



Promoting personal resources and reducing exhaustion through positive work reflection among caregivers

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Abstract

The aim of this study was to test the effects of a daily positive work reflection intervention on fostering personal resources (i.e., hope and optimism) and decreasing exhaustion (i.e., emotional exhaustion and fatigue) among caregivers for the elderly and caregivers who provide services at patients' homes. Using an intervention/waitlist control group design, 46 caregivers in an intervention group were compared with 44 caregivers in a control group at three points of measurement: Pre-intervention, post-intervention, and at a two-week follow-up. The results show that emotional exhaustion and fatigue were reduced for the intervention group. Primarily, caregivers with a high need for recovery at baseline benefited from the intervention. The results reveal no intervention effects for personal resources; however, they reveal a trend that the intervention led to an increase in hope and optimism among caregivers with a high need for recovery. Overall, the findings show that caregivers benefit from a daily positive work reflection intervention, particularly when their baseline levels of resources and well-being are low.

Keywords: positive reflection; hope; optimism; well-being; intervention

Promoting Personal Resources and Reducing Exhaustion through Positive Work

Reflection among Caregivers

Over the last decade, the interest of occupational health researchers has shifted from repairing the negative consequences of work stress to promoting personal resources and well-being through positive psychology interventions (Meyers, van Woerkom, & Bakker, 2012). Positive psychology interventions are defined as “treatment methods or intentional activities that aim to cultivate positive feelings, behaviours or cognitions” (Sin & Lyubomirsky, 2009, p. 467). The aim of these interventions is to build personal resources and to increase well-being (Luthans, Avey, Avolio, Norman, & Combs, 2006; Sin & Lyubomirsky, 2009). To achieve this, intervention studies have applied cognitive strategies such as practicing optimistic thinking and enhancing positive experiences (Sin & Lyubomirsky, 2009). One specific intervention is the reflection on positive events (Seligman, Steen, Park, & Peterson, 2005). Within the working context, there is some evidence that reflecting on positive events fosters personal resources and well-being (Bono, Glomb, Shen, Kim, & Koch, 2013; Meier, Cho, & Dumani, 2016; Ouweneel, Le Blanc, Schaufeli, & van Wijhe, 2012). However, intervention studies that aim to promote positive work reflection have resulted in inconsistent outcomes. Some researchers have found effects of positive reflection on well-being and personal resources (Bono et al., 2013; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008) while others report non-significant results (Meier et al., 2016).

Past research on positive reflection interventions has primarily concentrated on the positive reflection of events during leisure time (e.g. Chan, 2011; Meier et al., 2016; Seligman, Rashid, & Parks, 2006). Only a few studies have concentrated on positive reflection about work-related events (Bono et al., 2013; Meier et al., 2016). To the best of our knowledge, none of these studies have focused on the reflection of positive work events during working hours. This dearth of research is noteworthy given that employees spend a significant amount of their time at work. Therefore, the purpose of this study was to implement an intervention promoting

the daily reflection of work events during working hours with the aim of fostering personal resources and well-being among employees.

We focused on the caregiver profession, an often underpaid occupation (Stepstone, 2013) with individuals at high risk of experiencing strain (Delp, Wallace, Geiger-Brown, & Muntaner, 2010). Our study concentrated specifically on caregivers for the elderly and caregivers who provide services at the patients' homes. Their duties encompass caring for the patient's hygiene, mobility and diet as well as administering medical treatments (i.e., blood sugar measurement, injections or changing of bandages). The caregivers either work in an elderly care home or visit their patients at home. Past research demonstrated that almost half of those employed as caregivers suffer from emotional exhaustion and have to cope with the depletion of resources (Cocco, Gatti, de Mendonça Lima, & Camus, 2003; Gosseries et al., 2012). Reasons for feeling depleted include high workload, time pressure, handling aggressive patients, and experiencing abuse from care recipients (Delp et al., 2010; Steege, Drake, Olivas, & Mazza, 2015). At the same time, amongst caregivers, strategies that involve increasing positive experiences help to enhance their well-being (Burke & Greenglass, 2000). Furthermore, the experience of positive events at work has been shown to serve as a protective factor among caregivers (Simon et al., 2005).

