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Do Personal Resources and Strengths Use Increase Work Engagement? The Effects of a Training Intervention

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This study uses a quasi-experimental research design to investigate whether a personal resources intervention combined with strengths use can increase work engagement. Following job demands–resources theory, we argue that when employees strengthen their beliefs regarding how much control they have over their environment (i.e., increase their personal resources) and use their character strengths, they will be more engaged at work. The intervention focused specifically on impacting assertiveness, self-efficacy, and resilience. We hypothesized that the intervention would increase work engagement *through* an increase in personal resources. Participants were all enrolled for a personal resources training and were assigned to training intervention groups (n = 54) or waiting-list control groups (n = 48). Results of multivariate analyses of variance supported our hypotheses that the intervention increased personal resources, strengths use, and work engagement. In addition, process analyses using a bootstrapping procedure showed that in the intervention group (not in the control group), the intervention had a positive impact on changes in work engagement through changes in self-efficacy and resilience. We discuss the implications of these findings for job demands–resources theory, as well as the practical implications.

Keywords: assertiveness, training intervention, job demands–resources theory, personal resources, work engagement

In recent years, the organizational psychology literature has seen a sharp increase in the number of studies investigating work engagement (Bakker & Albrecht, 2018; Schaufeli, 2012) and possible personal strategies employees may use to improve their own levels of engagement (Bakker, 2017). When employees feel engaged, they are enthusiastic about their job, feel full with energy, and they are often completely immersed in their work activities. This positive motivational state enables individuals to be persistent and creative at work and to perform well (Christian, Garza, & Slaughter, 2011). Increasing and sustaining work engagement is, therefore, an important concern of many organizations. Moreover, organizations that acknowledge the importance of human resources identify and use employee character strengths, such as leadership, self-regulation, and social intelligence. 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), and research shows that employees who use their strengths are also likely to feel engaged at work (Stander, Mostert, & De Beer, 2014).

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A recent meta-analysis revealed that work engagement can be increased with several types of interventions (Knight, Patterson, & Dawson, 2019). In the present study, we use a quasi-experimental research design to investigate whether a *personal resources* intervention combined with strengths use can increase work engagement. Building on job demands–resources (JD-R) theory (Bakker & Demerouti, 2017), we argue that when employees strengthen their beliefs regarding how much control they have over their environment (i.e., increase their personal resources), they will be more engaged at work. The intervention focuses specifically on impacting assertiveness, self-efficacy, and resilience—three personal resources that seem crucial to deal with stressful job demands (Lee & Crockett, 1994; Xanthopoulou, Bakker, & Fischbach, 2013). Although some studies have suggested that personal resources interventions may be effective in an organizational context (Knight, Patterson, & Dawson, 2017), little is known about the causal impact of personal resources on work engagement—a central prediction in JD-R theory. Moreover, most intervention studies ignore the psychological processes responsible for increases in employee well-being. This means that it is largely unknown *why* interventions actually work.

We aim to make three contributions. First, we contribute to JD-R theory by testing a central hypothesis, namely, that personal resources have a causal impact on work engagement. Although a recent meta-analysis of work engagement interventions identified five studies that established this causal link (Knight et al., 2017), a closer inspection of the original studies reveals that self-efficacy was the only personal resource construct investigated. The studies focused on the effect of work-related self-efficacy, means/method efficacy, and career management self-efficacy. The present study

will investigate the intervention effects of three distinctive personal resources, namely, assertiveness, self-efficacy, and resilience on work engagement. Second, we test whether the intervention combining exercises and assignments to increase personal resources and the use of character strengths has a causal impact on the actual use of strengths. Showing that employees can learn to use their strong points is important because strengths use is a powerful behavioral strategy to improve job performance (Dubreuil, Forest, & Courcy, 2014; Stander et al., 2014). Third, we analyze the psychological mechanism through which the intervention has its effects. Specifically, we use a novel moderated mediation analysis to investigate which particular personal resources (assertiveness, self-efficacy, or resilience) are most important in fostering work engagement.

Theoretical Background

Personal resources are positive self-evaluations and refer to individuals' sense of their ability to control and impact their environments successfully (Hobfoll, Johnson, Ennis, & Jackson, 2003). Individuals who are high in assertiveness, self-efficacy, and resilience are convinced that they can adequately stand up for themselves, are capable to handle unforeseen events, and are able to bounce back from adversity and failure. JD-R theory (Bakker & Demerouti, 2017) proposes that such personal resources can play a similar role as job resources. Thus, personal resources have motivational potential because they help employees to deal with the prevailing job demands and reach work-related goals. Research has indeed confirmed that personal resources are unique (positive) predictors of work engagement and performance and become more important when job demands are high. For example, Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009) showed that self-efficacy, organization-based self-esteem, and optimism were positively related to future work engagement. In another study, Xanthopoulou et al. (2013) showed that self-efficacy (but not optimism) was particularly a positive predictor of work engagement when emotional job demands were high.

Expanding these findings, Bakker and Sanz-Vergel (2013) showed that weekly self-efficacy and optimism were positively related to weekly work engagement when weekly challenge job demands were high (vs. low), and that these personal resources were positively related to flourishing when weekly hindrance job demands were low (vs. high). Resilience refers to the capacity to regulate impulses and to adapt to the surrounding psychosocial environment (Block & Kremen, 1996). Consistent with the assumption in JD-R theory that personal resources can be increased, Luthans, Avey, and Patera (2008) have defined resilience as the developable capacity to bounce back from adversity, conflict, and failure. Thus, resilience is an adaptive and resource-using capacity. Previous survey research studies have provided tentative (correlational) support for the contention that resilience helps to be engaged at work (Bakker & Xanthopoulou, 2013; Kašpárková, Vaculík, Procházka, & Schaufeli, 2018; Malik & Garg, 2020), most likely because resilience helps to deal with the challenges employees face at work.

