to explain daily, intra-individual variations in creative performance. Moreover, researchers have theorized and shown the importance of individuals' self-regulatory and proactive behaviors in the creative process (Bakker et al., 2020; De Stobbeleir et al., 2011; Op den Kamp et al., 2018, 2020). This perspective contributes to and integrates proactivity and creativity literatures and alludes to a potential interplay in the creative process between more distal contextual factors on the one hand and daily proactive behaviors on the other hand. For example, the effective management of physical and mental energy on a day-to-day basis may, on those days, enable individuals to enact and make optimal use of potentially fruitful contextual conditions for creativity that are available to them, such as supportive colleagues and useful resources (cf. Daniels, 2006).

Our research provides additional support for proactive motivation theory, which states that individuals may initiate goal-directed behavior to change aspects of the self or the environment (i.e., locus of change) in order to achieve a different future (Parker et al., 2010). Accordingly, we have investigated a proactive process where individuals change aspects of the self (i.e., their physical and mental energy) to achieve a different future (i.e., optimal functioning in terms of creative performance). Our findings address the call for insights into the consequential processes of proactive behavior—or how a certain type of proactivity may bring about a certain type of "change" (cf. Parker et al., 2010). In this case, we aimed to explore a process in which PVM relates to changes in how individuals feel and perform on certain days relative to other days.

Our research builds further upon previous work by Op den Kamp et al. (2018, 2020) and Bakker et al. (2020), who showed that PVM is positively related to creativity. Our findings corroborate and complement these earlier studies by providing a more detailed look and robust test of the process with a constructive daily diary replication involving various samples and objective and dual-source measures of creativity. Besides such methodological considerations, our research theoretically expands upon these earlier studies as well. More specifically, we have focused on an additional explanatory mechanism between PVM and creative performance. Indeed, based on the vitality literature, PVM has been conceptualized as an overarching

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construct—comprising physical, affective, and cognitive components—that may trigger multiple, intertwined processes that may subsequently promote creativity (cf. Lavrusheva, 2020; Op den Kamp et al., 2018; Ryan & Deci, 2008; Ryan & Frederick, 1997). Whereas Bakker et al. (2020) addressed the affective side of the process by advancing work engagement as a mediating mechanism, we aimed to broaden our understanding of the PVM-creativity link by focusing on the cognitive aspect of the process. The findings suggest that mindfulness plays an important role in connecting PVM to creative outcomes—even over and above the influence of work engagement—supporting the proposed cognitive mechanism.

Even though studies sometimes focus on vitality's either physical or mental components and effects, the components are intertwined (Lavrusheva, 2020). Accordingly, we propose that the cognitive, affective, and physical processes spurred by PVM are partly overlapping and may occur simultaneously. For example, physical energy may play a role in the process of activated positive affect and may also enable a fresh pair of eyes and headspace. At the same time, some aspects of the different processes may be rather unique. For example, feeling physically energetic is not necessarily accompanied by happiness, and being able to focus well need not require one to experience positive affect. With regard to the current research focus, we propose that the relative importance of a primarily affective versus a cognitive mechanism in the PVM-creativity process may also depend on person and situation. For example, individuals who tend to mind wander a lot—providing them with valuable inspirational thoughts—may sometimes require the attention and clarity inherent to being mindful to bring the ideas into focus and develop them further. At other times, individuals may especially benefit from activated positive energy or moods (e.g., joy and enthusiasm) that broaden their thought-action repertoires to become inspired and invest resources into the creative process (e.g., Amabile et al., 2005; Fredrickson, 2001). Future research may take a closer look specifically at how physical energy plays a role in the process, as studies have indicated a link between PVM and physical energy (Bălăceanu et al., 2021; Op den Kamp et al., 2018; Ye et al., 2020) and between physical energy and creativity (e.g., Atwater & Carmeli, 2009). Even though the processes may be intertwined, focusing in more detail on the various potential underlying mechanisms in such a valuable process may bring more detailed theoretical and practical suggestions on how individuals promote their own creativity on a daily basis through their own intentional behaviors.

While many scholars have focused on the consequences and potential benefits of mindfulness, only a few studies so far have examined how experiences of mindfulness can be promoted (Dane, 2011; Hülsheger et al., 2018). Traditionally, mindfulness was seen as a phenomenon that could be reached by practicing meditation. Yet, the emergence of a mindful state does not necessarily require meditation (Brown & Ryan, 2003); it can be reached by anyone who focuses "their attention on events and phenomena *transpiring* in the present moment" (Dane, 2011, p. 998). We have argued that PVM may facilitate the emergence of a mindful state through its intentional, goal-driven nature and by supplying the cognitive and energetic resources needed to achieve and sustain a mindful state. Accordingly, we have addressed the scarcity of insights on the origin of fluctuations in mindfulness by putting forward PVM as a behavior that may promote daily states of mindfulness.