Our study advances the literature in several ways. First, we evaluate a positive work reflection intervention which aims to foster personal resources and decrease exhaustion among a homogenous sample of caregivers. In doing so, we contribute to the research on positive reflection interventions by examining an intervention which is conducted during working hours and which focuses on positive events experienced at work. As people spend a large proportion of their time at work, it is crucial to provide employees with short interventions that can be easily implemented during working hours instead of using their leisure time. Second, we focused on the specific population of caregivers, persons at high risk of exhaustion and depleted resources. A key requirement of evidence-based interventions is they are developed for

populations in need, who are in turn are more likely to benefit when interventions address their specific needs (Briner & Walshe, 2015). Accordingly, we tailored our intervention to the specific occupational group of caregivers by modifying typical positive thinking interventions (e.g. Seligman et al., 2006; Seligman et al., 2005). More specifically, we added components of meaningful work and mindfulness practices to render the intervention more effective as both mechanisms support positive experiences during positive reflection (Arnold, Turner, Barling, Kelloway, & McKee, 2007; Garland & Fredrickson, 2013). Finally, we tested the intervention effects with a rigorous intervention/waitlist control group design. This design allowed us to draw causal conclusions about the intervention's effectiveness in enhancing personal resources and reducing exhaustion. By using audio files on an iPad to guide the positive reflection, we provided a tool to foster mindful reflection which aids participants to benefit from positive experiences (Ellis, Carette, Anseel, & Lievens, 2014). Furthermore, we received information on the completion of the intervention on a daily basis by tracking the participants' logins.

Theoretical background

Building personal resources

Personal resources are defined as aspects of the self and are a fundamental component of individual adaptability (Hobfoll, 2002). Hence, personal resources may help the individual to adapt to stressful situations. For example, if caregivers have to deal with a difficult patient, an optimistic and hopeful attitude helps them to deal with the client in a positive and effective manner. Accordingly, personal resources enable people to handle risk factors such as stressors and reduce unpleasant influences (Lazarus, 1991). With regard to work, personal resources are associated with the ability of employees to manage job requirements (Luthans et al., 2006).

Personal resources can take many forms, and can be built, enhanced, and preserved (Fredrickson, 1998; Hobfoll, 1989) with the help of training and interventions (Luthans et al., 2006). Scholars have shown that the experience of positive events builds personal resources (broaden-and-build theory; Fredrickson, 1998; Fredrickson, Tugade, Waugh, & Larkin, 2003;

Grant & Gino, 2010; Ouweneel et al., 2012; Reis & Gable, 2003) and that interventions that support positive experiences are successful in enhancing personal resources (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Fredrickson et al., 2008). However, personal resources, like most psychological attributes, are unlikely to be either “strictly speaking, traits or states” (Hertzog & Nesselroade, 1987, p. 95). That is, they can have static, trait-like components as well as more dynamic, state-like components. Over time, personal resources may develop a stable or habitual form that can be quite trait-like (e.g., Gross & John, 2003). Two core personal resources that have been shown to be important in an employee’s **daily life and-work life** are hope (Snyder et al., 1991) and optimism (Scheier & Carver, 1985), both of which demonstrate both state and trait aspects.

Hope is defined as a “positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy) and (b) pathways (planning to meet goals)” (Snyder et al., 1991, p. 287). In other words, experiencing hope facilitates individuals to find the will to reach their goals and ways of doing so. Luthans and colleagues argue that hope is amenable to development and can be trained (Luthans, Avolio, Avey, & Norman, 2007). Thus, if caregivers are more hopeful they set reachable and positive goals for themselves and their patients. Furthermore, they are more motivated to reach these goals (they have the will) and find positive and effective ways.