In short, research on the role of personal resources in JD-R theory suggests that personal resources play an important role in sustaining work engagement. Only a few previous studies have used personal resources *interventions* to increase personal resources, and indirectly increase relevant work-related outcomes. A recent meta-analysis (Lupşa, Virga, Maricutoiu, & Rusu, 2020) showed that scholars have used various types of interventions to influence personal resources, including positive work reflection exercises, mindfulness, and skills training. However, only six of these studies directly targeted personal resources in interventions among employees.

For example, although the effect size was small, Luthans et al. (2008) showed that a short, 2-hr web-based training intervention could increase hope, self-efficacy, optimism, and resilience (referred to as "psychological capital" (p. 209)). Similarly, Zhang, Li, Ma, Hu, and Jiang (2014) showed that a structured reading materials–based psychological capital intervention increased Chinese employees' psychological capital and their self-rated task performance. Using a higher dose intervention (four 3-hr group training sessions), Demerouti, Van Eeuwijk, Snelder, and Wild (2011) showed that a personal effectiveness intervention increased self- and other-ratings of psychological capital and assertiveness. In a similar vein, van Wingerden, Derks, and Bakker (2017) showed that a personal resources intervention consisting of three 3-hr group training sessions increased employees' psychological capital. Two other interventions targeted one or two *specific* personal resources. Waite and Holder (2003) showed that a resilience intervention influenced resilience, and Liossis, Shochet, Millear, and Biggs (2009) revealed that a comparable intervention impacted optimism. Taken together, these studies indicate that a personal resources intervention can be effective and may influence employees' beliefs that they have control over their environment. However, it is largely unknown whether an increase in personal resources can consequently change employee work engagement. The meta-analysis by Lupşa et al. (2020) indicated that there was too much heterogeneity to conduct statistical analyses on such a secondary outcome.

One unique personal resource targeted in this study is assertiveness, defined as "any action that reflects an individual's own best interest, including standing up for oneself without significant anxiety, expressing one's feelings comfortably, or exercising one's own rights without denying the rights of others" (Speed, Goldstein, & Goldfried, 2018, pp. 1–2). The goal of assertiveness training is to help individuals become better able to openly verbalize what they want in various life situations. Assertiveness training uses a variety of cognitive–behavioral techniques and aims to help individuals reduce any anxiety-based inhibitions and learn specific skills to develop more competent social functioning. This intervention was particularly popular in the 1980s and 1990s in clinical settings and has shown its effectiveness in reducing anxiety and depressive symptoms, as well as increasing self-esteem, self-concept, and internal locus of control (Speed et al., 2018; for meta-analyses, see Barth et al., 2013; Cuijpers, Van Straten, Andersson, & Van Oppen, 2008). In the present study, we investigate the role of assertiveness in a work context. The training intervention focuses on three personal resources: assertiveness, self-efficacy, and resilience. On the basis of the existing literature, we propose the following:

> *Hypothesis 1*: The personal resources intervention has a positive impact on (a) assertiveness, (b) self-efficacy, and (c) resilience.

Strengths Use

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). Thus, strengths refer to the abilities or talents that allow a person to perform well or at their personal best (Wood, Linley, Maltby, Kashdan, & Hurling, 2011). Examples of character strengths are curiosity, self-regulation, social intelligence, appreciation of beauty, and humor—all positive individual characteristics and abilities that are reflected in thoughts, feelings, and behaviors (Park, Peterson, & Seligman, 2004). Although character strengths show conceptual overlap with personality traits (Littman-Ovadia & Lavy, 2012), strengths are different because of the moral and cultural value placed on them (Peterson & Seligman, 2004) and because strengths can be developed.

Research has shown that strengths use is more likely when organizations actively support the use of strengths, for example, by training leaders to identify strong points in employees (Bakker & van Woerkom, 2018) and by providing employees with training and opportunities for self-development (Mahomed & Rothmann, 2020). In addition, employees may assist each other in identifying and using their strengths. van Woerkom, Meyers, and Bakker (in press) argued that strengths of individual employees are socially embedded in the team. They propose that collective awareness of the variety of individual strengths that are represented in the team (strengths awareness), reliance on and trust in those strengths in the execution of tasks (credibility), and coordination of tasks and the allocation of team roles based on these strengths (coordination) may facilitate collective strengths use.

Strengths are trait-like, but individuals are most likely to experience positive psychological consequences when they identify, appreciate, and use their character strengths (Peterson & Seligman, 2004). When enacted, strengths are energizing and allow a person to flourish (Dubreuil et al., 2014). In contrast, repairing weaknesses may be demoralizing and demeaning (Hodges & Clifton, 2004). Employees who use their strengths during work-related activities can be themselves and are more likely to reach their goals (Bakker & van Woerkom, 2018). 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).