Our findings clearly indicate that on days participants proactively managed their vitality, they experienced more mindfulness at work. In turn, they unexpectedly did not generate more ideas during a brainstorming task at the end of the day in Study 1, but their ideas were more creative nonetheless. Although these findings were unexpected, fluency and originality can be seen as correlated but highly separable constructs (Dumas & Dunbar, 2014). Indeed, fluency is not a sufficient nor necessary requirement for originality (Cotter et al., 2020; Runco

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et al., 2011), and one may argue that the most important feature of creativity is whether the ideas are, in fact, original (Dumas & Dunbar, 2014; Runco et al., 2011). The nature of the brainstorming task used in Study 1 may have evoked a creative expectation among participants, potentially reducing variation in the number of ideas they reported. The findings suggest that a state of mindfulness may pave the way for more focus and efficiency in the creative process, which may (partially) be due to "de–automatization"—facilitated by mindfulness (Kang et al., 2013). Engaging in mindful reasoning may have helped the participants to think clearly and to overcome habitual and dominant but uncreative responses (cf. Bishop et al., 2004; Brown et al., 2007; Zedelius & Schooler, 2015).

A similar pattern emerged in the second study among workers in the creative industry, whose creative work performance was evaluated by their supervisors. On days that the participants proactively managed their physical and mental energy for work, they were more mindful, and their work was assessed as more creative. Overall, these findings corroborate earlier research on the mindfulness-creativity link (Lebuda et al., 2016). However, some studies have shown inconsistent or inconclusive results regarding the benefits of mindfulness for creativity (e.g., Baas et al., 2014). As both mindfulness and creativity are relatively complex and multidimensional constructs, it is not surprising that their relationship may be complex as well. Moreover, methodology may play a role. Although there are a few daily diary studies on mindfulness (e.g., Haun et al., 2018; Hülsheger et al., 2013), the link between mindfulness and creativity has not been studied on a within-person or daily level. Research has shown little or no relationship between trait and state mindfulness (Bravo et al., 2018; Thompson & Waltz, 2007), and because mindfulness is *inherently* concerned with varying levels of awareness and attention to ongoing events and experiences (Brown & Ryan, 2003), a diary approach that captures fluctuations in mindfulness seems highly suitable to examine this phenomenon. Indeed, it has been argued that between-person variation may not be used as a surrogate for within-person variation, and that the correlates and causes of between-person and within-person variation need to be analyzed as distinct phenomena (Brose et al., 2015; Molenaar, 2004). In turn, examining such daily fluctuations in state mindfulness in relation to fluctuations in creative performance may yield different results than studies involving trait measures of mindfulness and/or general creative potential (cf. Lebuda et al., 2016; Molenaar, 2004).

Our findings further contribute to this ongoing discussion regarding the role of executive processing in the creative process (cf. Barr et al., 2015; Smeekens & Kane, 2016). For example, some studies have shown that states of *mindlessness*, such as mind wandering, may promote creative insight (Baird et al., 2012). While mindfulness and mind wandering are usually seen as polar opposites (Mrazek et al., 2012), both are suggested to involve a relatively wide attentional breadth (Dane, 2011). An important feature distinguishing mindfulness from mind wandering is its present-moment orientation characterized by increased awareness and attention to ongoing events and stimuli. Even though unconscious thought (e.g., during mind wandering and incubation periods) can help to form relevant associations and gain inspiration, conscious thought is needed to bring the associations into awareness and to actually come up with the solutions, ideas, and/or new creations (Zhong et al., 2008). On a daily level, working individuals seem to benefit from the higher consciousness, attention, and awareness associated with a mindful state to perform creatively (cf. Brown & Ryan, 2003). Moreover, mind wandering may sometimes even be undesired, especially in work settings where people need to be able to focus on their work and produce results. Future research may build further on our findings to yield insights on a potentially ideal balance between valuable mind wandering on the one hand and mindful attention and awareness on the other hand (cf. Mrazek et al., 2012; Wiley & Jarosz, 2012).

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Strengths and limitations

Scholars have called for research taking into account the various aspects, levels, and forms of creativity in relation to mindfulness (Lebuda et al., 2016). Addressing this call, we have tested our hypotheses and replicated our results in two daily dairy studies among working individuals. Moreover, we measured creative performance with both a domain-general measure of creativity (i.e., brainstorming task) and a more context-specific measure of creative performance in the workplace, as rated by supervisors. This approach allows us to bridge laboratory and field research to some extent. Indeed, the present research is the first to examine *daily* performance on a brainstorming task (i.e., spanning multiple days). In addition, we asked supervisors to rate their employees' creative work performance to increase the relative objectivity of the ratings. Using supervisor ratings is a common practice in creativity research in work settings, even though there can be pitfalls to this method as well. Supervisors are only able to report on visible manifestations of creativity, while creativity may not always be visible to others because the creative process involves many internal psychological processes as well.

