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Daily strengths use and employee well-being: The moderating role of personality

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This study combines strengths use and personality theories to develop a multilevel model of employee well-being. We hypothesized that individuals would experience higher well-being on the days they use their strengths. In addition, we predicted that Neuroticism, Extraversion, and their blend would bolster this main effect. A total of 87 Norwegian naval cadets filled out a general survey and then completed a diary questionnaire for 30 consecutive days (total $N = 2610$). Results of multilevel modelling showed that daily strengths use was positively related to daily positive affect and work engagement, after controlling for previous levels of the dependent variables. In addition, we found evidence for the predicted three-way interaction effects. These findings contribute to character strengths and personality theories by showing how blends of personality traits modify the effects of daily strengths use behaviours.

Practitioner points

- Employees who use their strengths at work build their own positive affect and work engagement.
- Personality influences how successful employees are in using strengths; strengths use works best for those high in Extraversion and low in Neuroticism.
- Organizations and managers should facilitate employee strengths use, because when employees use their strong points, they are more dedicated and energized during work.

Individual strengths of character (e.g., creativity, bravery, social intelligence) facilitate social functioning and performance, because when individuals possess certain strengths they are better able to deal with environmental challenges (Peterson & Seligman, 2004; Van Woerkom, Bakker, & Nishii, 2016). Recent research among various groups (including students, employees, the elderly) has shown that the use of character strengths has predictive value for well-being and life satisfaction (e.g., Allan & Duffy, 2013; Dubreuil *et al.*, 2016; Proyer, Gander, Wellenzohn, & Ruch, 2014). Moreover, in a work context, it has been found that organizational support for strengths use can help employees deal better with high and accumulated job demands (Van Woerkom, Bakker, *et al.*, 2016), and

that weekly strengths use facilitates work engagement and proactive work behaviours (Van Woerkom, Oerlemans, & Bakker, 2016).

The central aim of the present study is to investigate daily fluctuations in character strengths use, and to test the impact of daily strengths use on daily positive affect and work engagement. Positive affect and work engagement are both well-known indicators of subjective well-being (Bakker & Oerlemans, 2011), with important implications for job performance (Christian, Garza, & Slaughter, 2011; Lyubomirsky, King, & Diener, 2005). Importantly, since it is largely unknown whether strengths use is equally effective for individuals with different personalities, we examine how two basic personality characteristics (Extraversion and Neuroticism) and their blend moderate the strengths use – well-being relationship. Extraversion and Neuroticism are included in most models of personality and have theoretically and empirically been linked to affective well-being in numerous studies (e.g., Costa & McCrae, 1980; Rusting & Larsen, 1997; Watson & Clark, 1984). We tested our hypotheses among a sample of naval cadets who received leadership training during their 75-day stay on a sail ship. This is a unique context in which cadets are exposed to unpredictable weather conditions and need to cope with daily challenges. This context offers ample opportunities for the daily use of character strengths.

With this study, we aim to make two main theoretical contributions. First, we contribute to character strengths theory by proposing that various strengths can be used and have an immediate impact on well-being – on a daily basis. When enacted, strengths are energizing and allow a person to flourish (Dubreuil, Foster, & Courcy, 2014; Wood, Linley, Maltby, Kashdan, & Hurling, 2011). Whereas previous survey research has revealed a positive link between strengths use and well-being (for an overview, see Bakker & Van Woerkom, 2018) – thus showing a difference in well-being between individuals who often use their strengths (e.g., humour, social skills, playfulness) versus those who hardly ever do so – the present study takes a radically different approach.

Specifically, we use a *within-person* approach and focus on fluctuations in strengths use within the same individual from day to day. We theorize that, independent from the general level of strengths use, individuals will experience a peak in positive affect and work engagement on the specific days they use their strong points. Finding such an effect at the day-level may suggest that employees should be encouraged to use their own strengths at work to improve their positive affect and work engagement – on a daily basis. This is important for individuals and organizations at large, because positive affect, and particularly active positive states like work engagement have been positively related to prosocial motivation, job performance, client satisfaction, and financial results, also at the day-level (e.g., Christian *et al.*, 2011; Kim, Kolb, & Kim, 2013; Lyubomirsky *et al.*, 2005). In addition, evidence for a link between strengths use and well-being at the within-person level would indicate that character strengths and work engagement theories hold across levels. This is known as isomorphism, the phenomenon that theoretical relationships take the same form across different levels of analysis.

Second, this study contributes to personality theory by testing whether traits, and particularly *blends* of traits, make an important difference and determine whether people manage to influence their own well-being. The Big Five model has provided a uniform framework for the investigation of personality, but an important criticism is that this model is too simplistic to understand the impact of personality in the workplace (Burns, Morris, & Wright, 2014). Our approach responds to calls for sophisticated and multilevel approaches of employee well-being (Bakker, 2015; Diener, Suh, Lucas, & Smith, 1999). We propose a cross-level model in which stable personality traits moderate (strengthen) the main effects of daily strengths use on daily positive affect and work engagement. We

propose that daily strengths use will have a positive impact on daily well-being, but particularly for certain groups of individuals with certain personality characteristics. Specifically, we argue that strengths use will be most effective for individuals who score high on Extraversion *and* low on Neuroticism. Extraversion and emotional stability will help people in various situations to successfully use their strengths as a lever to deal with job demands, feel enthusiastic, and achieve work-related goals. By investigating the boundary conditions of strengths use, we also make an important contribution to character strengths theory. Previous studies on character strengths and their use have overlooked the possibility that strengths use may not be equally effective for all individuals. Knowing which personalities profit most from strengths use may also help make informed human resource management decisions.

Theoretical background

Character strengths theory and research received increased attention after the emergence of positive psychology – the 'science of positive subjective experience, positive individual traits, and positive institutions' (Seligman & Csikszentmihalyi, 2000, p. 5). Character strengths refer to 'a natural capacity for behaving, thinking, or feeling in a way that allows optimal functioning and performance in the pursuit of valued outcomes' (Linley & Harrington, 2006, p. 88). Examples of character strengths are creativity, gratitude, bravery, and social intelligence – all positive individual characteristics, traits, and abilities that are reflected in thoughts, feelings, and behaviours (Park, Peterson, & Seligman, 2004). Character strengths are malleable but relatively stable across situations, and their definition shows some overlap with classic personality traits. Indeed, character strengths like, for example, curiosity and creativity can be seen as facets of the Big Five factor of Openness, whereas self-regulation and perseverance can be taken as facets of the Big Five factor of Conscientiousness (Peterson & Seligman, 2004). However, personality approaches like the Big Five factor model (Costa & McCrae, 1992a) differ from character strengths approaches in that the former are very broad and particularly aim at general classification and an overall taxonomy (John & Srivastava, 1999). In contrast, character strengths theories focus on how specific lower-order and positive individual differences between people can be developed and optimally used (Bakker & Van Woerkom, 2018).