In the present study, we propose that the personal resources and strengths use intervention will have a positive impact on the actual use of strengths. Personal resources such as assertiveness, self-efficacy, and resilience provide the confidence and motivation employees need to use their strengths. Assertiveness is important for strengths use because assertive beliefs and behaviors help establish self-assurance and facilitate interpersonal communication. When individuals stand up for themselves and feel comfortable to demand what they want, they will feel confident that they can use their personal strengths. Assertive individuals possess the skills necessary to step forward and make themselves be heard. This means that if these individuals receive work assignments, they will comfortably craft their work activities such that they can use their strengths (Kooij, van Woerkom, Wilkenloh, Dorenbosch, & Denissen, 2017). In addition, self-efficacy and resiliency are important for strengths use because they inform individuals that they can be confident and will be able to bounce back in case of failure when using their strong points. Self-efficacious individuals will comfortably choose to do things in their own way, using strengths that may not necessarily be most obvious for the specific tasks at hand, including strengths such as love of learning, caring for others, and perseverance. Indeed, van Wingerden et al. (2017) found that a job crafting intervention, in which employees learned to be proactive and optimize their job design (i.e., job crafting), was most effective when combined with a personal resources intervention that increased their self-efficacy, resilience, optimism, and hope. On the basis of this literature, we propose the next hypothesis:

> *Hypothesis 2*: The personal resources and strengths use intervention has a positive impact on strengths use.

Personal Resources and Work Engagement

Work engagement is a work-related and high-activation positive state, characterized by high levels of energy (vigor), dedication, and absorption. Early versions of JD-R theory (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Schaufeli, Bakker, & Van Rhenen, 2009) proposed that job resources such as autonomy, feedback, and skill variety are the most important antecedents of work engagement. Later versions of JD-R theory (Bakker & Demerouti, 2017; Xanthopoulou et al., 2009) included personal resources as well and proposed that such resources are unique predictors of engagement. Indeed, longitudinal survey studies have provided evidence for the hypothesis that personal resources such as self-efficacy and optimism are positively related to future work engagement (Hakanen, Perhoniemi, & Toppinen-Tanner, 2008; Xanthopoulou et al., 2009).

Interventions that build personal resources foster work engagement, as individual self-evaluations in terms of assertiveness, self-efficacy, and resilience become more positive. When individuals have a more positive view of themselves, they will believe they are able to meet work demands and achieve their goals despite adversity (Bakker & Demerouti, 2017). They have a greater sense of self-efficacy and resilience allowing them to persevere and continue to invest themselves in work to achieve their goals (Knight et al., 2019). Moreover, when individuals have learned to be more assertive and use their strengths, they will be better able to deal with emotional job demands and stay engaged in the face of stressors.

> *Hypothesis 3*: The personal resources and strengths use intervention has a positive impact on work engagement.

> *Hypothesis 4*: The personal resources and strengths use intervention has a positive impact on work engagement through (a) assertiveness, (b) self-efficacy, and (c) resilience.

Method

Participants and Procedure

The context of the present study was a personal resources training provided by a large soft-skills training and consultancy agency in the Netherlands. Participants who were interested in this training could subscribe themselves. Their employers paid for the

training. After enrollment in the training, the agency contacted the participants to ask whether they would be willing to participate in research. Between April and August, 2018, we contacted 150 persons who agreed to take part in this study. They were assigned to one of four training intervention groups or to one of four waiting-list control groups following the order of enrollment. Whether participants ended up in the intervention group or control group depended on their choice for receiving training in Autumn, 2018 (intervention group), or Winter, 2018 (waiting-list control group). Because of unforeseen circumstances, 20 persons were unable to take part in the study. In total, 15 individuals canceled the training or requested to reschedule to Autumn, 2018, whereas five individuals canceled the training because they were ill. A total of 120 participants completed the preintervention questionnaire (80% response rate), and 102 participants completed the postintervention questionnaire (68% of the original sample).

Of the 102 participants, 54 persons took part in the training intervention, whereas 48 persons represented the waiting-list control group. The intervention group consisted of 27 women and 27 men; mean age was 41 years (SD = 10.52); 72% had completed a higher vocational education or university education. The waiting-list control group consisted of 24 women and 24 men; mean age was 42 years (SD = 10.17); 68% had completed a higher vocational education or university education. The participants worked in different companies and in various sectors. With respect to sector, 15% of the sample worked in the educational sector, 14% in the public service sector, 16% in the health care sector, 12% in business services, 17% in financial institutions, and 26% in other sectors. In total, 11 participants (11%) held a supervisory position.

The study protocol and data collection followed the ethical guidelines of the American Psychological Association and the Dutch Association of Psychologists. The data collection through self-report surveys were exempted from the institutional ethics committee's approval. Individuals who enrolled the training program were informed that study participation was completely voluntary and that they could withdraw from the study at any time. Informed consent was collected, and participants did not receive any monetary compensation. The study participants were followed over a period of 9 weeks, in which we performed a pretest, the intervention (for the experimental group only), and a posttest. Following previous research practice (van den Heuvel, Demerouti, & Peeters, 2015; van Wingerden et al., 2017), the pretest took place 3 weeks before the start of the training intervention, and the posttest took place 3 weeks after the completion of the intervention (see Figure 1 for an overview of the research design). The timing of the posttest—shortly, but not immediately, after the intervention—provided the participants in the intervention group an opportunity to practice what they learned in the training. The first online questionnaire was announced in an e-mail containing instructions and an outline of the procedure while also explaining the anonymity of the data. Two weeks before the start of the intervention, the participants received additional information about the program and content of the intervention.