Overall, our approach has enabled a detailed examination and replication of our findings, which show a relatively robust, daily pattern in which PVM is related to creative performance through states of mindfulness. However, our research is not without limitations. First, we cannot infer causality from our findings, as doing so would warrant the experimental manipulation of PVM. In the present research, we were interested in processes and experiences that take place naturally and simultaneously, on the same day. Accordingly, the findings indicate that daily fluctuations in PVM are indirectly related to daily fluctuations in creative outcomes, linked together via daily fluctuations in mindfulness. In addition, scholars have argued that there is good reason to assume causation in the mindfulness-creativity link (cf. Lebuda et al., 2016). Nevertheless, future research may aim to implement an intervention encouraging working individuals to engage in PVM and examine its effects on (daily) states of mindfulness and creative performance. For example, an intervention focused on awareness and instruction may involve a workshop in which participants in the experimental group learn about their well-being in relation to work, and about how they can proactively improve this from day to day. During the training, participants may set personal goals and come up with various initiatives they can take to be physically active and get involved in interesting activities with the aim to feel energized and motivated.

Another limitation is the sole focus on mindful attention and awareness as a mechanism in the link between PVM and creativity, without examining the influence of other cognitive states (e.g., mind wandering). Moreover, mindfulness was measured using the MAAS (Brown & Ryan, 2003), which has sometimes yielded inconsistent findings in previous creativity studies. However, previous studies involved different research designs than ours (e.g., of cross-sectional nature), whereas the MAAS seems highly suitable to measure within-person fluctuations in mindfulness. In the future, though, scholars may want to draw comparisons by using different measures of mindfulness and by examining the influence of other cognitive or psychological states on creative performance as well.

Finally, our daily diary design allowed us to take a close look at and examine within-person fluctuations in PVM, mindfulness, and creativity. However, one may argue that these phenomena may also fluctuate *within* the day. Future studies could therefore zoom in on this process even further by adopting an experience sampling method (i.e., measuring variables multiple times within a day; Beal, 2015).

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Practical implications

Our findings suggest that not only individuals working in the creative industry but also employees from a wide range of professions and industries may take control over their own levels of vitality to promote their creativity. To stimulate this process, individuals may aim to develop self-awareness and insight regarding when and how to effectively manage their own levels of physical and mental energy for work (cf. Op den Kamp et al., 2020). For example, it could be beneficial to think about situations in which physical and mental energy is particularly scarce and/or valuable and to try out strategies that may help to manage vitality effectively. In addition, organizations may play a facilitative and empowering role to encourage their employees to engage in PVM. Such a proactive "growth" mindset may be promoted by, for example, emphasizing, praising, and rewarding effort (as opposed to results) and by allowing employees to set their own challenging yet attainable (creative) goals. In addition, organizations may provide their employees with opportunities to purposefully manage their vitality for work, corresponding to their own personal needs and preferences (cf. Trougakos & Hideg, 2009). Examples of such strategies may include going for a walk to clear their mind or to seek inspiration (Oppezzo & Schwartz, 2014), incorporating "quiet hours" in a workday to be able to focus (König et al., 2013), or listening to their favorite music while working to promote an energized and driven mindset (Lesiuk, 2005). As such, organizations may aim to complement valuable top-down approaches to promote creativity with the opportunity for a "bottom-up" approach in which individuals take control themselves in creating healthy circumstances for creativity to arise.

Conclusion

While some people may generally display more creativity than others, all individuals have some creative potential (cf. Amabile, 1997). This perspective implies that each person may aim to unleash their own creative potential to promote growth and innovation. The present research suggests that people do not need to wait for uncontrollable "AHA-moments" but may proactively create a mindset in which creativity can flourish on a daily basis by managing their levels of physical and mental energy.

ENDNOTE

[1] The results without the control variables may be requested from the first author.

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CONFLICT OF INTEREST

The authors do not have any potential conflict of interest.

ETHICS STATEMENT

All procedures performed in this study were in accordance with American Psychological Association (APA) ethical regulations regarding the treatment of human participants.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

Amabile, T. M. (1997). Motivating creativity in organizations: On doing what you love and loving what you do. *California Management Review*, *40*, 39–58. https://doi.org/10.2307/41165921

Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. (2005). Affect and creativity at work. *Administrative Science Quarterly*, *50*, 367–403. https://doi.org/10.2189/asqu.2005.50.3.367

Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations a state of-the science review, prospective commentary, and guiding framework. *Journal of Management*, *40*(5), 1297–1333. https://doi.org/10.1177/0149206314527128

Aspinwall, L. G. (2005). The psychology of future-oriented thinking: From achievement to proactive coping, adaptation, and aging. *Motivation and Emotion*, *29*(4), 203–235. https://doi.org/10.1007/s11031-006-9013-1