For an overview of character strengths models and measures, we refer to Bakker and Van Woerkom (2018). The literature shows that strengths researchers diverge in how broadly (e.g., Wood *et al.*, 2011) or narrowly (e.g., Peterson & Seligman, 2004) they define strengths. Whereas some scholars argue that certain strengths are more beneficial for well-being and performance than others (Harzer & Ruch, 2014; Park *et al.*, 2004), other scholars argue that using one's best characteristics – no matter whether they are physical, intellectual, or emotional – invariably leads to increased well-being and performance (Wood *et al.*, 2011).

Strengths use

Although strengths are trait-like, how strengths are used is dependent upon context, values, and interests (Biswas-Diener, Kashdan, & Minhas, 2011). Individuals are most likely to experience positive psychological consequences when they identify, appreciate, and use their character strengths (Peterson & Seligman, 2004). When engaged, strengths are energizing, foster harmonious passion, and allow a person to flourish (Dubreuil *et al.*, 2014; Wood *et al.*, 2011). In contrast, repairing weaknesses may be demoralizing and

demeaning (Hodges & Clifton, 2004). In spite of the recent attention for individual strengths, most developmental processes in organizations are still based on a deficit model in which a person's area of weakness is seen as their greatest area of opportunity (Van Woerkom, Mostert, *et al.*, 2016).

When employees utilize their strengths during work-related activities, they can be authentic and are more likely to reach their goals. When successful, people experience positive emotions such as pride and happiness, as well as work engagement – '. . . a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption' (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). Recent studies have offered preliminary evidence for these ideas, using survey and intervention research designs.

Wood *et al.* (2011) investigated the link between strengths use and well-being among an English community sample. Their results showed that strengths use was related to increases in self-esteem, positive affect, and vitality, and decreases in perceived stress three and 6 months later. Hone, Jarden, Duncan, and Schofield (2015) conducted a study among a nationally representative sample of more than 5,000 New Zealand workers. They found that workers who reported high strengths use were no less than 18 times more likely to be flourishing than those who reported low strengths use. In their study among South African employees from mining, nursing, engineering, and other occupational settings, Botha and Mostert (2014) found that strengths use was positively related to work engagement. The authors argued that strengths use generates feelings of autonomy, competence, and confidence, because people are doing what they naturally do best. Sosik, Gentry, and Chun (2012) examined behavioural manifestations of the character strengths of integrity, bravery, perspective, and social intelligence among top-level U.S. executives. Using matched-report data, they found positive relationships between direct reports' ratings of executive integrity, bravery, and social intelligence and bosses' and board members' ratings of executive performance.

These findings from survey research are generally consistent with findings from intervention studies. Most interventions to date have been conducted outside the workplace, for example, among students, the elderly, or adults who were instructed to use their strengths in a variety of situations (leisure, social, work). The results generally indicate that strengths use (vs. working on weaknesses, or a placebo control group) has a positive impact on well-being, including happiness, life satisfaction, and reduced depression (e.g., Dubreuil *et al.*, 2016; Proyer *et al.*, 2014; Seligman, Steen, Park, & Peterson, 2005).

Some strengths use interventions have focused specifically on a work context. Forest *et al.* (2012) developed an intervention where university students with a part-time job identified their signature strengths, visualized and described themselves at their personal best, and used their strengths in new ways. Results showed that the experimental group reported a higher use of their signature strengths at the end of the study than the control group. Increases in the use of signature strengths were related to increases in harmonious passion and well-being. Further, in a study among unemployed job seekers, Littman-Ovadia, Lazar-Butbul, and Benjamin (2014) investigated the impact of strengths-based (vs. conventional) career counselling as carried out by vocational counselling psychologists. At the 3-month follow-up, the intervention group had a higher rate of employment than the conventional career counselling group. These findings suggest that strengths use can be encouraged in work settings, and may have a positive impact on work-related well-being and behaviour.

Daily strengths use and well-being

In the present study, we build on character strengths theory and follow a relatively new approach in an organizational setting. Instead of using a survey or intervention research design, we adopted a quantitative diary design (see also, Lavy, Littman-Ovadia, & Bareli, 2014). Specifically, we asked our participants (naval cadets) to report their strengths use and well-being over the course of 30 days. In survey research, it is indirectly assumed that employees have an overall, stable tendency to use their strengths (Park *et al.*, 2004). Thus, strengths use is typically treated as an individual difference variable, and the person is the unit of analysis. Although we agree that character strengths are likely to be relatively stable, we argue that strengths *use* may fluctuate considerably from day to day (cf. Biswas-Diener *et al.*, 2011). For example, research has shown that strengths use fluctuates as a function of job autonomy and supervisor support (Bakker & Van Woerkom, 2018; Lavy, Littman-Ovadia, & Boiman-Meshita, 2017). Especially on the days employees have control over the methods they use, and are supported by their supervisor, they will be able to use strengths like persistence, bravery, and creativity. On the days that there is only limited autonomy and support, such strengths are less likely to be utilized.

Character strengths theory proposes that strengths use has a positive impact on well-being, because people are doing what they naturally do best (Harzer & Ruch, 2013; Park *et al.*, 2004). Individuals who use their strengths can be authentic and are more likely to be successful. When individuals use their strengths, they will thus be most strongly aligned with their tasks. This increases opportunities for optimal functioning and reduces the risk of stress. Strengths use is also consistent with conservation of resources theory (Hobfoll, Halbesleben, Neveu, & Westman, 2018), which proposes that individuals strive to maintain, protect, and retain their (material, personal, and energy) resources. Accordingly, in order to prevent stressful loss cycles of resources and to enhance motivating resource gain spirals people need to invest resources. The use of character strengths may be one important way to do so. Moreover, COR theory argues that the more resourceful people are, the better they will be able to invest resources.

Thus, we argue that daily strengths use is positively related to daily positive affect and daily work engagement. Positive affect is a context-free concept (i.e., does not refer to work) and includes high-activated positive states like excitement, as well as low-activated positive states like relaxation (Bakker & Oerlemans, 2011). In the present study, we will investigate positive affect as a momentary state, that is, ask naval cadets how they feel 'right now'. In contrast, work engagement is a work-related state of mind that only includes high-activation positive states, and is characterized by high levels of energy (vigour), dedication, and absorption. The work engagement construct is conceptually similar to flow (Csikszentmihalyi, 1997), but an important difference is that flow does not include an energy component. In addition, work engagement is conceptually similar to harmonious passion (Gorgievski & Bakker, 2010) – the inclination to invest considerable time and energy in activities that are liked and considered important, in harmony with other aspects of life (Vallerand, 2008).

In a recent weekly diary study, Van Woerkom, Oerlemans, *et al.* (2016) found that weekly strengths use predicted changes in self-efficacy, work engagement, and proactivity. This indicates that employees are more positive, energetic, and active during the weeks they use their strengths. This finding is consistent with the theoretical notion that individuals can be most authentic when they use their strengths (Harzer & Ruch, 2013; Park *et al.*, 2004). We expand these previous findings to the day-level, and investigate how strengths use is related to daily positive affect and work engagement. In addition to replicating the findings by Van Woerkom, Oerlemans, *et al.* (2016) across

levels (i.e., isomorphism – the similarity of processes across different time frames), our study answers the question whether individuals can have an immediate impact on their well-being by enacting their strengths, from day to day.

