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From prevention focus to adaptivity and creativity: the role of unfulfilled goals and work engagement

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ABSTRACT

Whereas promotion focus is consistently linked to high adaptivity (i.e., adjustment to changes) and creativity (i.e., generation of useful and original ideas), prevention focus is commonly associated with low adaptivity and creativity. The present study uncovers the conditions under which prevention focus may also have positive effects on adaptivity and creativity. First, we hypothesize that trait-level promotion focus positively relates to day-level adaptivity as well as creativity. More importantly, we hypothesize that trait-level prevention focus positively relates to day-level adaptivity and creativity when day-level goal fulfilment is low (i.e., two-way interactions) and that these effects are stronger when day-level work engagement is high (i.e., three-way interactions). To test our hypotheses, we conducted a daily diary survey among 209 employees from different occupational sectors, over five working days. As expected, trait promotion focus was positively related to adaptivity and creativity. Furthermore, trait prevention focus positively related to both adaptivity and creativity when day-level goal fulfilment was low and day-level work engagement was high (3-way interactions). None of the two-way interaction effects of trait prevention focus and goal fulfilment was significant. Our findings suggest that prevention focus and unfulfilled goals jointly should not only be seen as threats, but also as opportunities for adaptation and creativity.

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KEYWORDS

Regulatory focus; creativity; adaptivity; work engagement; goal fulfilment

To thrive and prosper, organizations need employees that are able to adjust to changes (i.e., adaptivity; Pulakos, Arad, Donovan, & Plamondon, 2000) and produce original and useful ideas (i.e., creativity; Anderson, Potočnik, & Zhou, 2014). Adaptive and creative employees are essential for organizations to introduce and implement successful changes and continuously improve organizational products and processes (Eldor & Harpaz, 2016). A principal precursor of both adaptivity and creativity is promotion focus, a mindset in which people focus on growth and fulfilling aspirations rather than security and fulfilling duties (Higgins, 1997, 1998; Lanaj, Chang, & Johnson, 2012; Liberman, Idson, Camacho, & Higgins, 1999). However, employees who need to adapt to changes or be creative are not always driven by a growth strategy or a promotion-focused mindset. According to regulatory focus theory (Higgins, 1997, 1998), people are motivated not only to achieve growth, self-fulfilment, and gains (i.e., promotion focus) but also to achieve security, perform duties, and avoid failure and losses (i.e., prevention focus).

A prevention focus is typically associated with a dislike of change, and inflexible and conservative thinking and behaviour (Brenninkmeijer & Hekkert-Koning, 2015; Friedman & Förster, 2010; Higgins, 1997; Liberman et al., 1999; Wallace, Butts, Johnson, Stevens, & Smith, 2016). Thus, although adaptive and creative work behaviour may help to avoid failure, confront set-backs, and perform work-duties (Anderson et al., 2014; Potočnik & Anderson, 2016; Roskes, De Dreu, & Nijstad, 2012), the inflexible

thinking and behaviour that are characteristic of people high in prevention focus may limit their capacity to be adaptive and creative. In this light, it is hopeful that a growing literature suggests that prevention focus does not always preclude adaptation to change (Taylor-Bianco & Schermerhorn, 2006), or creative performance (Baas, De Dreu, & Nijstad, 2011). A necessary precondition is that people with a strong prevention focus invest extra energy and effort to compensate for their inflexibility, and achieve adaptivity to change and creativity through effortful cognitive processes such as systematic search for, and analysis of, potential paths of action (Baas et al., 2011; Roskes et al., 2012). This means that for people high in prevention focus to invest in creativity and adaptivity, clear motivators are needed (Roskes, Elliot, & De Dreu, 2014). For example, compared to employees high in promotion focus, employees high in prevention focus have a greater need to understand that adaptation is necessary and expected from them, before they actually adapt to changes (Petrou, Demerouti, & Häfner, 2015). In addition, when individuals high in prevention focus actively pursue not yet fulfilled goals, they feel motivated and energized, which boosts their creative output (Baas et al., 2011). We, thus, believe that just like employees high in promotion focus, employees high in prevention focus are able to adapt to changes and be creative – under the right circumstances.

Our paper delivers two distinct contributions to the literature. First, we build upon research implying that employees high in prevention focus adapt to change if they understand they have to (e.g., Petrou et al., 2015). Going one step further,

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The data that support the findings of this study are openly available in Open Science Framework at <https://osf.io/u86r7>, doi: 10.17605/OSF.IO/U86R7

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and to explore how this phenomenon unfolds in daily life at work, we examine whether employees high in prevention focus display adaptivity on days on which they experience a low level of goal fulfilment. Furthermore, because changes do not fit the preferences of employees high in prevention focus (Liberman et al., 1999), we propose that the relation between prevention focus when goals are unfulfilled and adaptivity is stronger for employees with a strong work engagement – a positive, fulfilling, work-related state of mind characterized by vigour, dedication and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Second, based on experimental work on regulatory focus and creativity (Baas et al., 2011; Roskes et al., 2012), we aim to uncover the conditions under which employees high in prevention focus may achieve creativity at the workplace. Prevention focus is often thought to be at odds with creativity (Wallace et al., 2016), and unfulfilled goals tend to be considered as undesirable for organizations. We propose, however, that when employees high in prevention focus experience a lack of goal fulfilment, they can be creative, particularly when they are highly engaged. In other words, prevention focus and unfulfilled goals can jointly compel people to excel against the odds.

To achieve our research goals, we conducted a daily diary survey study and tested our hypothesized model as shown in Figure 1. We conducted a diary survey because we are interested in unfulfilled goals as an acute (rather than chronic) state that motivates employees high in prevention focus to take immediate action and leave their comfort zone. Diary studies make it possible to assess both between-person and within-person fluctuations in the predictor and outcome variables, making this method ideal for uncovering the effects of personality and situational predictors, as well as their interaction effects, on behaviour (Fritz & Sonnentag, 2009). Our model operationalizes regulatory focus as a chronic individual motivational style (Higgins et al., 2001) of employees at work (Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008), while adaptivity (Peeters, Arts, & Demerouti, 2016), creativity (Binnewies & Wörnlein, 2011), work engagement (Xanthopoulou, Bakker,

Demerouti, & Schaufeli, 2009b), and the level of goal fulfilment (Harris, Daniels, & Briner, 2003) are all operationalized as daily fluctuating variables.

Promotion focus, adaptivity, and creativity

Adaptivity and creativity are both change-related concepts (Potočník & Anderson, 2016). Adaptivity refers to the *adjustment to change* (Pulakos et al., 2000). For instance, employees may encounter changes and unanticipated challenges in their work (e.g., set-backs, change of plans, new opportunities), and have to discern ways to deal with these novel circumstances. Creativity, the production of original and useful ideas, refers to the *introduction of change* (Potočník & Anderson, 2016). Adaptivity can thus be seen as a response to novelty and change, whereas creativity introduces novelty and change (Griffin, Neal, & Parker, 2007; Miron, Erez, & Naveh, 2004). Another difference is that compared to creativity, adaptivity often manifests itself in flexible behaviour (e.g., adjusting one's behaviour to adapt to change), whereas creativity more often manifests itself in flexible thinking (e.g., thinking of a novel perspective on an existing problem; Griffin et al., 2007; Miron et al., 2004). Below, we explain promotion and prevention focus and how they relate to adaptivity and creativity.