Aspinwall, L. G., & Taylor, S. E. (1997). A stitch in time: Self-regulation and proactive coping. *Psychological Bulletin*, *121*(3), 417–436. https://doi.org/10.1037/0033-2909.121.3.417

Atwater, L., & Carmeli, A. (2009). Leader–member exchange, feelings of energy, and involvement in creative work. *The Leadership Quarterly*, *20*(3), 264–275. https://doi.org/10.1016/j.leaqua.2007.07.009

Baas, M., Nevicka, B., & Ten Velden, F. S. (2014). Specific mindfulness skills differentially predict creative performance. *Personality and Social Psychology Bulletin*, *40*(9), 1092–1106. https://doi.org/10.1177/0146167214535813

Baird, B., Smallwood, J., Mrazek, M. D., Kam, J. W., Franklin, M. S., & Schooler, J. W. (2012). Inspired by distraction: Mind wandering facilitates creative incubation. *Psychological Science*, *23*(10), 1117–1122. https://doi.org/10.1177/0956797612446024

Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands—Resources model to predict burnout and performance. *Human Resource Management*, *43*, 83–104. https://doi.org/10.1002/hrm.20004

Bakker, A. B., Petrou, P., Op den Kamp, E. M., & Tims, M. (2020). Proactive vitality management, work engagement, and creativity: The role of goal orientation. *Applied Psychology*, *69*(2), 351–378. https://doi.org/10.1111/apps.12173

Bălăceanu, A., Vîrgă, D., & Sârbescu, P. (2021). Psychometric evaluation of the proactive vitality management scale: Invariance, convergent, and discriminant validity of the Romanian version. *Evaluation & the Health Professions*. Advance online publication. https://doi.org/10.1177/0163278721998421

Balkis, M., & Duru, E. (2016). Procrastination, self-regulation failure, academic life satisfaction, and affective well-being: Underregulation or misregulation form. *European Journal of Psychology of Education*, *31*(3), 439–459. https://doi.org/10.1007/s10212-015-0266-5

Barr, N., Pennycook, G., Stolz, J. A., & Fugelsang, J. A. (2015). Reasoned connections: A dual- process perspective on creative thought. *Thinking & Reasoning*, *21*(1), 61–75. https://doi.org/10.1080/13546783.2014.895915

Beal, D. J. (2015). ESM 2.0: State of the art and future potential of experience sampling methods in organizational research. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*(1), 383–407. https://doi.org/10.1146/annurev-orgpsych-032414-111335

Becker, T. E., Atinc, G., Breaugh, J. A., Carlson, K. D., Edwards, J. R., & Spector, P. E. (2016). Statistical control in correlational studies: 10 essential recommendations for organizational researchers. *Journal of Organizational Behavior*, *37*(2), 157–167. https://doi.org/10.1002/job.2053

14640597, 2023, 2, Downloaded from https://iaap-journals.onlinelibrary.wiley.com/doi/10.1111/apps.12399 by Uva Universiteitsbibliotheek, Wiley Online Library on [20/12/2023]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Binnewies, C., & Wörnlein, S. C. (2011). What makes a creative day? A diary study on the interplay between affect, job stressors, and job control. *Journal of Organizational Behavior*, *32*(4), 589–607. https://doi.org/10.1002/job.731

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., ... Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, *11*(3), 230–241. https://doi.org/10.1093/clipsy.bph077

Bravo, A. J., Pearson, M. R., Wilson, A. D., & Witkiewitz, K. (2018). When traits match states: Examining the associations between self-report trait and state mindfulness following a state mindfulness induction. *Mindfulness*, *9*(1), 199–211. https://doi.org/10.1007/s12671-017-0763-5

Breevaart, K., Bakker, A. B., Demerouti, E., & Hetland, J. (2012). The measurement of state work engagement: A multilevel factor analytic study. *European Journal of Psychological Assessment*, *28*(4), 305–312. https://doi.org/10.1027/1015-5759/a000111

Brose, A., Voelkle, M. C., Lövdén, M., Lindenberger, U., & Schmiedek, F. (2015). Differences in the between–person and within–person structures of affect are a matter of degree. *European Journal of Personality*, *29*(1), 55–71. https://doi.org/10.1002/per.1961

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, *18*(4), 211–237. https://doi.org/10.1080/10478400701598298

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazons mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, *6*(1), 3–5. https://doi.org/10.1177/1745691610393980

Chen, F., & Sengupta, J. (2014). Forced to be bad: The positive impact of low-autonomy vice consumption on consumer vitality. *Journal of Consumer Research*, *41*(4), 1089–1107. https://doi.org/10.1086/678321

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, *6*(4), 284–290. https://doi.org/10.1037/1040-3590.6.4.284

Cotter, K. N., Ivcevic, Z., & Moeller, J. (2020). Person-oriented profiles of originality and fluency in divergent thinking responses. *Journal of Research in Personality*, *86*, 103941. https://doi.org/10.1016/j.jrp.2020.103941