> *Hypothesis 1*:   Daily strengths use has a positive relationship with (1) daily positive affect and (2) daily work engagement, after controlling for previous levels of the dependent variables.

Daily strengths use and the role of personality

Following Bakker's (2015) multilevel framework of employee well-being, we argue that not all individuals will be successful when using their strengths, and that personality traits will determine whether daily strengths use will result in daily well-being. This is consistent with COR theory, which proposes that key resources enable individuals to use other resources more effectively (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014; Hobfoll *et al.*, 2018). Key resources are stable management resources that facilitate the selection, alteration, and implementation of other resources (Thoits, 1994). Conceptually, key resources are more stable and more inherent to a person than other transferrable personal resources. They represent stable personality traits that enable individuals to cope with stressful situations. Key resources are able to explain why some people are better than others in using their strengths. We focus on emotional stability (i.e., low neuroticism) and extraversion as key resources, as they are particularly relevant to new environment adaptation.

Extraversion is the tendency to be self-confident, dominant, active, and excitement seeking (Costa & McCrae, 1992b). Extraverts have a high need for stimulation and have frequent and intense personal interactions. They are generally optimistic and often experience positive emotions. Extraversion is associated with the use of rational, problem-solving coping strategies and with social support seeking and positive reappraisal (Dorn & Matthews, 1992; Watson & Hubbard, 1996). Extraversion can be expected to bolster the daily strengths use – well-being relationship, because extraverts work well in groups and thrive off being around other people. The social resources that are mobilized in this way will help extraverts to optimize the impact of their specific strengths. Imagine a naval cadet – member of the target sample in the present study – using his bravery and kindness strengths on a certain day to coordinate an offensive action against a pirate ship on open sea. The cadet is more likely to be successful in using his strengths if he is extravert (vs. introvert). Extraverts are better able to mobilize social support for their initiatives than those low in extraversion. They are self-confident and proactive (Crant, 2000) and often take the lead in social situations (Judge, Bono, Ilies, & Gerhardt, 2002). This suggests that naval cadets high in extraversion are most likely to profit from using their character strengths (including facets of extraversion, but also completely different strengths like creativity and zest), and will be effective in using their strengths to get things done.

When using their strengths, extraverts will feel authentic and passionate, because they do what they are good at, and can mobilize the necessary social resources to increase the effectiveness of their strengths. Therefore, extraverts will experience positive affect and work engagement on the days they use or enact their strengths (see, for a similar reasoning, Howell, Ksendzova, Nestingen, Yerahian, & Iyer, 2016). In contrast, naval cadets low in extraversion will be less confident and may not be able to mobilize group

support for a brave and offensive action against pirates or other work activities. Thus, we predict a cross-level interaction between extraversion and daily strengths use:

Hypothesis 2:   The positive relationship between daily strengths use and (1) positive affect and (2) work engagement is moderated by trait extraversion. This relationship is stronger for individuals high (vs. low) in extraversion.

Neuroticism is characterized by poor inhibition of impulses, low self-esteem, social anxiety, and helplessness (Costa & McCrae, 1987). People high in neuroticism often experience fearfulness and irritability. They use avoiding and distracting coping strategies (e.g., denying, wishful thinking, self-criticism), rather than more approaching strategies (e.g., problem-solving, proactive behaviour; Bolger, 1990; McCrae & Costa, 1986). Moreover, neuroticism is associated with strong emotional reactions to stressful situations (Bakker, Van der Zee, Ledwig, & Dollard, 2006). We argue that neuroticism will also determine how people think, act, and behave while using their daily strengths.

Neuroticism will generally hinder the successful use of strengths, because individuals high in neuroticism have low personal resources, such as optimism, self-esteem, and self-efficacy (Choi & Lee, 2014), and will behave more nervous on the days they use their strengths (Geukes, Nestler, Hutteman, Küfner, & Back, 2017). This implies that even though they may use their strengths on a daily basis, persons high in neuroticism will be inclined to think that they have limited ability to control and impact upon their environment successfully (Hobfoll, Johnson, Ennis, & Jackson, 2003; Hobfoll *et al.*, 2018). Moreover, their emotional instability will undermine the positive impact of daily strengths use, because the utilization of the strengths will be accompanied by feelings of fear and lack of persistence.

In the context of the present study, naval cadets with low levels of emotional stability will particularly be in trouble on the days they are confronted with storms, and when they need to engage in dangerous work in the ship's masts – actually the conditions in which strengths like bravery and zest are highly needed. In contrast, individuals who are emotionally stable will persist, even when confronted with difficulties. Emotionally stable persons will effectively use their strengths, be less reactive to stressors, and will be better able to regulate their psychological resources (Costa & McCrae, 1987). Thus, we predict:

Hypothesis 3:   The positive relationship between daily strengths use and (1) positive affect and (2) work engagement is moderated by trait neuroticism. This relationship is stronger for individuals low (vs. high) in neuroticism.

Finally, we argue that it is important to recognize that individuals are characterized by several personality traits, and that we need to investigate the impact of blends of personality (cf. Burns *et al.*, 2014). Thus, integrating hypotheses 2 and 3, we argue that the combination of high extraversion and low neuroticism (i.e., their blend) will facilitate the impact of daily strengths use on employee well-being. Individuals who are characterized by high levels of both traits will have all the key resources (Halbesleben *et al.*, 2014; Ten Brummelhuis & Bakker, 2012) to use their character strengths in an effective way. When extraversion is high and neuroticism low, individuals have crucial social and personal resources to make their specific other strengths work for them, from day to day. By mobilizing social support for their initiatives and by showing persistence, naval cadets will be best able to capitalize on a range of other, and more specific character strengths, such as humour, curiosity, and playfulness. Indeed, Judge and Erez (2007) showed that particularly the blend of high extraversion and low neuroticism predicted supervisor-ratings of job performance. However, when either extraversion is low or

neuroticism is high, the value of one personality trait (key resource) may be undermined by the absence of the other personality trait. Specifically when high in neuroticism, extravert individuals may often feel too emotional to seek social support in an effective way and may not profit from personal interactions with colleagues. In a similar vein, when emotionally stable but also low on extraversion, individuals may not proactively seek social support for what they do and thus fail to capitalize on their personal strengths. In the present diary study, we propose that when using their strengths, individuals with many key resources will thrive at work, because they can mobilize all the necessary social and contextual resources to do what they are good at.

> *Hypothesis 4*: The positive relationship between daily strengths use and (1) positive affect and (2) daily work engagement is strongest when trait extraversion is high (vs. low) and trait neuroticism is low (vs. high).