Optimism is defined as a cognitive-affective construct with motivational aspects (Carver & Scheier, 2014) and as the expectation that one will experience good outcomes in life (Scheier & Carver, 1985). Optimism consists of both a trait and state component (Kluemper, Little, & DeGroot, 2009; Luthans et al., 2007). **Optimism consists of both a trait and state component (Kluemper et al., 2009; Luthans et al., 2007). Its’ state-like component can vary across situations (Kluemper et al., 2009) and can be trained (Luthans et al., 2007; Seligman, 1998).** For example, if employees (i.e., caregivers) have a positive experience at work they are likely to experience higher levels of optimism (Kluemper et al., 2009). We argue that daily positive

work reflection fosters optimism because being positive helps to reduce ruminating thoughts about problems at work and fosters belief in a positive future (Peterson, 2000; Seligman et al., 2005).

Reducing exhaustion

When personal energy is depleted, exhaustion occurs. Exhaustion is seen as an imbalance between available resources and demands that have to be faced (Bakker & Demerouti, 2007). As key symptoms of expending too much energy, emotional exhaustion and fatigue are characterized by feelings of depleted energy, negative emotions, and tiredness (Maslach & Leiter, 1997; Winwood, Winefield, Dawson, & Lushington, 2005).

Emotional exhaustion is a symptom of burnout which can occur among human service workers such as caregivers (Cocco et al., 2003; Maslach & Leiter, 1997). It involves feelings of being over-extended and of emotional resources being depleted (Maslach & Leiter, 1997). Caregivers are particularly susceptible to suffering from burnout due to their high level of emotional strain and emotionally stressful work (Gosseries et al., 2012). Thus, they are likely to frequently experience emotional exhaustion (Simon et al., 2005).

Fatigue includes mental, physical, and emotional components of fatigue. Characteristics of fatigue include declining interest and commitment, reduced concentration, negative emotions, and tiredness (Winwood et al., 2005). Similar to emotional exhaustion, caregivers often experience fatigue as a result of a high workload and time pressure (Steege et al., 2015).

In the following, we will outline how positive work reflection can foster hope and optimism as well as reduce emotional exhaustion and fatigue.

Positive work reflection: Theoretical mechanisms for building personal resources and reducing exhaustion

In order to foster personal resources and reduce exhaustion, we conducted an intervention comprising a daily positive reflection exercise. We asked caregivers to reflect on a positive and meaningful event that happened during their working day. To reflect on this

event, caregivers listened to an audio file which led them through mindful reflection of the event (see description of the intervention below).

Positive reflection helps to recall positive experiences which may in turn trigger positive emotions (e.g., happiness). These positive emotions have been shown to build personal resources and well-being, as suggested by the broaden-and-build theory (Fredrickson, 1998), and thus serve as an underlying mechanism. Furthermore, positive reflection can stimulate recovery processes as it refills one's energy reservoir and buffers against the effect of negative work outcomes such as exhaustion and fatigue (Bono et al., 2013; Fritz & Sonnentag, 2005; Meier et al., 2016). Ellis and colleagues (2014) stated that systematic reflection is an appropriate tool to benefit from former experiences, such as positive experiences in the work context. Guided reflection may result in caregivers being more motivated to reach their goals and believing in their own capacities (Ellis et al., 2014) which, in turn, should foster hope and optimism. Therefore, we propose that positive reflection improves personal resources by increasing hope and optimism as well as improves symptoms of exhaustion by decreasing emotional exhaustion and fatigue.

Building personal resources through positive reflection. Positive work reflection implies thinking about pleasurable, happy, and pleasant events of the ongoing working day (Meier et al., 2016). Recalling positive events gives rise to positive thoughts, which in turn can increase hope and optimism. Feeling optimistic and hopeful implies the expectancy of positive outcomes (Alarcon, Bowling, & Khazon, 2013). Thus, the reflection of positive events helps to raise awareness about situations in which expectations of positive outcomes have been met in the past. In addition to being optimistic, being hopeful implies not only the expectation of positive outcomes but also the belief in one's own capability and expectation of achieving one's (work-related) goals (Sweetman, Luthans, Avey, & Luthans, 2011). We aimed to develop this expectancy and capability in caregivers by encouraging them to reflect on positive and

meaningful events that had occurred due to their own capabilities in the past and, thus, remind them that it is possible to achieve such goals in the future.