According to regulatory focus theory (Higgins, 1997, 1998), people high in promotion focus are motivated to approach gains and develop themselves, while people high in prevention focus are motivated to avoid loss and failure and fulfill their duties and obligations. Regulatory focus theory also predicts how people construe goals and the preferred tactics and strategies to achieve these goals. Thus, people high in promotion focus and people high in prevention focus can pursue the same outcome (e.g., a possible financial bonus), but construe this goal differently and have different preferred strategies for goal achievement (Scholer & Higgins, 2008). For instance, people high in promotion focus may see an opportunity to gain something and use eager strategies to get the bonus, whereas people high in prevention focus may see a threat and rely on

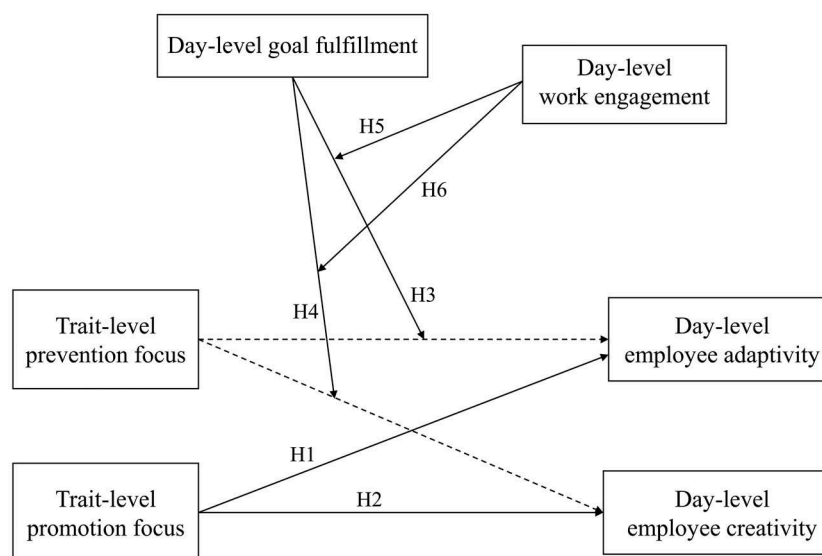


Figure 1. Our hypothesized model.

vigilant strategies and dutiful performance to avoid failing to get the bonus. Finally, the theory assumes that stable individual differences in regulatory focus (i.e. trait-level regulatory focus) exist, but that promotion and prevention focus also represent “states” that are influenced by the situation or task-requirements. Here, we study trait-level promotion and prevention focus that are relatively independent of one another (Haws, Dholakia, & Bearden, 2010).

Extensive empirical evidence reveals that, from these two motivational approaches, primarily promotion focus is associated with enhanced creativity (Baas, De Dreu, & Nijstad, 2008; Lanaj et al., 2012; Neubert et al., 2008). Additionally, some evidence suggests that promotion focus relates to adaptivity (Petrou et al., 2015; Petrou, Demerouti, & Schaufeli, 2018). Personality research shows patterns consistent with these findings – people that are high in promotion focus are self-efficacious, open to new experiences, and extraverted (Baas, Roskes, Sligte, Nijstad, & De Dreu, 2013; Lanaj et al., 2012; Vaughn, Baumann, & Klemann, 2008); they readily display extra-role performance and a learning orientation at work (Gorman et al., 2012), and have a preference for change rather than stability (Liberman et al., 1999). What underlines all these findings is the behavioural (Brenninkmeijer & Hekkert-Koning, 2015) and cognitive (Friedman & Förster, 2001) flexibility that a promotion focus entails. In other words, employees high in promotion focus are well equipped to deal with novel situations, for instance, when they have to adjust to a changed situation by behaving in appropriate ways (i.e., adaptivity). In addition, their ability to flexibly switch between cognitive categories, schema’s, and perspectives makes them well equipped to think of creative solutions for problems (i.e., creativity). We, thus, formulate:

Hypothesis 1: Trait-level promotion focus positively relates to aggregate day-level adaptivity (1a) and aggregate day-level creativity (1b).

Prevention focus and adaptivity

Unlike promotion focus, a prevention focus is characterized by low self-reliance or confidence (Lanaj et al., 2012; Pham & Avnet, 2004) and a readiness to experience uncertainty and threat (Förster & Higgins, 2005; Tseng & Kang, 2008). People that are high in prevention focus tend to set goals directed towards avoiding failure and act in a vigilant and conservative way (Elliot & Sheldon, 1997; Higgins, 1997; Payne, Youngcourt, & Beaubien, 2007; Scholer & Higgins, 2008). This can benefit people’s and organizations’ performance, for example, because it increases conscientious attention to detail, perseverance, and compliance with safety protocols (Lanaj et al., 2012). However, detailed information processing and careful scrutinizing of tasks and environments is relatively effortful and resource-consuming (Evans, 2003; Roskes et al., 2012). In addition, prevention focus is associated with anxiety and worrying, and regulating these negative affective experiences is taxing as well (Bridgett, Oddi, Laake, Murdock, & Bachmann, 2013; Van Dillen & Koole, 2007). Finally, employees high in prevention focus prefer stability over change (Liberman et al., 1999) and

routine over extraordinary behaviour (Lanaj et al., 2012). Therefore, when flexibility is necessary, a prevention focus and its association with vigilant strategies and behaviours may deter people from flexible exploration or risky choices, and stifle performance and wellbeing (Liberman et al., 1999). However, prevention focus is also associated with a strong motivation to identify and follow courses of action that are likely to prevent negative outcomes (Brockner & Higgins, 2001; Crowe & Higgins, 1997). When risky tactics are the only viable option for preventing negative outcomes, even people high in prevention focus are willing to take risks (Scholer, Zou, Fujita, Stroessner, & Higgins, 2010).

Individuals high in prevention focus are likely to construe their goals as duties and obligations they need to fulfill (Higgins, 1997, 1998). Failure to make goal-progress tends to be construed as a threat and is accompanied with feelings of anxiety and vigilance (Baas et al., 2011; Idson, Liberman, & Higgins, 2000). Such threats motivate and activate individuals in a prevention focus (Baas et al., 2011; Carver, 2004; Idson & Higgins, 2000; Van-Dijk & Kluger, 2004). This sometimes leads to increased, but inflexible, perseverance of current problem solving efforts (Carr & Steele, 2009; Carver, 2004), but it can also lead to the deployment of risky tactics in response to negativity (Scholer et al., 2010), and a stronger recognition that ways of dealing with the situation need to be altered (Scholer & Miele, 2016; Zaalberg, Midden, Meijnders, & McCalley, 2009). Unfulfilled daily goals signal insufficient goal progress, and represent a salient threat to people high in prevention focus. Under such pressing circumstances, employees that are high in prevention focus may infer that simply putting in more effort in current problem solving efforts is needed. Alternatively, they may infer that the regular way of doing things is insufficient for meeting their current goals and that the situation requires adaptivity, even if this goes against their natural behavioural tendencies (cf. Scholer & Miele, 2016). For the latter to happen, people high in prevention must see that adaptivity is, in fact, required. This relates to the observation that individuals high in prevention focus critically evaluate themselves and their environment. For example, research shows that compared to individuals in a promotion focus, those in a prevention focus are better able to evaluate the quality of presented information (Kao, 2012) and the quality of their own ideas (Herman & Reiter-Palmon, 2011). Based on their critical analysis, people high in prevention focus may be better able than those in a promotion focus, first, to acknowledge their lack of goal fulfilment, and, second, to discern that new ways of thinking and problem solving are needed in order to rectify their lack of goal fulfilment.