Method

Participants and procedure

A total of 87 Norwegian naval cadets from a Military University College participated in our study. At the start of their training, we assessed participants' personality (Extraversion and Neuroticism) using a survey. As part of their leadership training, the cadets travelled across the North Sea and the Atlantic from northern Europe to North America by sail ship. Participants received a booklet with diary questionnaires for the first 30 days of their 75-day stay on the sail ship. In order to ensure a good response rate, the cadets were instructed fill out the questionnaire just before dinner at 5 PM on each day. During this time, all cadets are awake and no one is allowed to sleep. In addition, each squad leader was instructed to remind his/her own squad of the daily study, and to control whether the team members filled out the daily questionnaire. The researcher on board of the ship collected the diary booklets on each of the days. As a result, the mean response rate across the 30 days of the voyage was very high, namely 97.5%. The sample consisted of 69 male participants (79.3%) and 18 female participants (20.7%). The mean age of the participants was 23.15 years (SD = 2.56).

Measures

Trait survey

We used two subscales of the Revised NEO Five Factor Inventory (NEO-FFI-R; McCrae & Costa, 2004) to assess Extraversion and Neuroticism. The NEO-FFI includes self-descriptive statements that participants respond to using a 1 (strongly disagree) to 5 (strongly agree) Likert-type scale. Scores for each domain are calculated by summing responses to 12 items. Neuroticism was assessed with items such as 'When I'm under a great deal of stress, sometimes I feel like I'm going to pieces', and 'I rarely feel lonely or blue' (reverse scored). Extraversion was assessed with items such as 'I like very much to talk with other people', and 'I usually prefer to do things alone' (reverse scored). The reliability of both scales was good. Cronbach's α was 79 and .78 for Neuroticism and Extraversion, respectively.

Daily diary booklet

We used daily diaries to measure our study variables. All day-level questionnaires were adapted versions of existing scales. We adapted the time frame of the scales and the

number of questions so the questions could be answered on a daily basis (cf. Ohly, Sonnentag, Niessen, & Zapf, 2010).

Day-level strengths use

Day-level strengths use was assessed with the four-item strengths use questionnaire developed by Van Woerkom, Oerlemans, *et al.* (2016). The scale has been validated in three independent samples providing evidence for the convergent and criterion validity of the strengths use scale (e.g., strengths use predicted manager-ratings of job performance). For the present study, the items were adjusted to the day level, for example, 'Today, I used my talents at work', and 'Today, I have applied my personal qualities in my job'. Responses were given on a 5-point frequency scale, ranging from 1 (to a very limited degree) to 5 (to a very large degree). The average within-level reliability coefficient (Cronbach's α) was .89 across the 30 days, indicating good reliability.

Day-level positive affect

Day-level positive affect was measured with the IWP Affect Questionnaire (Warr & Parker, 2009). We decide to use a limited number of affect items, because we asked the cadets to fill out the diary for 30 days. Our measure included six items covering positive affect following a headline stating 'At the present time I feel...', including three items for activated positive affect (e.g., 'enthusiastic'), and three items for low-activation positive affect (e.g., 'relaxed'). The selection of the items was made based on face validity. Responses were given on a 5-point frequency scale, ranging from 1 (not at all) to 5 (almost all of the time). We created an overall index of positive affect, since we have no theoretical reason to assume that strengths use would have a differential impact on high- versus low-activated positive affect. Using strengths at work is expected to facilitate authenticity, implying that individuals may use all types of character strengths that may be associated with various forms of affect. Previous research has indeed shown that strengths use is related to a range of affective well-being outcomes that differ in activation, including happiness, satisfaction, subjective vitality, and harmonious passion (Bakker & Van Woerkom, 2018). In addition, most previous studies on affective well-being have used combined scores of high and low-activated positive affect (for meta-analyses, see Kaplan, Bradley, Luchman, & Haynes, 2009; Lyubomirsky *et al.*, 2005). In the present study, Cronbach's alpha for daily positive affect was .79 across the 30 days.

Day-level work engagement

Day-level work engagement was measured with the state version (Breevaart, Bakker, Demerouti, & Hetland, 2012) of the 9-item Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). Here are three example items: 'Today, I felt bursting with energy' (vigour), 'Today, I was enthusiastic about my job' (dedication), and 'Today, I was immersed in my work' (absorption). The statements could be answered on a 5-point scale (1 = totally disagree, 5 = totally agree). Following the advice by Schaufeli *et al.* (2006), we created an overall index of work engagement. These scholars have argued that engagement is the combination of vigour, dedication, and absorption, and that researchers can avoid problems of multicollinearity and chance capitalization by calculating one overall score. In the present study, daily work engagement showed an average internal consistency of .88.

Strategy of analysis

Due to the multilevel structure of the data, where the 30 daily measurements (level 1) of the study constructs can be considered to be nested within individuals (level 2), we applied multilevel analyses by using MLwiN 2.20. In the analyses, level 1 (day-level) predictors were centred on the respective person mean, while level 2 (person-level) variables were centred on the sample grand mean. To test our hypotheses, we ran four random intercept models including the fixed effect of the intercept and the random effect for each person for both outcomes. First, we tested a model where the intercept was included as the only predictor (Null Model). In the next model (Main effect model), we included the explanatory variables (Strength use), the moderator variables (Neuroticism and Extraversion), and previous day positive affect or work engagement. In the third model, the three two-way interaction terms were included, and in the final model, the three-way interaction term (Strengths use x Neuroticism x Extraversion) was included. Simple slope tests for hierarchal linear models were used to examine whether the slopes in cross-level interactions were significantly different from zero (Preacher, Curran, & Bauer, 2006). The slopes where tested at $\pm$ 1 *SD* for the predictors and moderators, and calculations were based on the asymptotic covariance matrix from the respective multilevel models using R version 3.4.3.

Results

Descriptive statistics

Table 1 shows the means, standard deviations, and correlations between all study variables. It should be noted that we averaged day-level variables across 30 days to enable calculation of correlations between day- and person-level variables. It can be seen that positive affect and work engagement correlate .50 at the day-level. This means that both outcome variables share 25% of the variance. Moreover, the intra-class correlations (ICC) for day-level variables were .59, .23 and .31, for positive affect, work engagement, and strength use, respectively. We conducted a multilevel confirmatory factor analysis (MLCFA) to further test how well daily strength use, daily positive affect, and daily work engagement could be discriminated. In order to restrict the number of indicators due to low sample size (Matsunaga, 2008), we modelled work engagement using three parcel scores reflecting vigour, dedication, and absorption, and modelled positive affect by using

Table 1. Means, standard deviation, and day and person-level correlations for all study variables

Variables	M	SD	1	2	3	4
Day-level						
1. Positive affect	2.96	0.73		.50**	.27**	–
2. Work engagement	3.34	0.62	.51**		.47**	–
3. Strengths use	3.06	0.77	.39**	.40**		
Person-level						
4. Neuroticism	2.18	0.50	−.36**	−.42**	−.30**	
5. Extraversion	3.71	0.44	.30**	−.30**	−.16	−.25*

Note. Correlations above the diagonal are correlations on the within (day) level and correlations below the diagonal are correlations on the between (person) level.
*p < .05; **p < .001.

three parcel scores each including two of the original items (for a discussion, see Little, Cunningham, Shahar, & Widaman, 2002). For strength use, we used the four observed indicators. Results showed that a three-factor model fit significantly better to the data as compared to a one-factor model, $\Delta\chi^2$ (2) = 2525.63, p < .001. The three-factor model showed a reasonable fit to the data, χ^2 (64) = 270.75, CFI = .98, TLI = .97, RMSEA = .036, SRMR within = .033, and SRMR between = .048. This means that strength use, positive affect, and work engagement can be empirically distinguished.