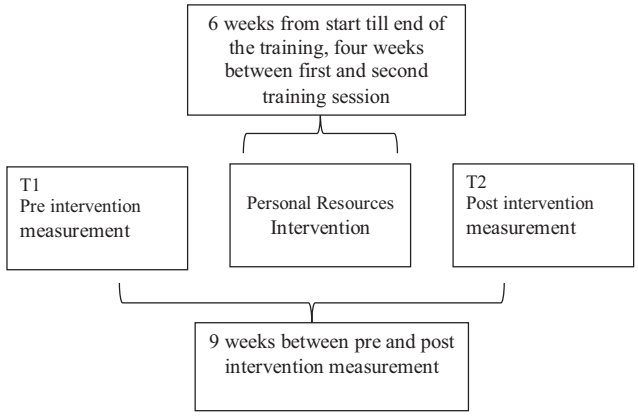

Figure 1. Research design.

Personal Resources Training Intervention

The personal resources training intervention is a social skills training that uses a variety of cognitive–behavioral techniques that aim to strengthen participants' personal beliefs and behaviors and increase their personal resources (assertiveness, self-efficacy, and resilience). The training intervention consisted of three sessions of 3 hr over a period of 6 weeks. The participants received a training handout and exercise book 1 week before the start of the training intervention. Each training group included a maximum of 16 participants who were trained and guided by two experienced (senior) certified trainers. During the three sessions, the trainers started by explaining the subject/goal of the session. After sharing insights about the theoretical background, they divided the training group in four subgroups for the exercises. The first and second sessions took place on the same day; between the second and third sessions, there was a time interval of 4 weeks (see Figure 2 for the intervention design). In the 4 weeks between the second and third training sessions, the participants were asked to complete three assignments in their own workplace to practice the new skills outside the classroom.

The intervention consisted of three different exercises. In the first exercise, the participants acknowledged, shared, and discussed their thoughts and feelings about their career with each other. They looked back on the things they experienced at work, shared the things they liked in their current job, discussed how they used their strengths at work, and discussed their ambitions. Furthermore, the participants practiced how to openly communicate with others about their desires and needs, and their positive and negative feelings. The participants practiced how to begin, maintain, and end conversations. Thus, they exercised in how to speak up about their needs and feelings at work and how to share their point of view, which presumably strengthens their assertiveness (Lin et al., 2004).

In the second exercise, the participants practiced giving and receiving feedback, including gracefully receiving compliments. Through this exercise, the participants learned how to give and receive positive feedback at work in a respectful and constructive way. Practicing giving and receiving feedback contributes to individuals' self-efficacy (Bandura, 1986; Luthans et al., 2008). After the first and second training sessions, the participants were asked to complete three assignments in their own workplace. The first assignment asked the participants to choose a colleague with whom they felt safe to share their point of view about a current situation at work and to speak up about their own needs and feelings in that situation. In the second assignment, the participants

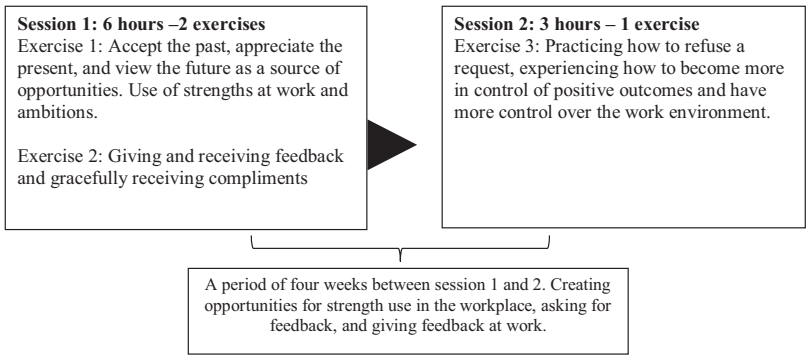

Figure 2. Design of the personal resources training intervention.

were instructed to ask three colleagues for feedback about their strong points at work and to give those colleagues feedback about their strong points. The third assignment challenged participants to deliberately create an opportunity at work to use one of the strengths mentioned by their colleagues. The participants were asked to reflect on their experiences with the three exercises at work and to write a short evaluation, which they needed to send to the trainers before the start of the third training session.

In the third exercise of the intervention, the participants practiced refusing a request, which is a way to reduce stressors and increase resilience (Luthans & Youssef, 2004). By practicing refusing requests, individuals feel that they are more in control of the positive outcomes of their behaviors—they experience control over their environment. In addition, the exercise included identifying recent personal setbacks within the work domain (Luthans et al., 2008). These setbacks could be major (e.g., lower revenues than previous year) or minor (e.g., incompatible job demands resulting in role conflict). The participants were then instructed to write their immediate reactions to the identified setback. The trainer then elaborated on various ways to mentally frame a setback so that the participants learned how to be resilient. Individually and in groups, the participants then assessed the realistic impact of their setback—what is in their control, what is out of their control, and what are the options for taking action.

Taken together, the intervention targeted three different personal resources (assertiveness, self-efficacy, and resilience) that are expected to be particularly effective when trained in concert (Luthans, Avey, Avolio, Norman, & Combs, 2006). Self-efficacy concerns beliefs about one's ability to succeed in challenging tasks, whereas assertiveness refers to social functioning, and resilience refers to the capacity to adapt to the surrounding psychosocial environment. Targeting all these beliefs can be expected to create the psychological resources that the participants can call upon in a variety of work situations.

Measures

The questionnaires were identical for all the participants and both measurements in time. To reduce participant burden, we decided to use shortened scales for the assessment of the three personal resources: assertiveness, self-efficacy, and resilience. We chose the items that loaded highest on the factor in previous research and made sure that the construct was adequately represented by the items. The reliability coefficients (Cronbach's α's) for all measures at both time points are presented on the diagonal in Table 1.