Crant, J. M. (2000). Proactive behavior in organizations. *Journal of Management*, *26*(3), 435–462. https://doi.org/10.1177/014920630002600304

Dane, E. (2011). Paying attention to mindfulness and its effects on task performance in the workplace. *Journal of Management*, *37*(4), 997–1018. https://doi.org/10.1177/0149206310367948

Daniels, K. (2006). Rethinking job characteristics in work stress research. *Human Relations*, *59*(3), 267–290. https://doi.org/10.1177/0018726706064171

De Bloom, J., Vaziri, H., Tay, L., & Kujanpää, M. (2020). An identity-based integrative needs model of crafting: Crafting within and across life domains. *Journal of Applied Psychology*, *105*(12), 1423–1446. https://doi.org/10.1037/apl0000495

De Dreu, C. K., Nijstad, B. A., Baas, M., Wolsink, I., & Roskes, M. (2012). Working memory benefits creative insight, musical improvisation, and original ideation through maintained task-focused attention. *Personality and Social Psychology Bulletin*, *38*(5), 656–669. https://doi.org/10.1177/0146167211435795

De Stobbeleir, K. E., Ashford, S. J., & Buyens, D. (2011). Self-regulation of creativity at work: The role of feedback-seeking behavior in creative performance. *Academy of Management Journal*, *54*(4), 811–831. https://doi.org/10.5465/amj.2011.64870144

Dumas, D., & Dunbar, K. N. (2014). Understanding fluency and originality: A latent variable perspective. *Thinking Skills and Creativity*, *14*, 56–67. https://doi.org/10.1016/j.tsc.2014.09.003

Elsbach, K. D., & Hargadon, A. B. (2006). Enhancing creativity through "mindless" work: A framework of workday design. *Organization Science*, *17*, 470–483. https://doi.org/10.1287/orsc.1060.0193

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218–226. https://doi.org/10.1037/0003-066X.56.3.218

Fritz, C., Lam, C. F., & Spreitzer, G. M. (2011). Its the little things that matter: An examination of knowledge workers energy management. *The Academy of Management Perspectives*, *25*, 28–39.

14640597, 2023, 2, Downloaded from https://iaap-journals.onlinelibrary.wiley.com/doi/10.1111/apps.12399 by Uva Universiteitsbibliotheek, Wiley Online Library on [20/12/2023]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Gilbert, D. T., & Hixon, J. G. (1991). The trouble of thinking: Activation and application of stereotypic beliefs. *Journal of Personality and Social Psychology*, *60*(4), 509–517. https://doi.org/10.1037/0022-3514.60.4.509

Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011). Mindfulness at work. In J. Martocchio, H. Liao, & A. Joshi (Eds.), *Research in personnel and human resource management* (pp. 115–157). Emerald Group Publishing Limited. https://doi.org/10.1108/S0742-7301(2011)0000030005

Goncalo, J. A., & Duguid, M. M. (2012). Follow the crowd in a new direction: When conformity pressure facilitates group creativity (and when it does not). *Organizational Behavior and Human Decision Processes*, *118*, 14–23. https://doi.org/10.1016/j.obhdp.2011.12.004

Goncalo, J. A., & Staw, B. M. (2006). Individualism–collectivism and group creativity. *Organizational Behavior and Human Decision Processes*, *100*, 96–109. https://doi.org/10.1016/j.obhdp.2005.11.003

Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., ... Lazar, S. W. (2016). Contemplating mindfulness at work: An integrative review. *Journal of Management*, *42*, 114–142. https://doi.org/10.1177/0149206315617003

Grant, A. M., & Parker, S. K. (2009). Redesigning work design theories: The rise of relational and proactive perspectives. *The Academy of Management Annals*, *3*(1), 317–375. https://doi.org/10.5465/19416520903047327

Guilford, J. P. (1967). *The nature of human intelligence*. McGraw-Hill.

Harari, M. B., Reaves, A. C., & Viswesvaran, C. (2016). Creative and innovative performance: A meta-analysis of relationships with task, citizenship, and counterproductive job performance dimensions. *European Journal of Work and Organizational Psychology*, *25*, 495–511. https://doi.org/10.1080/1359432X.2015.1134491

Harrison, S. H., & Dossinger, K. (2017). Pliable guidance: A multilevel model of curiosity, feedback seeking, and feedback giving in creative work. *Academy of Management Journal*, *60*(6), 2051–2072. https://doi.org/10.5465/amj.2015.0247

Haun, V. C., Nübold, A., & Bauer, A. G. (2018). Being mindful at work and at home: Buffering effects in the stressor–detachment model. *Journal of Occupational and Organizational Psychology*, *91*, 385–410. https://doi.org/10.1111/joop.12200