Hypotheses testing

Daily positive affect

Hypothesis 1a stated that daily strengths use has a positive relationship with daily positive affect. As can be seen in Table 2 (main effects model), the results of multilevel analyses showed that daily strengths use was positively related to daily positive affect, B = .193, p < .001, after controlling for previous day positive affect. Furthermore, the results showed a significant negative relationship between trait neuroticism and daily positive affect (B = −.404, p < .001), while the relationship between trait extraversion and daily positive affect was not significant (B = .265, n.s.). The main effect model explained in total 18.2% of the day-level variance and 18.2% of the person-level variance in positive affect. Specifically, strength use explained 6.8% of the daily variance in positive affect, while neuroticism explained 10.2% of the variance on the person-level variance. Thus, hypothesis 1a was supported.

Hypothesis 2a stated that trait extraversion would moderate the strengths use – positive affect relationship. However, the interaction between daily strengths use and trait extraversion was not significant in both the two-way interaction model (B = .031, n.s.), and three-way interaction model (B = .050. n.s.). This means that hypothesis 2a was rejected.

Hypothesis 3a stated that trait neuroticism would moderate the relationship between daily strengths use and positive affect. Specifically, we proposed that naval cadets would benefit more from strengths use in terms of positive affect if their trait neuroticism was low rather than high. Consistent with Hypothesis 3a, the results showed that the interaction between daily strengths use and trait neuroticism was close to significance in the two-way interaction model (B = −.063, p < .06), and significant (B = −.110, p < .01) in the final model including the three-way interaction term. Specifically, the interaction between strength use and neuroticism explained 0.44% of day-level variance in positive affect in the final model. We plotted the interaction effect based on the results from the two-way interaction model (see Figure 1) and conducted simple slope tests in order to examine the pattern of the two-way interaction (Preacher *et al.*, 2006). A slightly stronger positive relationship was found between strength use and positive affect among persons with a low level of trait neuroticism (Slope = 0.233, SE = .024, z = 36.898, p < .001) compared to persons with a high level of trait neuroticism (Slope = 0.170, SE = .025, z = 8.068, p < .001).

Hypothesis 4a stated that the positive relationship between daily strengths use and positive affect would be strongest when trait neuroticism is low (vs. high) and trait extraversion is high (vs. low). As can be seen in Table 2, the final model including the three-way interaction term fit the data significantly better than the two-way interaction model (difference of −2 × log = 7.471, df = 1, p < .001). The three-way interaction between strengths use, trait neuroticism, and trait extraversion was significant (B = −.185, p < .05; see Figure 2), and specifically explained 0.39% of the day-level variance in positive affect. The simple slope test indicated that for persons with a low level

Table 2. Multilevel analyses: Daily positive affect by daily strengths use, neuroticism, and extraversion

	Null model		Main effects		Two-way interactions		Three-way interaction	
	B	SE	B	SE	B	SE	B	SE
Intercept	2.963**	.062	2.968**	.059	2.948***	.060	2.948***	.060
Positive affect previous day			.276**	.020	.276**	.020	.274**	.020
Strengths use			.193**	.015	.201**	.016	.194**	.016
Neuroticism (N)			−.404**	.124	−.483**	.131	−.483**	.131
Extraversion (E)			.265	.139	.302*	.139	.302*	.139
Strengths use * N					−.063	.033	−.110**	.037
Strengths use * E					.031	.037	.050	.037
N * E					−.400	.250	−.402	.251
Strengths use * N * E							−.185**	.067
Variance level 2 (person)	.313 (59%)	.050	.265	.044	.256	.042	.256	.042
Variance level 1 (day)	.220 (41%)	.007	.180	.006	.180	.006	.179	.006
−2 Log likelihood	3,390.883		2,546.285		2,538.032		2,530.561	

Note. $N = 87$ individuals, $N = 2,610$ occasions.
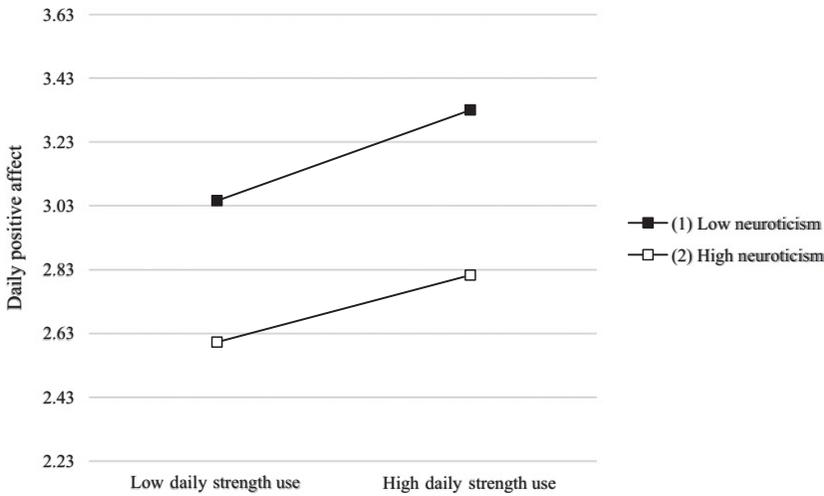**$p < .01$; *$p < .05$.

Figure 1. Daily positive affect as a function of daily strengths use and trait neuroticism.

of trait neuroticism and a high level of extraversion, strengths use was strongly positively related to positive affect (slope = 0.312, SE = .038, z = 8.155, p < .001). As can be seen in Table 4, all the other slopes were flatter than the target slope (all slopes ≤ 0.186, z's ≤ 6.002, p's < .001). Formal t-tests for slope differences showed that the slope for persons low in neuroticism and high in extraversion was more positive than the slopes for all other combinations (t's > 3.312, p's < .001). This means that hypothesis 4a was also supported.