To date, there is no literature on increased adaptivity among employees high in prevention focus when facing unfulfilled goals, but there is some evidence that seems to converge with this proposition. For example, empirical research has examined how employees high in prevention focus deal with organizational changes that are not communicated clearly. This situation entails a double threat for employees high in a prevention focus because they are aversive to change (Liberman et al., 1999) and also dislike lack of clarity (Semin, Higgins, de Montes, Estourget, & Valencia, 2005). Although one could expect that, in such distressing situations, employees

high in prevention focus become inflexible and withdrawn, research by Petrou et al. (2018) has revealed the opposite: Employees high in prevention focus who experienced unclear communication around organizational changes, in fact, took initiative and brought about proactive changes to their work that helped them adapt to the changes.

Taken together, we, thus, propose that a prevention focus associates with enhanced adaptivity when goal fulfilment is low. Additional motivators may help to strengthen and sustain this association. Because prevention focus is associated with relatively effortful and resource-consuming goal striving strategies (Evans, 2003; Roskes et al., 2012), the need to regulate negative emotions (Bridgett et al., 2013; Van Dillen & Koole, 2007), and a preference for stability and routine behaviour (Lanaj et al., 2012; Liberman et al., 1999), it should be relatively unpleasant and effortful for people high in prevention focus to engage in non-habitual behaviours and adapting to change. Therefore, it is important to create conditions that help to conserve, effectively focus, and replenish resources (Roskes, 2015; Roskes et al., 2014). Work engagement (i.e., a positive, fulfilling, work-related state of mind characterized by vigour, dedication and absorption; Schaufeli et al., 2002) could be such a favourable state that helps to maintain work motivation and facilitates focused investment in fulfilling work goals.

A strong work engagement is associated with proactive behaviour, perseverance, and dealing well with adversity (Demerouti & Cropanzano, 2010). Engaged employees find their tasks intrinsically motivating, which enables them to cope with stressors (Bakker, Schaufeli, Leiter, & Taris, 2008), and deal with challenges in a constructive and efficient manner without becoming disheartened (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007, 2009a). This is in line with the Broaden-and-Build theory (Fredrickson, 2003), suggesting that positive experiences make individuals more tolerant and resilient against stressors. Although work engagement is more strongly related to promotion than prevention focus (Lanaj et al., 2012), it is an independent factor that may moderate the relationship between regulatory focus and performance. Indeed, organizational interventions can successfully enhance work engagement of all employees (Bakker & Demerouti, 2017). To sum up, work engagement makes people more willing to take up challenges and tolerate frustrations (Tadić Vujčić, Oerlemans, & Bakker, 2017). Also, it increases resilience to stress and helps employees to adopt a positive mindset, which facilitates adaptation to changes taking place in their tasks or organizations (Kaltaiainen, Lipponen, & Petrou, 2018). Work engagement, therefore, has the potential to facilitate adaptivity of those employees who need this facilitation the most, namely, employees high in prevention focus.

Hypothesis 2: Trait-level prevention focus positively relates to day-level adaptivity on days when goal fulfilment is low (i.e., 2-way interaction; 2a) and this effect is stronger when employee work engagement is high (i.e., 3-way interaction; 2b).

Prevention focus and creativity

As explained earlier, people high in prevention focus tend to engage in systematic information processing (Baas et al., 2008;

Friedman & Förster, 2010; Roy & Phau, 2014), and consider relatively few perspectives and categories in depth (Roskes et al., 2012). These cognitive and behavioural processes generally impede creativity (Friedman & Förster, 2001). However, parallel to our reasoning for adaptivity, we propose that people high in prevention focus do engage in creative behaviour when they see its necessity (Lucas & Nordgren, 2015; Nijstad, De Dreu, Rietzschel, & Baas, 2010; Roskes et al., 2012).

Work by Baas and colleagues (2011), indeed, suggests that threatening task conditions (i.e., unfulfilled goals) may activate individuals in a prevention focus to improve their creativity. Baas et al. (2011) tested and found support for their predictions in four experiments on the effects of state regulatory focus and goal fulfilment. For instance, in Study 3, promotion and prevention focus were activated with a puzzle task which was either completed, or suddenly interrupted. Participants then completed an idea generation task to measure creative performance. The results revealed that a promotion focus always related positively to creativity. A prevention focus related more strongly to creative performance in the unfulfilled goal condition, and this effect was mediated by self-reported activation.

Building on, and going beyond, these experimental findings, we argue that a low level of day-level goal fulfilment in people's work, spurs creativity among employees high in trait prevention focus. Low goal fulfilment signals insufficient progress, which is threatening and should activate and motivate employees high in prevention focus. Moreover, it signals that the current strategies may not be adequate for goal achievement (cf. our reasoning for Hypothesis 2), and that new and creative tactics and ways of working may be necessary. However, the realization of creativity through the cognitive and behavioural processes that characterize prevention focus is also effortful and depleting. Indeed, experimental work has shown that a prevention focus only results in enhanced creativity when people have enough cognitive resources available and have the necessary motivation to invest these resources (Roskes et al., 2012). As argued before, a state of high task engagement may help individuals under prevention focus to conserve and replenish their resources, and should, therefore, increase their creativity.

Hypothesis 3: Trait-level prevention focus positively relates to day-level creativity on days when goal fulfilment is low (i.e., 2-way interaction; 3a) and this effect is stronger when employee work engagement is high (i.e., 3-way interaction; 3b).

Methods

Sample and procedure

Participants were 209 employees (103 men and 106 women) working in different organizations in the Netherlands. Their mean age was 38.6 years old ($SD = 13.2$) and they worked, on average, 9.5 years ($SD = 16.4$) at their organization. They worked an average of 36.4 hours per week ($SD = 5.0$), in sectors such as health (39%), government (30%), business (21%), education (18%), finance (17%), industry (11%), construction (10%),

commerce (9%), and communication (4%). A total of 32% participants indicated that they worked in another occupational sector, such as ICT, culture, entertainment, catering, marketing, or transportation.