Assertiveness was measured using six items from the scale developed by Demerouti et al. (2011). The authors showed that self- and other-ratings of assertiveness show considerable overlap, thus, providing evidence for the validity of this measure. Moreover, the assertiveness construct correlated positively with other personal resources, including self-efficacy, resilience, optimism, and hope (i.e., psychological capital). Example items are as follows: "I present my point of view in a discussion," and "I am able

Table 1
Correlations and Cronbach's α's (on the Diagonal) of the Study Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Assertiveness Time 1	(.70)	—	—	—	—	—	—	—	—	—
2. Self-efficacy Time 1	.32**	(.82)	—	—	—	—	—	—	—	—
3. Resilience Time 1	.20*	.44**	(.80)	—	—	—	—	—	—	—
4. Strength use Time 1	.41**	.36**	.21*	(.92)	—	—	—	—	—	—
5. Work engagement Time 1	.27**	.39**	.34**	.53**	(.91)		—	—	—	—
6. Assertiveness Time 2	.44**	.24*	−.03	.18	.09	(.84)	—	—	—	—
7. Self-efficacy Time 2	.26**	.65**	.24*	.33**	.28**	.48**	(.82)	—	—	—
8. Resilience Time 2	.18	.36**	.66**	.13	.26**	.27**	.53**	(.82)	—	—
9. Strength use Time 2	.23*	.30**	.02	.66**	.42**	.42**	.46**	.15	(.95)	—
10. Work engagement Time 2	.22*	.27**	.19	.42**	.76**	.25*	.45**	.35**	.59**	(.93)

Note. $N = 102$.
* $p < .05$. ** $p < .01$.

to deny a request that somebody makes to me." The participants could respond to the items using a 5-point scale, ranging from 1 (*never*) to 5 (*more than once per day*).

Self-efficacy was assessed with a four-item version of Schwarzer and Jerusalem's (1995) scale. Previous research has shown that this shortened scale has good psychometric properties—the items were internally consistent (reliable) in several samples, and the scale correlated positively with other personal resources and with work outcomes such as work engagement and performance (van Wingerden et al., 2017). Here are two examples: "I am confident that I can deal effectively with unexpected events," and "I can handle whatever comes my way" (1 = *absolutely wrong*, 5 = *absolutely right*).

Resilience was measured using five items from the scale developed by Block and Kremen (1996). Evidence for the soundness of this shortened measure was also collected in several samples, and the findings indicated that resilience is positively related to other personal resources, as well as work engagement and performance (Bakker & Xanthopoulou, 2013; van Wingerden et al., 2017). Example items are "I enjoy dealing with new and unusual situations," and "I like to try different routes to get to a familiar place" (1 = *does not apply at all*, 4 = *applies very strongly*).

Strengths use was measured using four items from the instrument developed by van Woerkom et al. (2016). Their validation study provided evidence for the psychometric quality of the measure, including positive relationships with proactive personality, personal initiative, and manager-rated performance. Example items are as follows: "I use my strengths at work," and "I organize my job to suit my strong points" (1 = *almost never*, 7 = *almost always*).

Work engagement was measured with the nine-item Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). This instrument is the most-often used instrument to assess work engagement, and its validity has been reported in previous research (Schaufeli & Bakker, 2010). Example items are as follows: "At work, I am bursting with energy" (Vigor), "I am enthusiastic about my job" (Dedication), and "I am immersed in my work" (Absorption). Participants used a 7-point frequency scale, ranging from 0 (*never*) to 6 (*always*). The responses were summed to form one overall work engagement score.

Results

Descriptive Statistics

Correlations and Cronbach's α's of the study variables can be found in Table 1. Before testing the hypotheses, we verified whether there were any significant differences between the intervention group and control group regarding the mean scores on the study variables at Time 1. A multivariate analysis of variance (MANOVA) showed that there were no differences between both the groups at baseline, F (5, 96) = 1.62, p = .163.

To investigate whether the study variables could be empirically distinguished, we used Amos Version 25.0 (Arbuckle, 2017) to test the factor structure of the survey at both time points. We first created a five-factor model, distinguishing between assertiveness, self-efficacy, resilience, strengths use, and work engagement. We used the items that were assumed to assess each of the factors (i.e., the five study variables) as indicators of the latent factors. The five latent factors were allowed to correlate. The fit of the five-factor model to the data at Time 1 was suboptimal, with $\chi^2(314)$ = 511.75, and fit indices incremental fit index (IFI) = .87, Tucker–Lewis Index (TLI) = .85, comparative fit index (CFI) = .87, root mean square error of approximation (RMSEA) = .08. This was particularly owing to covariations among the errors of items belonging to the same scale, namely, two items of the Strengths Use Scale and two items of the Work Engagement Scale. The phrasing or content of the items was rather similar. Following the advice of Jöreskog and Sörbom (1993), we allowed these errors to covariate. For strengths use, the items are as follows: "I draw on my talents in the workplace" and "In my job, I make the most of my strong points." For work engagement, the items are as follows: "When I am working, I forget everything else around me" and "I am immersed in my work." Considering the many parameters to be estimated and the high degrees of freedom, the adjusted five-factor model fit reasonably well to the data, $\chi^2(312)$ = 469.24, IFI = .90, TLI = .88, CFI = .90, RMSEA = .07. A χ^2 difference test showed that the adjusted model fit better to the data than the model without the modifications, $\Delta\ \chi^2(2)$ = 42.51, $p < .001$. More importantly, the five-factor model fit better to the data than all alternative four-model factors (e.g., models in which all indicators of two personal resources were forced to load on one latent factor), $\Delta\ \chi^2(4) > 58.61$, $p < .001$. Following a similar procedure for the Time 2 survey, the results showed that the adjusted five-factor model fit well to the data, $\chi^2(312)$ = 473.91, IFI = .91, TLI = .90, CFI = .91, RMSEA = .07. In addition, the five-factor model fit better to the data than all alternative four-model factors, $\Delta\ \chi^2(4) > 76.44$, $p < .001$. In sum, the five theoretical constructs could be empirically distinguished at both time points.