Furthermore, recalling positive events not only leads to positive thoughts but also to positive affect, emotions, or mood (Daniel & Sonnentag, 2014; Meier et al., 2016; Sonnentag & Grant, 2012). For instance, if a caregiver remembers a nice situation with a patient, he or she should be happier or more satisfied with the job.

Turning to our intervention, we claim that positive work reflection leads to caregivers recalling positive experiences and induces positive emotions, which generate new expectations and strategies (according to the broaden-and-build theory) that help caregivers to handle difficult work situations. In terms of building hope, positive work reflection can enhance positive expectations about one's own capabilities to achieve work-related goals or to handle difficult situations. In terms of building optimism, positive reflection can enhance one's belief in a positive future and help caregivers to stay positive even in stressful situations.

Research supports the assumption that positive work reflection builds personal resources, such as hope and optimism. Fritz and Sonnentag (2005) revealed that reflecting positively about one's job is a resource-providing experience. Scholars found that positive work events are related to personal resources (Grant & Gino, 2010; Reis & Gable, 2003). Furthermore, research has shown that positive emotions build hope on a daily basis (Ouweneel et al., 2012). In addition, people who experience positive emotions show increases in optimism (Fredrickson et al., 2003). For example, Fredrickson et al. (2008) developed a love and kindness intervention to examine the build hypothesis of the broaden-and-build theory. They showed that a daily positive experience in the workplace increased the levels of several personal resources (e.g., hope and purpose in life).

By focusing more specifically on daily positive reflection *at work*, we aim to extend the knowledge on positive reflection interventions that foster hope and optimism. We hypothesize:

Hypothesis 1: Caregivers who engage in positive work reflection (i.e., intervention group) will show higher levels of hope after the intervention than caregivers who do not engage in positive work reflection (i.e., control group).

Hypothesis 2: Caregivers who engage in positive work reflection (i.e., intervention group) will show higher levels of optimism after the intervention than caregivers who do not engage in the positive work reflection (i.e., control group).

Reducing exhaustion through positive work reflection. We also propose that daily positive work reflection during work hours will decrease emotional exhaustion and fatigue. Scholars argue that exhaustion and fatigue occur when energy is depleted and not recovered (Maslach & Leiter, 1997; Winwood et al., 2005). Thus, we assume that positive work reflection enables people to experience positive emotions which replenish energy and help them to recover from exhaustion and fatigue (Oerlemans, Bakker, & Demerouti, 2014). Positive experiences are known to speed up recovery from negative arousal (Tugade & Fredrickson, 2004). Thus, positive experiences may enhance recovery because they are likely to “undo the lingering after-effects of negative emotions such as the acute load reactions experienced from work-related effort” (Oerlemans et al., 2014, p. 3).

Furthermore, it can be stated that positive work reflection leads to a more positive appraisal of a potentially stressful working day, which is likely to reduce exhaustion (Lazarus, 1991; Meier et al., 2016). The daily reflection of positive work events counteracts the human tendency to focus on negative aspects (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001) and the tendency to remember negative aspects (Seligman et al., 2006), thus leading to more positive emotions (Fredrickson, 1998).

Several studies show that reflection about positive events leads to better well-being and less exhaustion (Bono et al., 2013; Chan, 2011; Seligman et al., 2006; Seligman et al., 2005). For instance, positive work reflection during the weekend predicts lower emotional exhaustion in the following week (Fritz & Sonnentag, 2005) and shows a cross-sectional relation with

affective well-being (Daniel & Sonnentag, 2014). In terms of interventions, studies have demonstrated that positive reflection reduces depressive symptoms (Seligman et al., 2006; Seligman et al., 2005) and enhances positive affect (Chan, 2011). Positive reflection about work-related events is associated with less stress and fewer health complaints (Bono et al., 2013). In addition, Meier et al. (2016) found evidence from multiple diary studies that positive reflection about work events during leisure time positively impacts affective well-being, although they did not find significant effects in their intervention study. Based on our theoretical framework and the results of previous studies, we hypothesize:

Hypothesis 3: Caregivers who engage in positive work reflection (i.e., intervention group) will show lower levels of emotional exhaustion after the intervention than caregivers who do not engage in positive work reflection (i.e., control group).