Hughes, D. J., Lee, A., Tian, A. W., Newman, A., & Legood, A. (2018). Leadership, creativity, and innovation: A critical review and practical recommendations. *The Leadership Quarterly*, *29*, 549–569. https://doi.org/10.1016/j.leaqua.2018.03.001

Hülsheger, U. R., Alberts, H. J., Feinholdt, A., & Lang, J. W. (2013). Benefits of mindfulness at work: The role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of Applied Psychology*, *98*, 310–325. https://doi.org/10.1037/a0031313

Hülsheger, U. R., Anderson, N., & Salgado, J. F. (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology*, *94*(5), 1128–1145. https://doi.org/10.1037/a0015978

Hülsheger, U. R., Walkowiak, A., & Thommes, M. S. (2018). How can mindfulness be promoted? Workload and recovery experiences as antecedents of daily fluctuations in mindfulness. *Journal of Occupational and Organizational Psychology*, *91*, 261–284. https://doi.org/10.1111/joop.12206

Hunter, S. T., Bedell, K. E., & Mumford, M. D. (2007). Climate for creativity: A quantitative review. *Creativity Research Journal*, *19*, 69–90. https://doi.org/10.1080/10400410709336883

Kang, Y., Gruber, J., & Gray, J. R. (2013). Mindfulness and de-automatization. *Emotion Review*, *5*, 192–201. https://doi.org/10.1177/1754073912451629

Karasek, R. A. (1985). *Job content instrument: Questionnaire and users guide, revision 1.1*. University of Southern California.

Kark, R., & Carmeli, A. (2009). Alive and creating: The mediating role of vitality and aliveness in the relationship between psychological safety and creative work involvement. *Journal of Organizational Behavior*, *30*(6), 785–804. https://doi.org/10.1002/job.571

Köhler, T., & Cortina, J. M. (2021). Play it again, Sam! An analysis of constructive replication in the organizational sciences. *Journal of Management*, *47*(2), 488–518. https://doi.org/10.1177/0149206319843985

König, C. J., Kleinmann, M., & Höhmann, W. (2013). A field test of the quiet hour as a time management technique. *Revue Européenne de Psychologie Appliquée/European Review of Applied Psychology*, *63*(3), 137–145. https://doi.org/10.1016/j.erap.2012.12.003

Lavrusheva, O. (2020). The concept of vitality. Review of the vitality-related research domain. *New Ideas in Psychology*, *56*, 100752. https://doi.org/10.1016/j.newideapsych.2019.100752

14640597, 2023, 2, Downloaded from https://iaap-journals.onlinelibrary.wiley.com/doi/10.1111/apps.12399 by Uva Universiteitsbibliotheek, Wiley Online Library on [20/12/2023]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Lebuda, I., Zabelina, D. L., & Karwowski, M. (2016). Mind full of ideas: A meta-analysis of the mindfulness–creativity link. *Personality and Individual Differences*, *93*, 22–26. https://doi.org/10.1016/j.paid.2015.09.040

LePine, J. A., & Van Dyne, L. (1998). Predicting voice behaviour in work groups. *Journal of Applied Psychology*, *83*(6), 853–868. https://doi.org/10.1037/0021-9010.83.6.853

Lesiuk, T. (2005). The effect of music listening on work performance. *Psychology of Music*, *33*, 173–191. https://doi.org/10.1177/0305735605050650

Mesmer-Magnus, J., Manapragada, A., Viswesvaran, C., & Allen, J. W. (2017). Trait mindfulness at work: A meta-analysis of the personal and professional correlates of trait mindfulness. *Human Performance*, *30*(2–3), 79–98. https://doi.org/10.1080/08959285.2017.1307842

Michalak, J., Heidenreich, T., Ströhle, G., & Nachtigall, C. (2008). Die deutsche version der Mindful Attention and Awareness Scale (MAAS): Psychometrische Befunde zu einem Achtsamkeitsfragebogen [the German version of the Mindful Attention and Awareness Scale (MAAS): Psychometric findings to a mindfulness questionnaire]. *Zeitschrift für Klinische Psychologie Und Psychotherapie: Forschung Und Praxis*, *37*, 200–208. https://doi.org/10.1026/1616-3443.37.3.200

Miron-Spektor, E., Erez, M., & Naveh, E. (2011). The effect of conformist and attentive-to-detail members on team innovation: Reconciling the innovation paradox. *Academy of Management Journal*, *54*(4), 740–760. https://doi.org/10.5465/amj.2011.64870100

Molenaar, P. C. (2004). A manifesto on psychology as idiographic science: Bringing the person back into scientific psychology, this time forever. *Measurement*, *2*(4), 201–218. https://doi.org/10.1207/s15366359mea0204_1

Moore, A., & Malinowski, P. (2009). Meditation, mindfulness and cognitive flexibility. *Consciousness and Cognition*, *18*, 176–186. https://doi.org/10.1016/j.concog.2008.12.008

Mrazek, M. D., Smallwood, J., & Schooler, J. W. (2012). Mindfulness and mind-wandering: Finding convergence through opposing constructs. *Emotion*, *12*(3), 442–448. https://doi.org/10.1037/a0026678

Muthén, L. K., & Muthén, B. O. (1998–2012). *Mplus users guide* (Seventh ed.). Muthén & Muthén.