We recruited participants through network sampling by student research assistants (Demerouti & Rispens, 2014), which involved the use of research assistants' professional contacts, advertising in social media and snowball sampling. In total, 775 participants were invited by email to participate in an online survey study comprising one baseline survey that should be filled in within two weeks from the time of the invitation, and five daily surveys that had to be filled in during five consecutive days after the baseline, at the end of each day. The baseline survey included demographic variables and trait-level regulatory focus, while the daily surveys included all day-level variables (i.e., goal fulfilment, work engagement, adaptivity and creativity). Two hundred and nine participants filled in the baseline survey and at least three daily surveys, forming the final sample for our analyses (response rate = 27%). On average, participants filled in 3.9 daily surveys ($SD = 0.7$). Dropouts (i.e., 46 employees who filled in only one or two daily surveys) did not significantly differ from the sample on any of the study variables; with the only exception that they were younger, $t(253) = -2.7, p < .01$.

Measures

All trait-level items (i.e., regulatory focus) used a 6-point Likert format ranging from 1 = completely disagree to 6 = completely agree, while all day-level items used a 7-point Likert format that ranged from 1 = totally disagree to 7 = totally agree. Cronbach's alphas for all variables can be found in the diagonal of Table 1.

Trait-level regulatory focus was measured with the shortened version (Petrou et al., 2015) of the questionnaire by Neubert et al. (2008). The questionnaire included 5 items for promotion focus (e.g., "I spend a great deal of time envisioning how to fulfill my aspirations") and 5 items for prevention focus (e.g., "Fulfilling my work duties is very important to me").

Day-level goal fulfilment was measured with a self-made single item, based on earlier operationalizations of goal fulfilment (e.g., Linley, Nielsen, Gillett, & Biswas-Diener, 2010). Respondents were first asked to report the most important work goal of their day. Then they were asked to indicate the extent to which they had fulfilled the goal on that day, using a scale ranging from 1 = totally not fulfilled to 7 = totally fulfilled. Additionally, respondents had the possibility to write down a second and third goal of the day, if they had one, and also rate those on their fulfilment. The respondents who only

reported one daily work goal ranged from 7% to 21% over the five days. The respective range was 25%-31% for two work goals and 49%-66% for three work goals. On average, respondents reported 2.4 work goals ($SD = .58$). Following Baas et al. (2011) who conceptualized goal fulfilment on the basis of one goal only, we used the first (i.e., most important and salient) work goal of the day to test our hypotheses. However, we will conduct and report additional analyses addressing the mean goal fulfilment on the basis of all work goals (one to three) that respondents reported.

Day-level work engagement was measured with six items from the Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). Items captured all three dimensions of work engagement, namely, vigour (e.g., "Today, at my work, I felt bursting with energy"), dedication (e.g., "Today, my job has inspired me") and absorption (e.g., "Today, I was immersed in my work") and one aggregate score was used for overall work engagement (Schaufeli & Bakker, 2003).

Day-level adaptivity was measured with the three-item individual task adaptivity scale by Griffin et al. (2007) adjusted to refer to the day-level (e.g., "Today, I have adapted well to changes in core tasks").

Day-level creativity was measured with the four-item scale by Miron et al. (2004), adjusted to refer to the day-level (e.g., "Today, I had a lot of creative ideas" or "Today, I liked to do things in an original way").

Statistical analyses

Day-level repeated measurements were nested within individuals, which resulted in a multilevel data structure. Therefore, we conducted multilevel analyses using MLwiN. Trait-level promotion and prevention focus were both at the between-level of analyses, whereas, day-level adaptivity, creativity, goal fulfilment, and work engagement were at the within-level of analyses. Before conducting our main analyses, we found that a 2-level Null model had better fit to the data compared to a 1-level Null model both for day-level adaptivity, $\Delta\chi^2(1) = 214.85, p < .01$ and for day-level creativity, $\Delta\chi^2(1) = 215.70, p < .01$, thus, justifying a multilevel approach. Furthermore, we calculated intraclass correlations (i.e., variance at the between-level of analyses) for all study variables, by dividing the variance at the between-level by the sum of the variance at the between-level plus the variance at the within-level (Hox, 2002). Intraclass correlations were 47% for adaptivity, 48% for creativity, 14% for goal fulfilment, and 57% for work engagement. Following previous practice (Oerlemans & Bakker, 2018) and recommendations (Ohly, Sonnentag, Niessen, & Zapf,

Table 1. Intercorrelations between the study variables (N = 209 employees and N = 808 occasions).

	1	2	3	4	5	6
1. Trait-level promotion focus	(.80)					
2. Trait-level prevention focus	.25**	(.71)				
3. Day-level goal fulfilment	.04	.13 [†]	(-)			
4. Day-level work engagement	.11	-.01	.13 [†]	(.88/.92)		
5. Day-level adaptivity	.33**	.06	.03	.29**	(.72/.88)	
6. Day-level creativity	.32**	.10	.04	.39**	.51**	(.83/.89)

Note. Correlations below the diagonal are at the between-level and above the diagonal at the within-level; please note that the between-level variable can only be correlated at the between-level; in the diagonal ranges are shown (low/high) for the alpha's of all scales;

* $p < .05$, ** $p < .01$, [†] $p < .10$

Table 2. Multilevel estimates for nested models with day-level adaptivity as dependent variable (N = 209 employees and N = 808 occasions).

Model Variables	M0		M1			M2			M3		
	b	SE B	b	SE B	β	b	SE B	β	b	SE B	β
Intercept	4.79	.06	4.79	.06		4.79	.06		4.79	.06	
Trait-level promotion focus			.25**	.06	.23**	.24**	.06	.22**	.25**	.06	.23**
Trait-level prevention focus			.03	.07	.02	.04	.07	.03	.05	.07	.04
Day-level goal fulfilment			.00	.03	.00	.00	.03	.00	.00	.03	.00
Day-level work engagement			.12**	.04	.07**	.23**	.06	.13**	.23**	.06	.13**
Prevention focus \times Goal fulfilment						-.06	.04	-.04	-.07 [†]	.04	-.05 [†]
Prevention focus \times Work engagement						.00	.07	.00	.02	.07	.01
Goal fulfilment \times Work engagement						-.09 [†]	.05	-.05 [†]	-.07	.05	-.04
Prevention focus \times Goal fulfilment \times Work engagement									-.14*	.07	-.06*
-2 \times log		2234.13		2201.92			2148.22			2144.20	
$\Delta - 2 \times$ log				32.21**			53.70**			4.02*	
df											
Between-person variance		.56(.07)		.50(.07)			.53(.07)			.53(.07)	
Within-person variance		.63(.04)		.62(.04)			.48(.03)			.47(.03)	

* $p < .05$, ** $p < .01$, [†] $p < .10$

2010), we centred between-level independent variables (i.e., regulatory focus) around the grand mean (i.e., results use the mean of the sample as a reference), while we centred within-level independent variables (i.e., work engagement and unfulfilled goals) around the person mean (i.e., results use the person's mean as a reference).