Hypothesis 4: Caregivers who engage in positive work reflection (i.e., intervention group) will show lower levels of fatigue after the intervention than caregivers who do not engage in positive work reflection (i.e., control group).

Do caregivers with a high need for recovery benefit more from the intervention?

The positive-activity model (Lyubomirsky & Layous, 2013) supports the assumption that characteristics of the person, such as the availability of personal resources or need for an intervention, impact the effectiveness of positive interventions. Similarly, Briner and Walshe (2015) emphasized that people with a higher need to build resources (such as hope or optimism) are more likely to benefit from an intervention that aims to boost these resources. According to the Conservation of Resources Theory (Hobfoll, 1989), people are generally motivated to rebuild resources or to conserve current resources. Whether they build new or conserve existing personal resources with the help of an intervention may depend on how much of a resource is available. It is likely that low levels of personal resources such as hope and optimism signal a need for building higher levels of hope and optimism, whereas a high level of these personal resources signals the necessity to maintain this level. People feel that their personal resources

are low when they experience a need to recover or to recuperate (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014; van Veldhoven & Broersen, 2003). Therefore, we assume that a high level of need for recovery signals low levels of personal resources (i.e., hope and optimism), which in turn signals a stronger need and motivation to build higher levels of these personal resources. Because caregivers have to cope with a significant loss of resources (Cocco et al., 2003), our intervention should motivate all caregivers to build hope and optimism. However, we assume that those with higher levels of need for recovery also have lower levels of personal resources and, therefore, will benefit more from the intervention. We therefore propose:

Hypothesis 5: Caregivers with an initially higher level of need for recovery will benefit more from the intervention, such that they will show a stronger increase of a) hope and b) optimism than caregivers with a lower level of need for recovery at baseline and the control group.

Briner and Walshe (2015) also supported the notion that there has to be a significant well-being problem in the target group for an intervention that aims at boosting well-being to be beneficial. In other words, there has to be a need to improve well-being (e.g., to reduce emotional exhaustion or fatigue). Little or no change in well-being variables after the intervention can be expected in participants who state low levels of strain at baseline (Bunce & Stephenson, 2000). As caregivers frequently have high exhaustion levels (Cocco et al., 2003), we suggest that all caregivers in the intervention group will benefit from a positive work reflection intervention. However, following Briner and Walshe (2015), we assume that the caregivers with a higher need for recovery will benefit more from the intervention. We propose that the baseline levels of need for recovery will impact the effect of the intervention on emotional exhaustion and fatigue, as need for recovery may lead to long-term, work-related fatigue syndromes as well as symptoms of exhaustion (van Veldhoven & Broersen, 2003). We therefore propose:

Hypothesis 6: Caregivers with an initially higher level of need for recovery will benefit more from the intervention, such that they will show a stronger decrease of a) emotional exhaustion and b) fatigue than caregivers with a lower level of need for recovery at baseline and the control group.

Intervention and study design

Intervention. In a first step, caregivers were asked to think about a positive and meaningful work-related event they had experienced on that specific workday. It had to be an event that made them feel good, pleased, or happy and reminded them why their work was meaningful both for themselves and for others. They had to choose at least one keyword and enter it in the reflection activity on an iPad describing what or with whom they associated the event (i.e., a colleague or a patient). We focused on positive and meaningful events as research has shown that the experience of a meaningful event is linked to more positive well-being, energy, and personal growth (Arnold et al., 2007; Spreitzer, 1995). Therefore, we assumed that the positive reflection of meaningful events at work is an effective way of fostering the experience of positive emotions among caregivers.

In a second step, in order to induce positive reflection, the audio file started with a short mindfulness exercise in which caregivers were instructed to close their eyes, lean back, breathe deeply, and concentrate on their breathing for a few moments (Shapiro, Astin, Bishop, & Cordova, 2005): “Please, try to concentrate on your breathing. As you inhale and exhale, keep count of the number of seconds it takes you to inhale and exhale.” Mindfulness is described as a conscious, receptive, and non-judgemental experience of an ongoing event (Hülshager, Alberts, Feinholdt, & Lang, 2013). Mindfulness leads to a greater awareness of positive experiences during positive reflection. Thus, we designed our positive work reflection with the experience of a meaningful event and a mindful reflection to strengthen the positive experience.