Hypotheses Testing

Hypothesis 1 states that the personal resources training intervention will have a positive impact on participants' assertiveness, self-efficacy, and resilience. To test Hypothesis 1, we conducted a one-way repeated measures MANOVA with time (two levels: pretest and posttest) and group type (two levels: control and intervention) as the independent variables and the three personal resources as the dependent variables. The results show a multivariate significant effect of time, F (3, 198) = 6.37, $p < .001$, Wilks' Λ = .966, η^2p = .088, indicating that the participants' personal resources beliefs became stronger over time. As predicted, this effect was only significant for the training intervention group—the multivariate effect of the Time × Group type interaction was F (3, 198) = 6.94, $p < .001$, Wilks' Λ = .905, η^2p = .095.

To investigate whether the effects of the intervention were different for the three different personal resources, we continued by investigating the univariate effects. The results are presented in Table 2. As can be seen, there are significant Condition × Time interaction effects for assertiveness, self-efficacy, and resilience. These effects stemmed from an increase in each of the personal resources in the training intervention group from Time 1 to Time 2, whereas there was no significant change in the control group. Indeed, tests of simple effects revealed that the increase in the training intervention group from Time 1 to Time 2 was significant for assertiveness, F (1, 106) = 29.92, $p < .001$; self-efficacy, F (1, 106) = 12.34, $p < .001$; and resilience, F (1, 106) = 13.62, $p <$ .001. For the control group, there was no increase over time in any

Table 2
Summary of Analyses of Variance of Personal Resources and Work Outcomes

Variable	Time	Intervention (n = 54)		Control (n = 48)		F^a	η^2_p
		M	SD	M	SD		
Assertiveness	1	3.01	0.63	3.15	0.52	15.27***	.071
	2	3.68	0.63	3.14	0.65	—	—
Self-efficacy	1	3.36	0.75	3.45	0.59	4.19*	.021
	2	3.81	0.58	3.55	0.56	—	—
Resilience	1	3.04	0.73	3.38	0.63	9.53**	.046
	2	3.56	0.74	3.32	0.55	—	—
Strengths use	1	4.32	0.96	4.49	0.96	5.02*	.024
	2	5.05	1.01	4.61	0.92	—	—
Work engagement	1	3.39	0.92	3.40	0.81	3.85*	.019
	2	3.90	0.96	3.42	0.82	—	—

Note. There were n = 54 participants in the training intervention group and 48 participants in the waiting-list control group.
[a] The F test tests the Condition × Time interaction effect to detect a significant difference between the conditions in the rate of change across time.
* $p < .05$. ** $p < .01$. *** $p < .001$.

of the personal resources, all Fs < 1, *ns*. These findings offer evidence for Hypothesis 1.

In the next step, we tested the hypotheses that the intervention would have a positive impact on strengths use (Hypothesis 2) and work engagement (Hypothesis 3). To test both the hypotheses simultaneously, we continued with a new MANOVA with time and group type as the independent variables, and strengths use and work engagement as dependent variables. There was a multivariate significant effect of time, F (2, 199) = 4.99, $p < .01$, Wilks' Λ = .952, η^2p = .048, indicating that the two work outcomes increased over time. As hypothesized, this effect was only significant for the training intervention group—note that the multivariate effect of the Time × Group type interaction was marginally significant, F (2, 199) = 2.88, p = .06; Wilks' Λ = .972, η^2p = .028. The univariate analyses of variance produced significant Condition × Time interaction effects for strengths use and work engagement (Table 2). These effects stemmed from an increase in the outcomes in the training intervention group from Time 1 to Time 2, whereas there were no significant changes in the control group (Fs < 1, *ns*). Simple effects tests revealed that the increase in the training intervention group from Time 1 to Time 2 was significant for strengths use, F (1, 106) = 14.66, $p < .001$, and for work engagement, F (1, 106) = 7.94, $p < .01$. These findings offer evidence for Hypotheses 2 and 3.

Hypothesis 4 states that the personal resources intervention has a positive impact on work engagement through (a) assertiveness, (b) self-efficacy, and (c) resilience. These three indirect effect hypotheses were tested simultaneously in a moderated multiple mediation model using Hayes' PROCESS macro (Model 7) for SPSS (Hayes, 2018). We used time as an independent variable, the three personal resources as mediators, and work engagement as a dependent variable; group type (control vs. intervention) was the first stage moderator. This model tests whether the intervention causes a *change* in work engagement as a result of *change* in personal resources. Bootstrap samples were set to 5,000. The results of this analysis are presented in Table 3. As can be seen, the indirect effect of time on work engagement is significant for the intervention (vs. control) group for self-efficacy and resilience, but not for assertiveness. These results indicate that Hypothesis 4a is rejected, and that Hypotheses 4b and 4c are supported. Self-efficacy and resilience were more important than assertiveness in explaining the effect of the personal resources training intervention on work engagement. Here, it is also important to notice that originally, time did show an indirect effect on work engagement through assertiveness, contingent on group type: intervention group (b = .12, SE = .04, 95% confidence interval [CI; .048, .210]), control group (b = .00, SE = .02, 95% CI [−.046, .044]). However, this indirect effect disappeared in the moderated multiple mediation model. We conclude that self-efficacy and resilience were the active personal resources that carried the effect of the intervention on work engagement.