Daily work engagement
In the second series of multilevel models for daily work engagement, we performed the same set of analyses as for positive affect. As can be seen in Table 3 (main effects model),
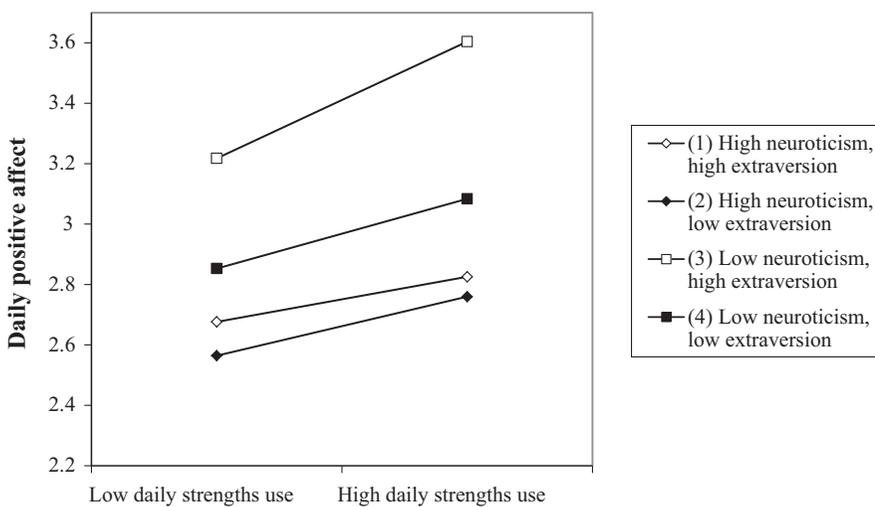

Figure 2. Daily positive affect as a function of daily strengths use, trait neuroticism, and trait extraversion.

Table 3. Multilevel analysis: Daily work engagement by daily strengths use, neuroticism, and extraversion

	Null model		Main effects		Two-way interactions		Three-way interaction	
	B	SE	B	SE	B	SE	B	SE
Intercept	3.335**	.034	3.338**	.032	3.336**	.032	3.335**	.032
Work engagement previous day			.156**	.020	.157**	.020	.155**	.019
Strengths use			.400**	.017	.409**	.017	.402**	.017
Neuroticism (N)			−.210**	.066	−.221**	.071	−.221**	.071
Extraversion (E)			.216**	.074	.221**	.075	.221**	.075
Strengths use * N					−.085*	.037	−.135**	.042
Strengths use * E					.026	.041	.046	.042
N * E					−.052	.132	−.053	.132
Strengths use * N * E							−.199**	.075
Variance level 2 (person)	.087 (23%)	.015	.068	.012	.067	.012	.067	.012
Variance level 1 (day)	.294 (77%)	.009	.224	.007	.223	.007	.222	.007
−2 Log likelihood	3,928.832		2,860.529		2,853.302		2,846.291	

Note. $N = 87$ individuals, $N = 2,610$ occasions.
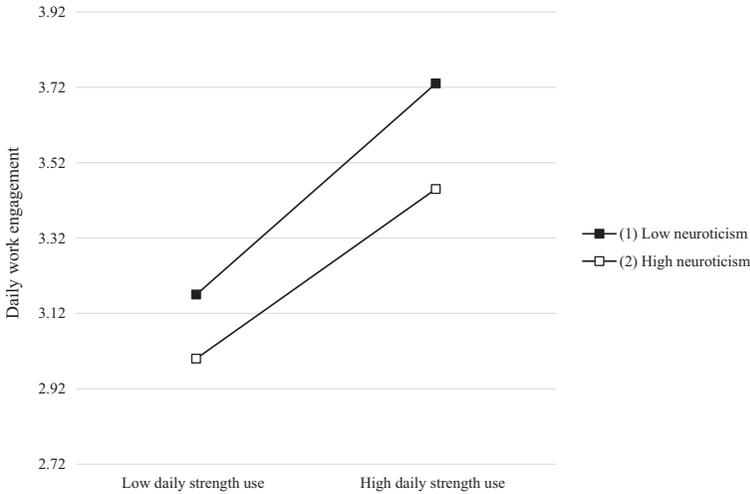**$p < .01$; *$p < .05$.

Figure 3. Daily work engagement as a function of daily strengths use and trait neuroticism.
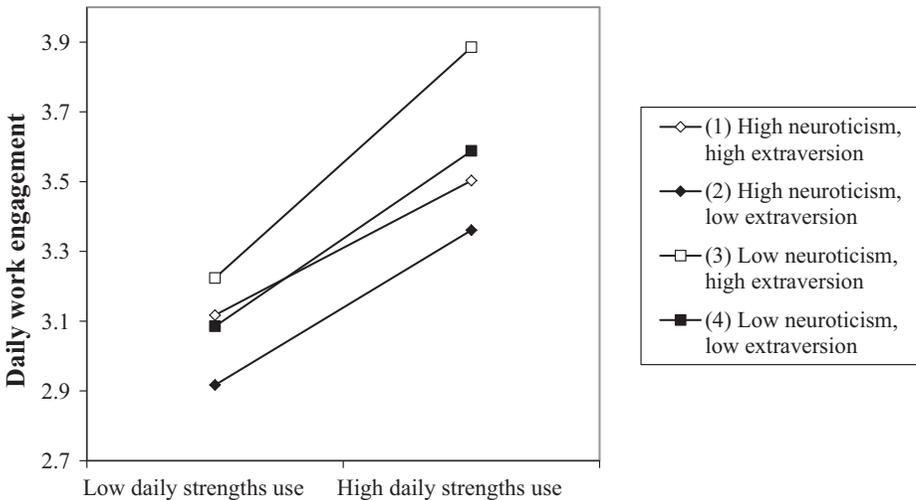

Figure 4. Daily work engagement as a function of daily strengths use, trait neuroticism, and trait extraversion.

consistent with Hypothesis 1b, the results showed that daily strengths use was positively related to daily work engagement ($B = .409$, $p < .001$. In addition, the results showed a significant negative relationship between trait neuroticism and daily work engagement ($B = -.210$, $p < .001$), and a significant positive relationship between trait extraversion and daily work engagement ($B = .216$, $p < .001$). Specifically, strength use explained 22.2% of the day-level variance in work engagement, while neuroticism and extroversion explained 15.0% and 8.1% of the person-level variance, respectively.

Hypothesis 2b stated that trait extraversion would moderate the daily strengths use – work engagement relationship. Similar as for positive affect, the interaction between daily strengths use and trait extraversion was non-significant in both the two-way interaction model ($B = .026$, n.s.), and three-way interaction model ($B = .046$, n.s.). Thus, hypothesis 2b was rejected.

Table 4. Simple slope tests for three-way interaction predicting daily positive affect and work engagement

	Strengths use – Positive affect				Strengths use – Work engagement			
	Neuroticism				Neuroticism			
	Low		High		Low		High	
Moderator	Slope	Z-score	Slope	Z-score	Slope	Z-score	Slope	Z-score
Extraversion								
Low	.186*	6.002	.158*	6.234	.406*	8.070	.379*	17.724
High	.312*	8.155	.120*	3.372	.534*	26.731	.411*	14.414

Note. *$p < .001$.