As a third step, caregivers were asked to remember the work-related event in detail. In this part of the exercise they listened to several questions about the event to give them time

during which they could think about the event itself: “Take your time to answer the following questions about the positive event you are thinking about: What happened exactly? Where did it happen? What did you see, hear, or even smell? What did you do or say?” After these questions, caregivers were instructed to relive this situation in as much detail as possible and to concentrate specifically on how they felt about the positive event. After three minutes of dwelling on this positive moment, the intervention ended by instructing the caregivers to open their eyes slowly when they had the feeling that they had finished with the reflection.

Caregivers were asked to conduct the reflection exercise during a break in the second half of their working day. The positive reflection lasted between five and ten minutes in total. The core part of the exercise consisted of reliving the positive event and approximately two minutes were spent on the mindfulness exercise. We set a beeper on each iPad to remind the caregivers to conduct the reflection exercise each working day.

Study design. The overall duration of the study was four to five weeks and encompassed 10 consecutive working days of intervention activities for the intervention group. The participants of the intervention and control groups were asked to answer three questionnaires: a pre-questionnaire (T1) in week 1, a post-questionnaire (T2) after ten working days, and a follow-up questionnaire (T3) after two additional weeks. The intervention activities were conducted between the pre- and post-questionnaires (T1-T2).

Materials and methods

Sample and procedure

We recruited caregivers between February 2013 and September 2014 in 25 nursing homes, retirement homes, and mobile care-giving organizations in Germany. The first author presented the aims and procedure of the study in team meetings or individually to the potential participants. Participation was voluntary and the participants signed an informed consent after they had been informed about the study content and requirements. In total, 97 caregivers volunteered to participate in the study and were assigned to the intervention group or waitlist

control group. In the intervention group, 46 caregivers received the training. Three participants who were initially assigned to the intervention group did not attend the training and therefore dropped out. In the control group 48 caregivers agreed to participate in the study; however, only 44 caregivers actually filled in the first questionnaire of the study. The final sample consisted of 90 caregivers, of which 46 caregivers were assigned to the intervention group and 44 were assigned to the waitlist control group by using a quasi-experimental design. Caregivers were assigned to the intervention group or control group based on their availability (depending on vacation time, absenteeism, advanced training at work, etc.). Caregivers from the same organization were assigned in the same group (either control or intervention group) to avoid contamination effects.

To check for potential selection bias due to dropout, univariate analyses of variance and chi-square tests were calculated for the sociodemographic variables and study variables. The results show that the dropouts (those who did not fill in the post- and follow-up questionnaires) differed with regard to marital status ($\chi^2(2, N = 44) = 6.12, p < .05$): More participants living in a partnership dropped out. The means of other demographic variables and study variables did not differ significantly. Attrition analyses for the control group only revealed that caregivers who dropped out during the post- and follow-up questionnaire did not differ significantly with regard to their sociodemographic variables or most of the study variables. However, dropouts differed significantly with regard to optimism at T1 ($F(2, 39) = 3.60, p = .037$): Those who continued the study had significantly lower means for optimism.

The majority of caregivers were female (71.1%) and their age ranged from 23 to 61 years, with an average age of 42.3 ($SD = 10.82$). Most participants lived with a partner (65.6%) and had completed their vocational training as a nurse (80%). All caregivers worked at least 35 hours a week.

In the intervention group, 46 caregivers (100%) completed the first questionnaire (T1) prior to the training. Afterwards, they received a standardized training program of

approximately one hour, which introduced them to the daily positive work reflection exercises and trained them on how to conduct the exercises. In the following stage, they were asked to perform the positive work reflection exercises over 10 consecutive working. We installed the exercise on the iPad as a program (app) which was used offline. Finally, participants were asked to answer a post-questionnaire (T2) in the week following completion of the intervention exercises (n = 45; 93.3%) and a follow-up questionnaire (T3) two weeks later (n = 44; 90.6%). We loaned the iPads to participants during the intervention between the T1 and T2 questionnaires. We had 15 iPads to distribute and therefore ran the study in four waves. For the control group, 44 caregivers (100%) started directly with the first pre-questionnaire (T1) without a training program. In total, 31 caregivers answered the post-questionnaire (70.5%) after 10 working days (T2) and 26 answered the follow-up questionnaire (59.1%) after two weeks (T3). Subsequently, the control group also received the intervention.