Additional Analyses

We used JD-R theory to argue that the intervention would influence work engagement through personal resources. However, the intervention also included the instruction to use character strengths, and the results showed that strengths use increased as a function of the intervention. JD-R theory proposes that strengths use will also influence work engagement (Bakker & van Woerkom, 2018). We, therefore, decided to conduct additional analyses, in which the personal resources intervention is modeled to have a positive impact on work engagement through strengths use. The indirect effect was tested in a new moderated mediation model using Hayes' PROCESS macro (Model 7), in which we controlled for the indirect effects of personal resources (assertiveness, self-efficacy, and resilience). Specifically, we used time as an independent variable, and strengths use as well as the three personal resources as mediators; group type (control vs. intervention) was the first stage moderator. This model tests whether the intervention causes a *change* in work engagement as a result of a *change* in strengths use (independent from a change in personal resources). Bootstrap samples were set to 5,000. The results of these analyses revealed a significant indirect effect of time on work engagement through strengths use for the intervention group (b = .16, SE = .05, 95% CI [.075, .263]) and not for the control

Table 3
Results of Moderated Multiple Mediation Models for Intervention Effects on Work Engagement

Variable	Indirect effect[a] (SE)	BC 95% CI		Hypothesis confirmed?
		Lower	Upper	
Assertiveness				No
Control	.00 (.01)	−.022	.020	—
Intervention	.05 (.03)	−.012	.110	—
Self-efficacy				Yes
Control	.02 (.02)	−.030	.068	—
Intervention	.09 (.04)	.034	.174	—
Resilience				Yes
Control	−.01 (.02)	−.041	.021	—
Intervention	.06 (.03)	.017	.117	—

Note. BC 95% CI = bias-corrected 95% confidence intervals for indirect effects. Control group, n = 48; training intervention group, n = 54.
[a] Indirect effect of time on work outcome through the mediator.

group (b = .03, *SE* = .04, 95% CI [−.060, .114]). It should be noted that in this analysis, the indirect effects of the intervention through personal resources were largely unaffected. Thus, the indirect effects of the intervention on work engagement through self-efficacy and resilience stayed significant—adding to the robustness of the findings.

Discussion

The central aim of this study was to test whether a personal resources and strengths use intervention could increase strengths use and work engagement. The results showed that the intervention had a positive impact on assertiveness, self-efficacy, and resilience, and that some of these personal resources, in turn, had a positive impact on work engagement. The intervention also increased the actual use of strengths. These findings make an important contribution to JD-R theory (Bakker & Demerouti, 2017) because they provide causal evidence for a core assumption in the theory, namely, that personal resources can be motivational and influence work engagement. In what follows, we discuss the contributions of the present study in more detail. We will argue that these contributions are incremental but important for JD-R theory.

Theoretical Contributions

The first contribution made by this research is that it provides convincing evidence for the idea that personal resources can be increased through a training intervention. Whereas previous intervention studies have primarily focused on improving psychological capital (Lupşa et al., 2020)—a combined index of the personal resources of optimism, self-efficacy, resilience, and hope—we expanded this literature by showing an increase in assertiveness, self-efficacy, and resilience. Our face-to-face training intervention showed generally stronger effects than these previous studies that tried to increase personal resources using remote interventions, for example, a short, 2-hr web-based training intervention (Luthans et al., 2008), or a structured reading materials–based intervention (Zhang et al., 2014). Furthermore, our findings are consistent with, and expand the findings by, Demerouti et al. (2011). These authors showed that a personal effectiveness training program increased self- and other-ratings of assertiveness, self-efficacy, resilience, hope, and optimism. However, Demerouti and her colleagues did not examine the impact of training on secondary outcomes, such as strengths use and work engagement. Taken together, and in line with JD-R theory (Bakker & Demerouti, 2017), our findings show that personal resources are malleable and can be increased through a series of intensive group training sessions.

The second contribution to the literature is the finding that the intervention increased strengths use. As the intervention consisted of a training combining personal resources and strengths use exercises, it remains unclear whether the personal resources were really needed to increase the actual use of strengths. Theoretically, it is conceivable that when employees strengthen their beliefs that they can adequately stand up for themselves and are capable to handle unforeseen events, they are more likely to use the character strengths that were identified and practiced in the training and also during work. When individuals become assertive, they can express their feelings comfortably and become better able to openly verbalize what they want in various work situations (Speed et al., 2018). In addition, when individuals feel self-efficacious, they stick to their aims and are confident in their ability to get what they want.

In the current study, we did not ask which specific strengths individuals used. Strengths could be all the specific virtues included in the Virtues in Action framework (Peterson & Seligman, 2004)—including humor, social intelligence, kindness, and fairness. Strengths use has been positively associated with work engagement, well-being, and job performance (Dubreuil et al., 2014; Stander et al., 2014) and negatively associated with stress and company-registered sickness absenteeism (Bakker & van Woerkom, 2018). The present study adds to the knowledge base regarding *predictors* of strengths use. Previous studies have suggested that strengths knowledge, proactivity, person–organization value fit, and various job resources (e.g., autonomy, support for strengths use, and meaningful work) make a positive contribution to explaining variance in strengths use (Botha & Mostert, 2014; Govindji & Linley, 2007; van Woerkom et al., 2016; van Wingerden, Berger, & Poell, 2018). We add that a training combining personal resources and strengths use exercises has a causal impact on strengths use.