Hypothesis 3b stated that trait neuroticism would moderate the relationship between daily strengths use and work engagement. Specifically, we proposed that naval cadets would benefit more from character strengths use in terms of work engagement if their trait neuroticism was low (vs. high). Consistent with Hypothesis 3b, the results showed that the interaction between daily strengths use and trait neuroticism was significant in both the two-way interaction model ($B = -.085$, $p < .05$), and in the final model (three-way interaction model) including the three-way interaction term ($B = -.135$, $p < .001$). Specifically, the interaction between strength use and neuroticism explained 0.27% of the day-level variance in the two-way model and 0.53% of the day-level variance in the final three-way interaction model. Simple slope tests based on the results from the two-way interaction model (see Figure 3) showed a stronger positive relationship between strength use and daily work engagement among persons with a low level of trait neuroticism (Slope $= 0.452$, $SE = .023$, $z = 16.559$, $p < .001$) compared to persons with a high level of trait neuroticism (Slope $= 0.367$, $SE = .023$, $z = 15.641$, $p < .001$).

Finally, Hypothesis 4b stated that the positive relationship between daily strengths use and work engagement would be strongest when trait neuroticism is low (vs. high) and trait extraversion is high (vs. low). As can be seen in Table 3, the model including the three-way interaction term fit the data significantly better than the two-way interaction model (difference of $-2 \times \log = 7.011$, $df = 1$, $p < .01$. The three-way interaction between strengths use, trait neuroticism, and trait extraversion was significant ($B = -.199$, $p < .05$; see Figure 4), and specifically explained 0.36% of the day-level variance in work engagement. Simple slope tests indicated that for persons low in neuroticism and high in extraversion, strengths use was strongly positively related to positive affect (Slope $= 0.534$, $SE = .020$, $z = 26.731$, $p < .001$). Table 4 shows that all other slopes were flatter than the target slope (all slopes ≤ 0.405, z's ≤ 8.070, p's $< .001$). *T*-tests for slope differences showed that the slope for persons low in neuroticism and high in extraversion was more positive than the slopes for all other combinations (t's > 2.390, p's $< .05$). This means that hypothesis 4b was supported as well.

Discussion

The central aim of the present study was to investigate daily fluctuations in strengths use in a work setting, and to examine how two basic personality characteristics (Extraversion and Neuroticism) moderate the strengths use – employee well-being relationship. We

argued that daily strengths use leads to positive affect and work engagement, because employees who use their strengths can be authentic and are more likely to be successful in their work. The results of our study in a novel occupational context showed that naval cadets were most excited, enthusiastic, and energized on the days they used their strengths on board of the sail ship. Moreover, the two core personality traits – extraversion and neuroticism – largely played the predicted role as key resources. Naval cadets who could be characterized as high in extraversion and low in neuroticism benefitted most from capitalizing on their strong points during work. In what follows, we discuss the most important contributions of the study.

Theoretical contributions

The present study makes two important theoretical contributions. First, we contribute to positive psychology theory in general and character strengths theory in particular by showing that various strengths can be used on a daily basis and have an immediate impact on well-being. Our study is arguably the most comprehensive study to date by revealing strengths use fluctuations over the course of 30 working days. On the days individuals use their strengths at work, they feel full with energy and they flourish (Dubreuil *et al.*, 2014; Wood *et al.*, 2011). Whereas previous survey studies showed that those who often use their strengths generally feel more positive emotions and are more engaged in their work (Bakker & Van Woerkom, 2018), the present study used a *within-person* approach, and theorized and showed that individuals experience a peak in positive affect and work engagement on the days they enact their strong points. The finding that the strengths use–well-being relationship takes the same form across different levels of analysis (i.e., isomorphism) implies that character strengths and work engagement theories hold across levels. Importantly, the findings suggest that employees can proactively increase their daily positive affect and work engagement by using their individual strengths (e.g., humour, social skills, playfulness).

Whereas previous research has provided strong evidence for the idea that personal resources (e.g., optimism, self-efficacy) and job resources (e.g., autonomy, performance feedback, task identity) provided by the organization are important predictors of daily and sustained work engagement (Bakker, Demerouti, & Sanz-Vergel, 2014), the present study suggests that employees may also build their own work engagement. By using their strengths, employees do their work in an optimal way, because the application of character strengths means that one is behaving naturally and authentically (Botha & Mostert, 2014; Park *et al.*, 2004). For example, it is conceivable that a general physician who uses her social intelligence strength will use all available time to listen empathetically to her patients, and in that way arrives at the best diagnosis. A physician who instead uses her knowledge and creativity to find the best treatment for the patient may similarly reach her goals through using other strengths. In whatever way physicians and naval cadets reach their work-related goals, they will feel happy and engaged if they do reach their goals by using their strengths at work.

Second, the present study contributes to personality theory by showing that personality traits, and particularly *blends* of traits make an important difference, and determine whether people manage to influence their own well-being. The Big Five model has provided a uniform framework for the investigation of personality, but an important criticism is that 'the Big Five does not offer the complexity necessary for truly understanding the impact of personality in the workplace' (Burns *et al.*, 2014, p. 57). One way of adding complexity is through studying combinations or interactions between

traits. The finding of the present study that particularly the combination of high extraversion and low neuroticism facilitated the effectiveness of daily strengths use in a work context is consistent with previous research showing that the same blend of traits predicted supervisor-ratings of job performance (Judge & Erez, 2007). Bowling, Burns, Stewart, and Gruys (2011), and Jensen and Patel (2011) found that conscientiousness and agreeableness moderated the relationship between neuroticism and counterproductive work behaviours. Particularly, employees who were high in neuroticism and simultaneously low in conscientiousness or low in agreeableness showed more counterproductive work behaviours directed at the organization (e.g., put little effort into work) or at co-workers (e.g., make fun of others). In a similar fashion, Zhou, Meier, and Spector (2014) showed that blends of personality traits might act as key resources. Among other things, these authors reported that interpersonal conflicts were positively related to counter-productive work behaviour (CWB). However, for individuals characterized by a blend of high emotional stability and high agreeableness interpersonal conflicts were unrelated to CWB. The present study expands these previous findings, and further informs personality theory by showing that blends of personality traits (neuroticism and extraversion) explain important work behaviours and outcomes over and above the impact of individual traits.

Although extraversion played an important role as a moderator of the daily strengths use–well-being relationship when blended with neuroticism (i.e., the three-way interaction effects), extraversion did not moderate this relationship as an isolated trait (i.e., the two-way interaction effects). Closer inspection of the correlations reveals that individuals scoring higher on extraversion were not more likely to use their strengths. This means that the predictor and moderator were largely independent. One possibility is that introverts may use other strengths than extraverts (e.g., more personal strengths, fewer social strengths). However, on the days these specific (and different) strengths are used, they are equally effective for introverts and extraverts. Another possible reason why extraversion did not moderate the link between daily strengths use and well-being is that emotional stability is needed to effectively enact extraversion. When high extraversion is combined with high neuroticism, individuals are not able to effectively regulate their energetic resources. This will then undermine the power of extraversion to mobilize social resources (e.g., social support from colleagues for implementing the strengths on a daily basis). This is exactly the pattern of findings produced by the three-way interaction effect (see Figures 2 and 4). Future research should reveal whether these findings hold across occupations.