Measures

The three questionnaires (T1-T3) were completed either online or in paper-and-pencil format. All study variables were assessed at all measurement points. Participants who had no internet access received printed versions of the questionnaire and mailed them back in a prepaid envelope. All participants created their own personal code, which was used to match the three questionnaires.

Optimism was assessed with the *Life Orientation Test-Revised* (LOT-R; Scheier, Carver, & Bridges, 1994) which consists of six items (e.g., “I rarely count on good things happening to me”), three of which are reverse coded. The items were rated on a five-point Likert scale (1 = *strongly disagree*, 5 = *strongly disagree*).

Hope was measured using the *State Hope Scale* (Snyder et al., 1996). Six items assessed the state hope (e.g., “At present, I am energetically pursuing my goals”) on a five-point Likert scale (1 = *strongly disagree*, 5 = *strongly disagree*).

Emotional exhaustion was measured with the *Maslach Burnout Inventory – General Survey* (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996). The participants were asked to rate five statements (e.g., “I feel tired when I get up in the morning and have to face another day on the job”) regarding their frequency of occurrence on a six-point answering scale (1 = *never*, 6 = *every day*).

Fatigue was measured as chronic fatigue using the *Occupational Fatigue Exhaustion Recovery scale* (OFER; Winwood et al., 2005). Nine items (i.e., “I often dread waking up to another day of my work”) were rated on a five-point Likert scale (1 = *strongly disagree*, 5 = *strongly disagree*).

Need for recovery was assessed with the *Need for Recovery Scale* (van Veldhoven & Broersen, 2003) and comprising 11 items (i.e., “Often, after a day's work I feel so tired that I cannot get involved in other activities”) using a dichotomous answering scale (0 = *no*, 1 = *yes*). As need for recovery was a dichotomous variable, a sum score was calculated, with a maximum of 11 points indicating the highest score of need for recovery.

All scales showed good internal consistencies at all measurement times (see Table 1). As emotional exhaustion, fatigue, and need for recovery are highly related variables, we conducted confirmatory factor analyses with the T1 study variables using MPLUS 7.1. We found that the three-factor model with independent but correlated factors for need for recovery, emotional exhaustion, and fatigue showed an acceptable fit to the data: χ^2 (121, N = 90) = 396.68, $p < .001$; CFI = .87; RMSEA = .07; SRMR = .07).

Statistical analyses

IBM SPSS Statistics 21 was used to analyze the data. The data met all of the requirements for applying general linear models, that is, independent observations, normal distribution of all study variables, and homogeneity of variances. Descriptive analyses and tests of baseline homogeneity of the intervention and control groups were conducted with independent samples, *t*-tests, and chi-square analyses.

To test our hypotheses, we conducted mixed between-within analyses of variance with $\alpha = .05$ as the criterion for significance. We analyzed the interaction of group (intervention vs. control group) by time (T1, T2, T3) to test whether the intervention and control group showed different developments over time. In addition, we conducted post-hoc analyses to test mean differences between the intervention and control group at T1, T2, and T3 with three MANOVAs. Next, we ran pairwise comparisons to test within-group differences, that is, to test whether the intervention group showed a significant increase in the study variables over time (i.e., increase from T1 to T2 and from T1 to T3). Partial eta-squared (η^2_p) and Cohen's d were calculated to examine the effect sizes. Cohen's d is considered to be a small effect if $d \geq 0.2$, a medium effect if $d \geq 0.5$, and a large effect if $d \geq 0.8$ (Cohen, 1988), whereas partial eta-squared can be interpreted as a small effect if $\eta^2_p \geq .01$, a medium effect if $\eta^2_p \geq .06$, and a large effect if $\eta^2_p \geq .14$ (Cohen, 1988).