To test the hypotheses, we conducted two sets of multilevel regression analyses. The first set (see Table 2), conducted with day-level adaptivity as dependent variable, compared a Null model with three nested models comprising successively the independent variables, namely, trait-level promotion focus, trait-level prevention focus, day-level goal fulfilment, and day-level work engagement (Model 1), the 2-way interactions between prevention focus and goal fulfilment, between prevention focus and work engagement and between goal fulfilment and work engagement (Model 2) and finally the three-way interaction between trait-level prevention focus, day-level goal fulfilment and work engagement (Model 3). The second set of analyses (see Table 3) included the same steps but had day-level creativity as the dependent variable. In both sets of analyses the random slope variance was included in Model 2 and Model 3 for all day-level variables.

Results

Table 1 shows the means, standard deviations, and intercorrelations between the study variables. Notably, while promotion focus

correlates positively with both day-level adaptivity and creativity, prevention focus does not correlate with any of the two.

Table 2 (Model 1) and Table 3 (Model 1) present the main effects of all independent variables. Trait level-promotion focus positively related to both aggregate day-level adaptivity ($\beta = .23$, $p < .001$) and aggregate day-level creativity ($\beta = .27$, $p < .001$), which provides support to Hypothesis 1a and Hypothesis 1b respectively. As can be seen in Model 2 of Tables 2 and 3, the interaction term between prevention focus and goal fulfilment was unrelated to both adaptivity and creativity, which respectively fails to provide support to Hypothesis 2a and Hypothesis 3a.

The three-way interaction between prevention focus, day-level goal fulfilment and work engagement was negatively related to both adaptivity ($\beta = -.06$, $p = .044$) and creativity ($\beta = -.08$, $p = .004$). Simple slope tests revealed that the link between prevention focus and adaptivity was non-significant when goal fulfilment was 1 SD above the mean and work engagement was 1 SD above the mean (estimate = $-.12$, $z = -1.07$, $p = .286$), when goal fulfilment was 1 SD above the mean and work engagement was 1 SD below the mean (estimate = $.06$, $z = .57$, $p = .572$) and also when goal fulfilment was 1 SD below the mean and work engagement was 1 SD below the mean (estimate = $.02$, $z = .17$, $p = .863$). However, the link was positive and significant when goal fulfilment was 1 SD below

Table 3. Multilevel estimates for nested models with day-level creativity as dependent variable (N = 209 employees and N = 808 occasions).

Model Variables	M0		M1			M2			M3		
	b	SE B	b	SE B	β	b	SE B	β	b	SE B	β
Intercept	4.22	.07	4.22	.06		4.22	.06		4.22	.06	
Trait-level promotion focus			.33**	.07	.27**	.32**	.07	.26**	.32**	.07	.26**
Trait-level prevention focus			.00	.08	.00	.00	.08	.00	.02	.08	.01
Day-level goal fulfilment			.00	.03	.00	.00	.03	.00	.01	.03	.01
Day-level work engagement			.43**	.05	.22**	.43**	.05	.22**	.43**	.05	.22**
Prevention focus \times Goal fulfilment						-.03	.04	-.02	-.04	.04	-.02
Prevention focus \times Work engagement						.02	.06	.01	.04	.06	.02
Goal fulfilment \times Work engagement						.05	.05	.03	.08	.05	.04
Prevention focus \times Goal fulfilment \times Work engagement									-.21**	.07	-.08**
-2 \times log		2451.38		2340.67			2337.89			2329.94	
$\Delta - 2 \times$ log				110.71**			2.78			7.95**	
df											
Between-person variance		.75(.10)		.67(.08)			.67(.08)			.67(.08)	
Within-person variance		.82(.05)		.72(.04)			.70(.04)			.69(.04)	

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

the mean and work engagement was 1 SD above the mean (estimate = .24, $z = 2.04$, $p = .041$; see Figure 2 for the interaction plot). Summarized, these results suggest that, at low levels of daily work engagement, prevention focus is not strongly related to adaptivity for all levels of daily goal fulfilment, but as work engagement increases, the relationship between prevention focus and adaptivity becomes more positive at low (i.e., compared to high) levels of day-level goal fulfilment. In other words, prevention focus is increasingly positively related to adaptivity as engagement increases but goal fulfilment decreases, which supports Hypothesis 2b.

Furthermore, simple slope tests revealed that the link between prevention focus and creativity was non-significant

when goal fulfilment was 1 SD above the mean and work engagement was 1 SD above the mean (estimate = $-.16$, $z = -1.39$, $p = .166$), when goal fulfilment was 1 SD above the mean and work engagement was 1 SD below the mean (estimate = $.10$, $z = .88$, $p = .380$) and also when goal fulfilment was 1 SD below the mean and work engagement was 1 SD below the mean (estimate = $-.11$, $z = -1.01$, $p = .311$). However, the link was positive and marginally significant when goal fulfilment was 1 SD below the mean and work engagement was 1 SD above the mean (estimate = $.24$, $z = 1.93$, $p = .053$; see Figure 3 for the interaction plot). Conducting a test for regions of significance revealed that the link became significant when work engagement was 1 SD above the mean and goal

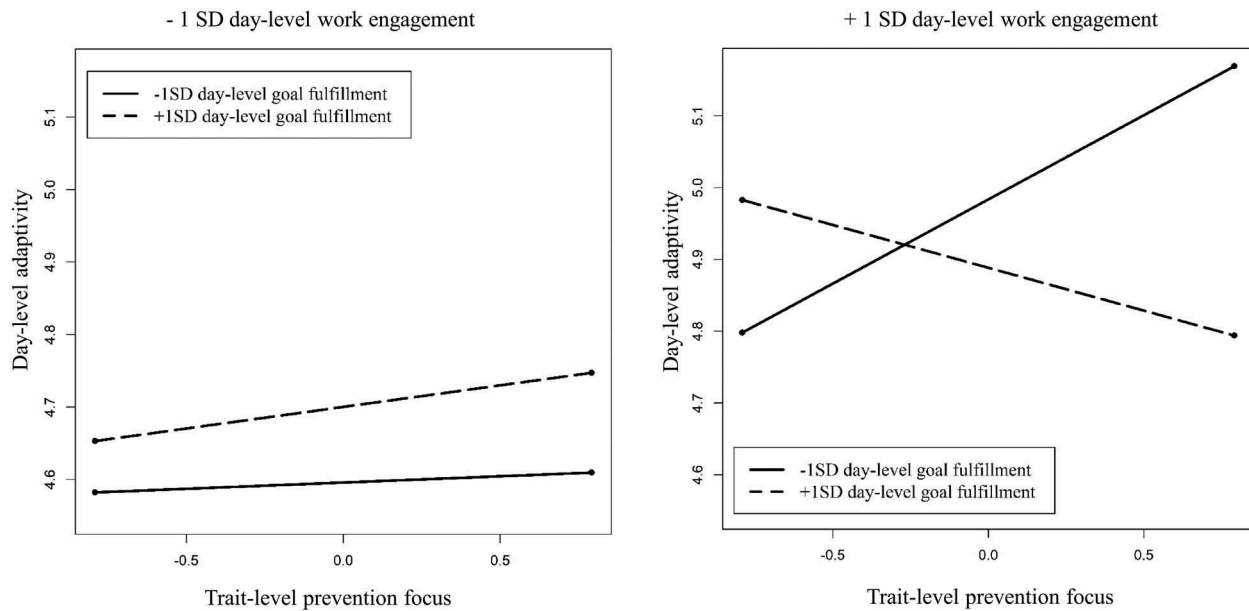


Figure 2. The link between trait-level prevention focus and day-level adaptivity moderated by day-level goal fulfilment and day.