Limitations

The present study used a novel sample of naval cadets in a unique setting – sailing across the North Sea and Atlantic from Europe to the United States. Although the findings were generally consistent with our theory-based predictions, a possible limitation is that the majority of the sample was male and the work tasks were rather unique (e.g., climbing the masts, cleaning the deck; engaging in military actions). Thus, we do not know whether the findings generalize across genders and to other occupational groups. However, previous research among researchers, scientists, engineers, and support staff (Van Woerkom, Bakker, *et al.*, 2016; Van Woerkom, Oerlemans, *et al.*, 2016) has suggested that strengths use also influences important organizational outcomes (e.g., work engagement, self-efficacy, other-ratings of job performance) among females and in other occupations. Future research should build on these findings and test the strengths use model in other settings and cultures. Second, we investigated the relationship of strengths use with employee well-being, but we do not know which specific strengths were used by

the naval cadets. The sample used in the present study has gone through a serious selection procedure, so it is clear that all cadets had various strengths that were needed for the job (e.g., bravery, confidence). Nevertheless, it would be interesting to find out whether the cadets used idiosyncratic and 'hidden' strengths on a daily basis. Did the cadets use humour during work, and did humour help them to deal with stressful working conditions? What other strengths were useful during the execution of daily work tasks? It seems important for strengths use theory to combine information about specific virtues and strengths with frequency of strengths use, and investigate what helps most to be engaged at work and perform well.

A third possible limitation is that we selected extraversion and neuroticism as moderators of the strengths use – work engagement relationship. Although these two factors can be considered as core personality factors, it would be exciting and important to investigate the role of the other Big Five personality factors – Openness, Agreeableness, and Conscientiousness. Also, it would be very interesting to investigate the role of work environmental factors, such as workload, autonomy, support for strengths use, and time pressure. Are employees able to use their strengths when under time pressure? Is autonomy needed to use character strengths at work?

Fourth, although we analysed the impact of daily strengths use on daily positive affect and work engagement, it is also plausible that those who are engaged at work and experience positive emotions are more likely to use their strengths. Indeed, previous research has shown that other proactive behaviours – such as job crafting – can be cause and consequence of work engagement (Demerouti, 2014). Future research may test reciprocal relationships between strengths use and work engagement, and identify the strongest direction in these relationships. It is also conceivable job resources (e.g., autonomy and social support) influence both strengths use and positive affect/work engagement, and that this explains the positive relationship between strengths use and well-being. However, previous theory and experimental research suggests that strengths use has positive effects on well-being and performance (e.g., Littman-Ovadia *et al.*, 2014; Proyer *et al.*, 2014). Thus, we can build on theory and findings to argue that daily strengths use is a predictor of positive affect and work engagement. Moreover, we controlled for previous-day well-being, and showed that the effect of strengths use was predictably different for different subgroups.

Finally, we acknowledge that the percentages of variance explained by the interaction terms are limited. However, it should be noted that the interactions provide a *qualification* and thus a more nuanced view of the main effects that explain much more variance. Thus, the interactions give insight in the subgroup of individuals most responsible for the main effects. Although the additional variance explained is limited, we think the interaction effects are highly informative.

Practical implications

The present study also has several practical implications. First, our findings show that employees can work on their own engagement by using their character strengths at work. Since awareness of strengths seems an important prerequisite for using strengths, organizations may want to identify their employees' strengths by using validated instruments for the assessment of strengths, or by organizing workshops, in which employees learn to identify their own strengths through structured exercises. For example, employees could use the Reflected Best Self Exercise (Roberts, Dutton, Spreitzer, Heaphy, & Quinn, 2005), in which they email several people who know them

well, asking them to write a story about a time when the focal employee was at his/her best. Employees can then use the common patterns in the stories to create an overview of their personal strengths.

Our results showed considerable fluctuations in strengths use, implying that employees cannot use their strengths to an equal extent every day. On days employees do use their strengths, they feel vigorous and dedicated to their work, and they perform well. Thus, employees should take advantage of the days that offer room for strengths use – for example, through self-leadership (e.g., use goal-setting, self-reward strategies). On the days that do not offer much room for strengths use – for example, on days with high job demands, or at the end of the day when employees feel too tired to invest additional effort in their work – employees should try to use external resources to deal with their job demands – for example, social support from colleagues.

Second, organizations may want to encourage their employees to use their strengths at work. This can be done by creating a climate for strengths use and by offering support for strengths use (Van Woerkom, Oerlemans, *et al.*, 2016). In addition, leaders should be made aware of the importance of using their followers' strengths. Leaders will need to be enabled to perceive strengths and made aware of the importance of strengths use for employee well-being, behaviours, and performance. Being able to use followers' strengths is actually an important facet of effective leadership. According to transformational leadership theory (Bass & Riggio, 2006), effective leaders exhibit individual consideration to followers by paying attention to and meeting the needs of their followers. Leaders who capitalize on their followers' strengths will most likely be more effective than leaders who tell their followers to work on their weaknesses.

Third, our findings show that strengths use is an important predictor of positive affect, which is particularly important in working environments that require learning and creativity (e.g., Amabile, Barsade, Mueller, & Staw, 2005; Fredrickson, 2001). Since individuals low in extraversion and high in neuroticism seem least able to translate their strengths into positive affect and work engagement, organizations with a high need for learning and creative problem-solving may want to select their employees on the basis of personality tests. The present study has shown that individuals high in extraversion and low in neuroticism are most likely to create positive affect and work engagement through using their strengths, on a daily basis.

Finally, the current findings seem to suggest that daily strengths use is not particularly effective for individuals high in neuroticism – that is, for individuals who are impulsive and vulnerable to stress, and who regularly experience feelings of anxiety, anger, frustration, and depression. There are two possible ways to deal with this. One way is to provide sufficient environmental resources so that emotionally less stable employees will also feel comfortable in using their strengths. A second way is to help employees implement their strengths, particularly those with high levels of neuroticism. Since theoretically all people with all types of personalities have certain strengths, it seems particularly important to identify these strengths and help those employees with the use of their strengths. Both strategies seem important, because strengths use has important implications for work engagement (Van Woerkom, Oerlemans, *et al.*, 2016), job performance (Harzer & Ruch, 2014), and sickness absenteeism (Van Woerkom, Bakker, *et al.*, 2016).

Conclusion

This study suggests that strengths use may foster positive affect and work engagement. Since previous research has shown that work engagement is an important predictor of job

performance and creativity (Christian *et al.*, 2011; Kim *et al.*, 2013), organizations should try to stimulate strengths use, for example, by support for strengths use, through individual consideration by leaders, or by providing autonomy support. Such strategies will most likely work best for employees with high levels of extraversion and low levels of neuroticism, because these personalities are best able to use their strengths from day to day.

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