Nijstad, B. A., De Dreu, C. K., Rietzschel, E. F., & Baas, M. (2010). The dual pathway to creativity model: Creative ideation as a function of flexibility and persistence. *European Review of Social Psychology*, *21*(1), 34–77. https://doi.org/10.1080/10463281003765323

Ohly, S., & Fritz, C. (2010). Work characteristics, challenge appraisal, creativity, and proactive behavior: A multi-level study. *Journal of Organizational Behavior*, *31*(4), 543–565. https://doi.org/10.1002/job.633

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research. An introduction and some practical recommendations. *Journal of Personnel Psychology*, *9*, 79–93. https://doi.org/10.1027/1866-5888/a000009

Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal*, *39*, 607–634.

Op den Kamp, E. M., Bakker, A. B., Tims, M., & Demerouti, E. (2020). Proactive vitality management and creative work performance: The role of self-insight and social support. *The Journal of Creative Behavior*, *54*(2), 323–336. https://doi.org/10.1002/jocb.368

Op den Kamp, E. M., Tims, M., Bakker, A. B., & Demerouti, E. (2018). Proactive vitality management in the work context: Development and validation of a new instrument. *European Journal of Work and Organizational Psychology*, *27*, 493–505. https://doi.org/10.1080/1359432X.2018.1483915

Oppezzo, M., & Schwartz, D. L. (2014). Give your ideas some legs: The positive effect of walking on creative thinking. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *40*, 1142–1152.

Ostafin, B. D., & Kassman, K. T. (2012). Stepping out of history: Mindfulness improves insight problem solving. *Consciousness and Cognition*, *21*, 1031–1036. https://doi.org/10.1016/j.concog.2012.02.014

Parker, S. K., Bindl, U. K., & Strauss, K. (2010). Making things happen: A model of proactive motivation. *Journal of Management*, *36*(4), 827–856. https://doi.org/10.1177/0149206310363732

Parker, S. K., Williams, H. M., & Turner, N. (2006). Modeling the antecedents of proactive behaviour at work. *Journal of Applied Psychology*, *91*(3), 636–652. https://doi.org/10.1037/0021-9010.91.3.636

Paulus, P. B., & Yang, H. (2000). Idea generation in groups: A basis for creativity in organizations. *Organizational Behavior and Human Decision Processes*, *82*(1), 76–87. https://doi.org/10.1006/obhd.2000.2888

Peer, E., Vosgerau, J., & Acquisti, A. (2014). Reputation as a sufficient condition for data quality on Amazon mechanical Turk. *Behavior Research Methods*, *46*, 1023–1031. https://doi.org/10.3758/s13428-013-0434-y

14640597, 2023, 2, Downloaded from https://iaap-journals.onlinelibrary.wiley.com/doi/10.1111/apps.12399 by Uva Universiteitsbibliotheek, Wiley Online Library on [20/12/2023]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Preacher, K. J., & Selig, J. P. (2010). Monte Carlo method for assessing multilevel mediation: An interactive tool for creating confidence intervals for indirect effects in 1-1-1 multilevel models [Computer software]. Available from http://quantpsy.org/

Raudenbush, S. W., Bryk, A. S., & Congdon, R. (2013). *HLM 7.01 for Windows [computer software]*. Scientific Software International, Inc.

Runco, M. A., Noble, E. P., Reiter-Palmon, R., Acar, S., Ritchie, T., & Yurkovich, J. M. (2011). The genetic basis of creativity and ideational fluency. *Creativity Research Journal*, *23*(4), 376–380. https://doi.org/10.1080/10400419.2011.621859

Ryan, R. M., & Deci, E. L. (2008). From ego depletion to vitality: Theory and findings concerning the facilitation of energy available to the self. *Social and Personality Psychology Compass*, *2*, 702–717. https://doi.org/10.1111/j.1751-9004.2008.00098.x

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*(3), 529–565. https://doi.org/10.1111/j.1467-6494.1997.tb00326.x

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire a cross-national study. *Educational and Psychological Measurement*, *66*(4), 701–716. https://doi.org/10.1177/0013164405282471

Schwarzer, R. (2000). Manage stress at work through preventive and proactive coping. In E. A. Locke (Ed.), *The Blackwell handbook of principles of organizational behavior* (pp. 342–355). Blackwell.

Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *The Leadership Quarterly*, *15*, 33–53. https://doi.org/10.1016/j.leaqua.2003.12.004

Smeekens, B. A., & Kane, M. J. (2016). Working memory capacity, mind wandering, and creative cognition: An individual-differences investigation into the benefits of controlled versus spontaneous thought. *Psychology of Aesthetics, Creativity, and the Arts*, *10*, 389–415. https://doi.org/10.1037/aca0000046

Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, *12*(3), 204–221. https://doi.org/10.1037/1076-8998.12.3.204

Suelmann, H., Brouwers, A., & Snippe, E. (2018). Explaining variations in mindfulness levels in daily life. *Mindfulness*, *9*(6), 1895–1906. https://doi.org/10.1007/s12671-018-0932-1

Sung, S. Y., & Choi, J. N. (2012). Effects of team knowledge management on the creativity and financial performance of organizational teams. *Organizational Behavior and Human Decision Processes*, *118*, 4–13. https://doi.org/10.1016/j.obhdp.2012.01.001

Thayer, R. E., Newman, J. R., & McClain, T. M. (1994). Self-regulation of mood: Strategies for changing a bad mood, raising energy, and reducing tension. *Journal of Personality and Social Psychology*, *67*(5), 910–925. https://doi.org/10.1037/0022-3514.67.5.910

Thompson, B. L., & Waltz, J. (2007). Everyday mindfulness and mindfulness meditation: Overlapping constructs or not? *Personality and Individual Differences*, *43*(7), 1875–1885. https://doi.org/10.1016/j.paid.2007.06.017

Tierney, P., Farmer, S. M., & Graen, G. B. (1999). An examination of leadership and employee creativity: The relevance of traits and relationships. *Personnel Psychology*, *52*(3), 591–620. https://doi.org/10.1111/j.1744-6570.1999.tb00173.x

Tims, M., Bakker, A. B., & Derks, D. (2012). Development and validation of the job crafting scale. *Journal of Vocational Behavior*, *80*, 173–186. https://doi.org/10.1016/j.jvb.2011.05.009

Trougakos, J. P., & Hideg, I. (2009). Momentary work recovery: The role of within-day work breaks. In S. Sonnentag, P. L. Perrewé, & D. C. Ganster (Eds.), *Research in occupational stress and wellbeing: Current perspectives on job-stress recovery* (Vol. 7, pp. 37–84). Emerald. https://doi.org/10.1108/S1479-3555(2009)0000007005

Tuckey, M. R., Sonnentag, S., & Bryan, J. (2018). Are state mindfulness and state work engagement related during the workday? *Work and Stress*, *32*(1), 33–48. https://doi.org/10.1080/02678373.2017.1420707

Unsworth, K. L., & Parker, S. K. (2003). Promoting a proactive and innovative workforce for the new workplace. In D. Holman, T. D. Wall, C. W. Clegg, P. Sparrow, & A. Howard (Eds.), *The new workplace: A guide to the human impact of modern working practices*. John Wiley & Sons.

14640597, 2023, 2, Downloaded from https://iaap-journals.onlinelibrary.wiley.com/doi/10.1111/apps.12399 by Uva Universiteitsbibliotheek, Wiley Online Library on [20/12/2023]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Unsworth, K. L., Wall, T. D., & Carter, A. (2005). Creative requirement: A neglected construct in the study of employee creativity? *Group & Organization Management*, *30*, 541–560. https://doi.org/10.1177/1059601104267607

Vohs, K. D., & Baumeister, R. F. (2004). Understanding self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation* (pp. 1–9). Guilford.

Wang, H., Yang, J., & Li, P. (2021). How and when goal-oriented self-regulation improves college students well-being: A weekly diary study. *Current Psychology*. Advanced online publication. https://doi.org/10.1007/s12144-020-01288-w

Ward, T. B., Smith, S. M., & Finke, R. A. (1999). Creative cognition. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 189–212). Cambridge University Press. https://doi.org/10.1017/CBO9780511807916.012

Wiley, J., & Jarosz, A. F. (2012). Working memory capacity, attentional focus, and problem solving. *Current Directions in Psychological Science*, *21*(4), 258–262. https://doi.org/10.1177/0963721412447622

Wrzesniewski, A., & Dutton, J. E. (2001). Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review*, *26*, 179–201. https://doi.org/10.2307/259118

Ye, L., Chen, Y., & Li, F. (2020). Psychometric properties of the proactive vitality management scale in a Chinese sample. *Current Psychology*. Advanced online publication. https://doi.org/10.1007/s12144-020-01022-6

Zedelius, C. M., & Schooler, J. W. (2015). Mind wandering "Ahas" versus mindful reasoning: Alternative routes to creative solutions. *Frontiers in Psychology*, *6*, 834. https://doi.org/10.3389/fpsyg.2015.00834

Zhong, C. B., Dijksterhuis, A., & Galinsky, A. D. (2008). The merits of unconscious thought in creativity. *Psychological Science*, *19*, 912–918. https://doi.org/10.1111/j.1467-9280.2008.02176.x

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13–39). Academic. https://doi.org/10.1016/B978-012109890-2/50031-7

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