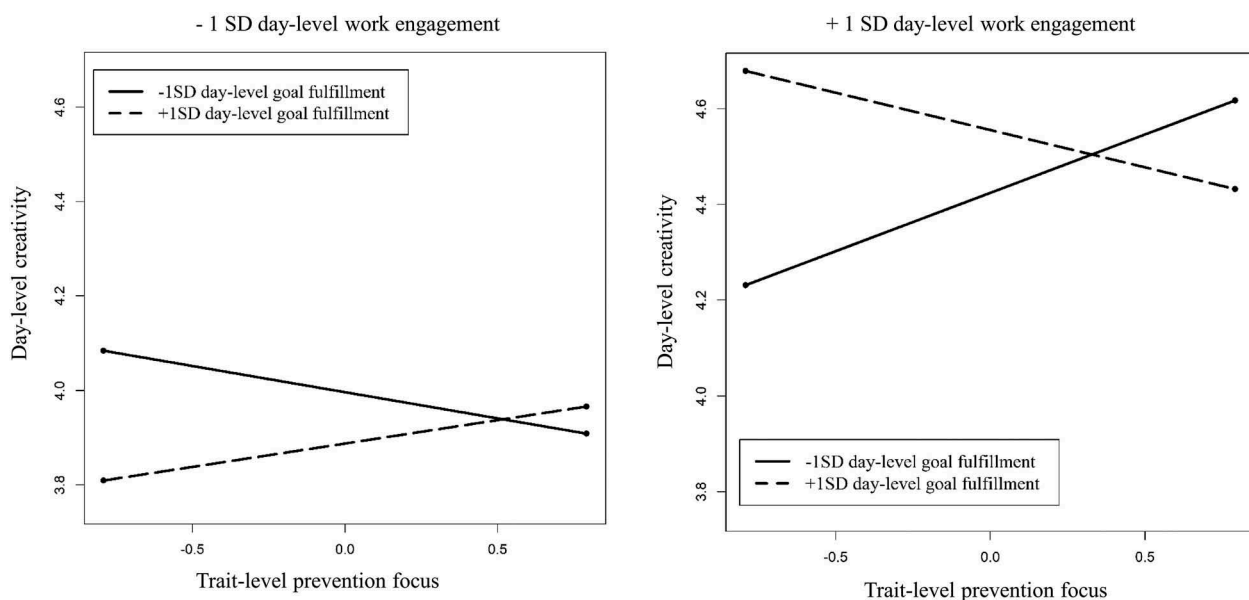


Figure 3. The link between trait-level prevention focus and day-level creativity moderated by day-level goal fulfilment and day.

fulfilment was lower than -1.15 (i.e., the SD of goal fulfilment was 1.13). Taken together, these findings reveal that, at low levels of daily work engagement, prevention focus is not strongly related to creativity for all levels of daily goal fulfilment, but as work engagement increases, the relationship between prevention focus and creativity becomes more positive at low (i.e., compared to high) levels of day-level goal fulfilment. In other words, prevention focus is increasingly positively related to creativity as engagement increases but goal fulfilment decreases, which supports Hypothesis 3b.¹

Additional analyses

To exclude the possibility that our hypothesized interactions hold for trait-level promotion focus, we reran analyses replacing prevention with promotion focus in all 2-way and 3-way interactions of our two sets of analyses. None of the 2-way interaction effects was significant, all $ps > .472$. Similarly, the three-way interaction between promotion focus, goal fulfilment and work engagement on adaptivity was non-significant ($\beta = -.06$, $p = .059$). However, because the effect was close to being significant, we conducted simple slope tests for exploratory purposes (see Figure 4). The link between trait level promotion focus and adaptivity was positive and significant when goal fulfilment was high and work engagement was high (estimate = .24, $z = 2.80$, $p = .005$), when goal fulfilment was high and work engagement was low (estimate = .28, $z = 3.47$, $p < .001$), when goal fulfilment was low and work engagement was high (estimate = .36, $z = 4.36$, $p < .001$) and also, but weaker, when goal fulfilment was low and work engagement was low (estimate = .15, $z = 2.01$, $p = .045$). In other words, the link was weakest when both moderators were at low levels.

The three-way interaction effect of promotion focus, goal fulfilment and work engagement on creativity was significant ($\beta = -.07$, $p = .012$). Simple slope tests revealed a similar pattern

as for adaptivity. The link between promotion focus and creativity was positive and significant in all four cases, namely, high goal fulfilment and high work engagement (estimate = .31, $z = 3.72$, $p < .001$), high goal fulfilment and low work engagement (estimate = .40, $z = 4.68$, $p < .001$), low goal fulfilment and high work engagement (estimate = .45, $z = 4.95$, $p < .001$) and low goal fulfilment and low work engagement (estimate = .18, $z = 2.17$, $p = .030$). However, as can be gleaned from the aforementioned statistics and the interaction plot of Figure 5, the link was weakest when both goal fulfilment and work engagement were low.

Finally, we rerun additional analyses replacing day-level goal fulfilment (i.e., conceptualized so far as the fulfilment on the most important goal of the day) with the mean fulfilment of all work goals (one to three) that respondents had reported. In other words, in these additional analyses, goal fulfilment of the second and third goal was included in the mean score of goal fulfilment only when the second and third goal were reported. The additional analyses (i.e., available upon request) did not substantially alter the tested regression coefficients in terms of direction or significance level. In other words, all 3-way interaction effects that were significant based on the most important goal of the day remained significant when the three daily goals were considered. However, regarding the 3-way interaction effects of regulatory focus, fulfilment of all (1–3) work goals and work engagement on adaptivity/creativity, simple slope tests revealed the following differences, compared to the previously reported analyses (based on one goal): The hypothesized 3-way interaction effect of prevention focus on adaptivity for low (-1 SD) goal fulfilment and high ($+1$ SD) work engagement becomes non-significant (estimate = .17, $z = 1.56$, $p = .12$) and is only significant when goal fulfilment is 1.6 SD below the mean (estimate = .25, $z = 1.96$, $p = .05$). Furthermore, the hypothesized 3-way prevention interaction effect on creativity for low goal fulfilment (-1 SD) and high work engagement ($+1$ SD) becomes non-significant (estimate = .13, $z = 1.18$, $p = .24$)