Third, we contribute to the literature by showing a causal effect of a personal resource intervention on work engagement. This finding replicates and expands previous research in which scholars used various procedures to increase work engagement through an intervention (Knight et al., 2017, 2019). The meta-analysis of previous intervention studies by Knight and colleagues indicated that the causal impact of personal resources interventions on work engagement was unclear, whereas we found a relatively strong effect of the intervention on work engagement. More specifically, indirect effect analyses showed that particularly self-efficacy and resilience increased work engagement. This is consistent with JD-R theory, which proposes that employees with more personal resources will be more engaged because the resources help them reach their work-related goals. Moreover, personal resources can buffer the negative impact of hindrance job demands on work engagement and boost the positive impact of challenge job demands on work engagement (Bakker & Sanz-Vergel, 2013; Searle & Lee, 2015).

Strengths and Limitations

The present study has several strengths and limitations. First, an important strength of this study is that we avoided the endogeneity problem that may threaten the validity of findings in survey research (Antonakis, Bendahan, Jacquart, & Lalive, 2014). An intervention design provides a stronger test of theory than survey designs owing to the ability to manipulate the independent variable and assess causality. Even when predictors and outcomes are temporarily separated in survey research, there can always be a third variable explaining the link among the study variables. The present study adds to a growing body of studies in which the independent variable is under control of the researchers, and thus we can be confident that the findings have merit. Another strength of this study is that we analyzed the active ingredients that made the intervention work. Although the training program increased each of the intended personal resources—assertiveness, self-

efficacy, and resilience—the findings showed that there were unique personal resources through which the intervention influenced work engagement.

However, one possible limitation of this study is the generalizability of the findings to other cultures. Although we do expect that a personal resources intervention will have similar effects in other Western countries where individual values are important, we expect that the intervention program will need to be adjusted to the context and culture if applied in Eastern countries. Asia has a collectivist culture (Brewer & Venaik, 2011), where perhaps psychological resources of complete work teams could be trained—and this may work better than changing individual-level personal resources. Future studies should try to replicate our study among employees working in other countries and cultures and test the boundaries of personal resources effects. Another limitation is that we only used self-reports and do not know what the longer term effect of the intervention is. Although Demerouti et al. (2011) have shown that there is considerable agreement between self- and other-ratings of personal resources, and that a personal effectiveness intervention impacts both types of ratings in a similar fashion, they also found that the effects were stronger for self- versus other-ratings. Future intervention research may want to use outcomes that are less susceptible to psychological biases, for example, objective financial results and client satisfaction ratings. Regarding the longer term impact, Vîrgă, Maricuţoiu, and Iancu (2019) showed in their meta-analysis of work engagement interventions that the intervention effect decreases as the time lag increases. Moreover, their moderator analysis showed that the effectiveness decreases steeply after 3 months since the end of the intervention. This indicates that employees need to continue working on their personal resources after they have finished the training and may need continuous training to maintain their personal resources.

Finally, although we used an intervention design, one may argue that the effects of the training were caused by not only the content provided by the trainers but also the specific tasks that were used and group processes such as helping each other and providing feedback during exercises. In addition, we worked with two different trainers who were highly experienced, and thus it is unknown to what extent the effects were because of the trainers instead of the content of the training. One possible solution to guard against potential experimenter or reactivity effects is to use a placebo intervention to secure that demand characteristics are controlled. Unfortunately, a placebo intervention was not a viable option in the current study because participants were paying clients of the soft-skills training and consultancy agency with whom we collaborated, and the clients needed to get what they paid for. Another option is to collect information from participants in an unobtrusive way, for example, by collecting information about their performance without asking questions (e.g., by using objective output or behavioral observations without participants being aware). However, it should be noted that our process analyses supported the hypothesized indirect effects. This suggests that the intervention worked as expected and that the employees who participated in the training program changed their work engagement because the program bolstered their personal resources beliefs.

Practical Implications

One obvious practical implication of this study is that organizations that want to increase their employees' strengths use behaviors and work engagement could use a personal resources training intervention. As discussed previously, it would seem important to tailor the specific intervention to the cultural context and perhaps find out for whom this type of intervention works best. For example, it is conceivable that the personal resources intervention works best in Western countries and for individuals with a promotion focus (Lanaj, Chang, & Johnson, 2012). In addition, JD-R theory (Bakker & Demerouti, 2017) proposes that personal resources can buffer the impact of hindrance demands on well-being and boost the impact of challenge demands on work engagement and performance. This means that it is particularly important to offer personal resources training or workshops to those who are exposed to high-hindrance and/or high-challenge job demands.

Another possible practical implication is that leaders may want to influence personal resources such as self-efficacy and resilience by regularly providing positive feedback to their followers and by giving trust. Research on transformational and empowering leadership has suggested that individual consideration, inspirational motivation, and empowerment may strengthen personal resources as effectively as a training intervention does (van Knippenberg & Sitkin, 2013). The present study has indicated that such a strategy is important because employees who increase their personal resources are more likely to be engaged.

Conclusions

This study has shown that a personal resources intervention has a positive impact on strengths use and work engagement. Moreover, we showed that self-efficacy and resilience were the most important predictors of work engagement. Thus, employees who strengthen their personal beliefs that they are capable to handle unforeseen events and who are able to bounce back from adversity and failure are more likely to be engaged. Although organizations should be aware that job (re)design (job demands and resources) can have a major impact on employee behaviors and work engagement, the present study indicates that it is useful to also invest in employees' personal resources via training interventions.

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