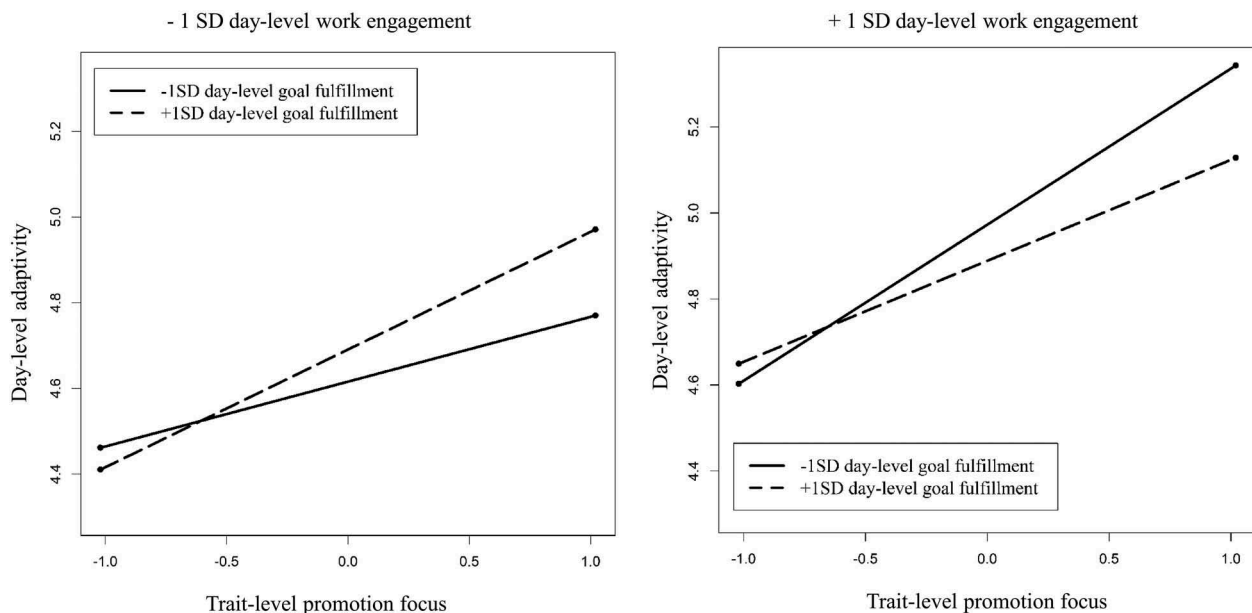


Figure 4. The link between trait-level promotion focus and day-level adaptivity moderated by day-level goal fulfilment and day-level work engagement.

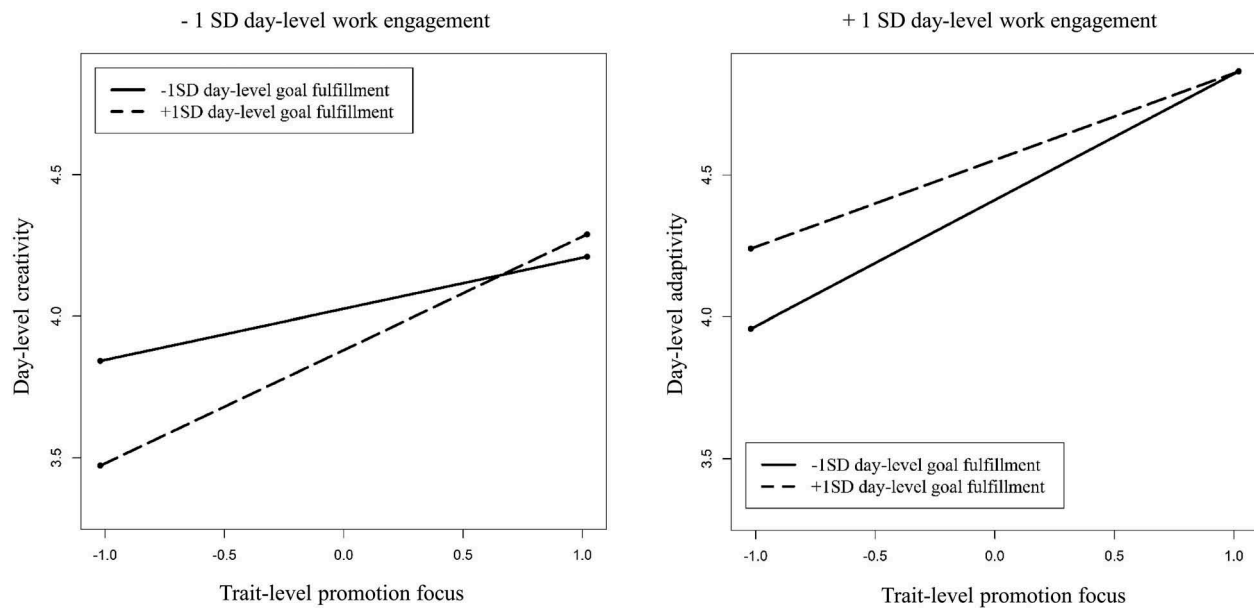


Figure 5. The link between trait-level promotion focus and day-level creativity moderated by day-level goal fulfilment and day-level work engagement.

and stays non-significant throughout the whole range of goal fulfilment. The simple slope tests did not reveal any differences for the 3-way promotion interaction effects.

Discussion

We conducted the present study with the hypothesis that while promotion focus positively relates to adaptivity and creativity, for prevention focus more conditions need to be met for a positive relation with adaptivity and creativity to emerge. Specifically, we hypothesized that prevention focus positively relates to adaptivity and creativity when day-level goal fulfilment is low (i.e., two-way interactions), and that this effect is stronger when work engagement is high (i.e., three-way interactions). As expected, promotion focus indeed positively related to both adaptivity and creativity. The hypothesized positive relations between prevention focus, on the one hand, and adaptivity and creativity, on the other hand, were non-significant when goal fulfilment was low; however, they became positive when work engagement was high (i.e., the three-way interaction was significant). Finally, two unexpected three-way interactions regarding promotion focus emerged: The positive relations between promotion focus, on the one hand, and adaptivity and creativity, on the other hand, became less strong (although they remained positive and significant) when day-level goal fulfilment and day-level work engagement were both low.

The significant positive relations between promotion focus and adaptivity and creativity are in line with extensive literature portraying people high in promotion focus as creative (Friedman & Förster, 2001), open to change (Vaughn et al., 2008), and ready to adapt to changes that occur in their environment (Petrou et al., 2015). Our present results replicate these earlier findings and highlight that a promotion focus is a strategic advantage not only when it comes to the initiation of extraordinary behaviour (Hmieleski & Baron, 2008) or

performance in experimental tasks (Lieberman et al., 1999) but also in boosting every-day creativity (Binnewies & Wörnlein, 2011; Conner & Silvia, 2015) and adaptivity (Peeters et al., 2016) at work. In other words, promotion focus fosters day-level relevant work behaviours that enable individuals to have a successful and efficacious approach towards novel situations.

The predicted two-way interaction effects of prevention focus and goal fulfilment on adaptivity and creativity were not supported. Based on experimental work by Baas and colleagues (2011), we expected that a low level of day-level goal fulfilment cognitively activates and motivates people with a stronger prevention focus, resulting in increased creativity. However, the current findings reveal that this only happens when individuals experience high work engagement. One difference between our study and that by Baas et al. (2011), is that their study was conducted in the lab and people worked on fun creativity tasks, which are possibly engaging in and by themselves. In a work setting, people work on real problems, where they face obstacles and possibly more repetitive work, and where the stakes are higher (Montag, Maertz, & Baer, 2012); they also have to initiate adaptive and creative work behaviours themselves rather than merely responding to a given creativity task. In this work setting, only those people who are engaged in their work may show elevated creativity. Compared to low goal fulfilment in a one-time, short creativity task, low goal fulfilment at one's daily job is likely to be more stressful, especially for people with a strong prevention focus who tend to get easily discouraged by obstacles (Lanaj et al., 2012). Our findings, thus, empirically address and highlight work engagement not simply as an employee outcome important in its own right but also as an asset that empowers employees to deal with adversity and to flourish (Bakker & Demerouti, 2008; Demerouti & Cropanzano, 2010). When work engagement compensates for the attentional or cognitive deficiencies of a prevention focus, failures at work (i.e., unfulfilled goals) could be transformed from a negative state, which is how they are often

considered in research and practice (e.g., Moberly & Watkins, 2010), to a learning opportunity.

Unexpectedly, we discovered two three-way interaction effects for promotion focus. Specifically, a promotion focus always related positively and significantly to adaptivity and creativity, but this relation became weaker when goal fulfilment and work engagement were both low. Although for promotion focus, unfulfilled goals result in enhanced effort to actively pursue these goals (Carver, 2004; Förster, Higgins, & Idson, 1998; Mowrer, 1960), there is the risk that failure to reach desired end states impairs motivation (Higgins, 1997; Idson & Higgins, 2000). Our findings suggests that the latter is more likely when low goal fulfilment is combined with low work engagement, a state that perhaps reveals a “double” frustration. However, we emphasize that the discussion of these non-hypothesized effects (one of which was only marginally significant) is based on speculation and more research is needed to address and understand these effects better.

Last but not least, we conducted additional analyses replacing fulfilment of the most important daily goal with fulfilment of all (one to three) daily goals. Although these analyses did not alter substantially our main findings in terms of regression coefficients, simple slope tests revealed that the hypothesized 3-way interaction effects became non-significant. Additionally, the effect of prevention focus on adaptivity for high (+ 1 SD) work engagement became significant only when goal fulfilment was more extremely low (- 1.6 SD). This is perhaps not surprising if one thinks that the fulfilment of the second and third daily goal is less relevant when people are still dealing with the most important goal of the day. If the most important goal of the day remains unfulfilled, other goals may of course very well concern employees but are perhaps weaker triggers and less likely to motivate them to take immediate action. In that sense, this action is primarily driven by a lack of fulfilment of the one and most important daily task or goal. This is in agreement with work by Baas et al. (2011) who hypothesized and found that lack of fulfilment on one specific task leads individuals high in prevention focus to become creative.

Limitations and implications for future research

Its contributions notwithstanding, the present study entails certain limitations. First, it is a single study and replication studies are needed to verify the robustness of the findings. Second, the study only uses self-reports which may be associated with common-method bias. However, it has been suggested that such bias is of less concern when significant interaction effects are present (Schmitt, 1994). Additionally, daily diary studies with a temporal separation between predictor and outcome (e.g., as we have done with regulatory focus and creativity) are less prone to common method bias (Ohly et al., 2010; Podsakoff, MacKenzie, Jeong-Yeon, and Podsakoff (2003). Similarly, Ng and Feldman (2012) argue that, because employees know better than others the fluctuations of their performance, self-ratings are suitable for studies measuring creativity over time. Thirdly, our study used network sampling and the snowballing technique to recruit participants. This method often results in heterogeneous samples that may help increase the generalizability of the findings to diverse occupational groups (Demerouti & Rispens, 2014), and

we expect that although the creativity and adaptivity demands may vary across organizations, they are needed in each organization. However, future research within organizations where change or creativity are explicit organizational demands will further enhance the external validity of our findings. A fourth limitation is that our hypothesized and found effects refer to a trait-level rather than state-level of regulatory focus, and future research could measure its state component (e.g., day-level promotion and prevention focus; Koopmann, Lanaj, Bono, & Campana, 2016). Given the highly similar findings between trait- and state-level regulatory focus with creativity (e.g., Friedman & Förster, 2010; Roskes, Elliot, Nijstad, & De Dreu, 2013), we would expect a similar pattern of findings as in our study. Another limitation is that our study design is unable to detect causation within the expected relationships. Future research that uses more days and perhaps multiple measurements within a day could be conducted in order to address questions regarding causality more directly, for instance, whether unfulfilled goals in the morning predict adaptivity and creativity at the end of the day. Similarly, research could manipulate regulatory focus in experiments, operationalizing regulatory focus as a state that may change from situation to situation and perhaps act as a mediator. Additionally, our underlying assumption behind the hypothesized effects of prevention focus on adaptivity and creativity was not measured directly. Future research could test whether employees high in prevention focus that experience lack of goal fulfilment recognize that adaptivity and creativity are indeed needed as a way to address their unfulfilled goals.

Last but not least, in this paper, we have argued that threats activate individuals in a prevention focus. This sometimes leads them to increased, but inflexible, perseverance of habitual problem solving and sometimes it may lead to more risky tactics and reactions (e.g., adaptivity and creativity). Our paper only focuses on the latter, which may explain why the effects we have found are generally small. Future research could perhaps test when employees high in prevention focus who face threat display flexible reactions and when they display inflexible reactions.

Implications for practice

Unavoidably, the present study as well prior literature upon which we have built pose challenges for practice: How to best utilize the knowledge that we have acquired? Is it ethical, or desirable to encourage a state of low goal fulfilment in prevention focused employees? We believe that the answer to this question is two-fold. First, the realization that prevention focus and having unfulfilled work goals are not at odds with creativity and adaptivity, contrary to what managers and organizations may believe, is important. Rather than losing faith in prevention focused employees when adaptivity or creativity are required from them, it would be worthwhile and preferable to coach and guide them to achieve adaptivity and creativity by making explicit how and why this is necessary for goal achievement. Second, by creating a resourceful work environment or designing and conducting workplace interventions managers can enhance work engagement among their employees (Bakker & Demerouti, 2017). This will benefit work performance in general, and specifically help

prevention focused employees to succeed in the effortful mission of reaching adaptivity and creativity. Not only organizations, but also employees could benefit from this knowledge. For example, employees struggling with unfulfilled goals may want to try to sustain a positive and engaged mindset. This could help them cope in an effective way with the unfulfilled goals or even translate them to adaptive and creative responses. Going one step further, employees may want to make explicit for themselves which (unfulfilled) goals have the potential to lead to or even be achieved via adaptivity and creativity.

Note

1. As can be seen in Model 2 of Table 2, the 2-way interaction effect of goal fulfilment and work engagement on adaptivity was marginally significant. Simple slope tests revealed that the link between goal fulfilment and adaptivity was positive but non-significant when work engagement was 1 SD below the mean ($z = 1.4, p = .18$) and it was negative and non-significant when work engagement was 1 SD above the mean ($z = -1.3, p = .18$).

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