Results

Zero-order correlations and Cronbach's alphas for all study variables are shown in Table 1. As a manipulation check, we checked whether the daily exercise had been opened and used on the iPad on each day of the intervention. All participants conducted the daily exercise on at least seven days.

INSERT TABLE 1 HERE

Preliminary analyses

As preliminary analyses, we tested whether the intervention and control groups differed with regard to their sociodemographic and baseline measures of study variables. No significant differences were found for age $t(85) = -1.85, p = .067$, gender $\chi^2(1, N = 90) = 1.59, p = .207$, relationship $\chi^2(1, N = 90) = 0.26, p = .608$, educational status $\chi^2(4, N = 90) = 1.11, p = .892$, and the study variables hope $t(88) = -0.51, p = .615$, optimism $t(88) = -0.81, p = .420$, emotional exhaustion $t(87) = 0.90, p = .370$, fatigue $t(87) = 1.09, p = .277$, and need for recovery $t(86) = 0.82, p = .411$ at baseline.

Intervention effects on hope and optimism

To test our first and second hypotheses, which proposed that the intervention would have a positive effect on hope and optimism, we performed a mixed between-within analysis of variance. It revealed no significant interaction effect for group by time for hope, $F(1, 67) = 1.93, p = .148, \eta^2_p = .03$, and for optimism, $F(1, 67) = 0.98, p = .377, \eta^2_p = .01$. Furthermore, the post-hoc tests revealed no differences between groups (between level) or time points (within level). Thus, Hypotheses 1 and 2 were not supported.

Intervention effects on emotional exhaustion and fatigue

Our third and fourth hypotheses proposed that the intervention would have a positive effect on emotional exhaustion and fatigue. For emotional exhaustion, the mixed between-within analysis of variance revealed significant interaction effects of group by time, $F(1, 66) = 5.51, p = .005, \eta^2_p = .08$. As post-hoc analyses, we conducted three MANOVAs in order to test whether the intervention group (IG) and control group (CG) differed significantly regarding their means at T1, T2, and T3 for emotional exhaustion. The results of the MANOVAs indicated significant differences between the IG and CG for T3 with medium effect sizes (see Table 2). The IG had significantly lower means for emotional exhaustion compared to the CG after the intervention. Furthermore, we analyzed whether the means in the intervention group were significantly different between T1 and T2 between T1 and T3, expecting a decrease across this time frame. The pairwise comparisons showed a significant reduction in emotional exhaustion over time in the intervention group: The means differed significantly between T1 and T2 ($\Delta (T1-T2) = 0.36, p = .008, d = .41$) and between T1 and T3 ($\Delta (T1-T3) = 0.40, p = .024, d = .45$). For the control group, the pairwise comparison showed no significant changes between T1 and T2 ($\Delta (T1-T2) = -0.21, p = 1.00, d = -.94$) or between T1 and T3 ($\Delta (T1-T3) = -.30, p = .396, d = -1.39$). Thus, only the intervention group significantly decreased its emotional exhaustion. Thus, Hypothesis 3 was supported.

For fatigue, the mixed between-within analysis of variance revealed a significant interaction effect of group by time, $F(1,67) = 5.68, p = .004, \eta_p^2 = .08$. As post-hoc analyses, we conducted three MANOVAs in order to test whether the IG and CG significantly differed with regard to their means for fatigue at T1, T2, and T3. The results of the MANOVAs indicated significant differences between the IG and CG for T3 with medium effect sizes (see Table 2). The IG had significantly lower means for fatigue compared to the CG after the intervention. Furthermore, we analyzed whether the means in the intervention group significantly decreased from T1 to T2 and T1 to T3, expecting a decrease across this time period. The pairwise comparisons showed a significant reduction in fatigue: The means between T1 and T2 (Δ (T1-T2) = 0.29, $p = .001, d = .47$) and between T1 and T3 (Δ (T1-T3) = 0.25, $p = .011, d = .39$) differed significantly. For the control group, the pairwise comparison showed no significant changes between T1 and T2 (Δ (T1-T2) = 0.01, $p = 1.00, d = .08$) or between T1 and T3 (Δ (T1-T3) = -.16, $p = .348, d = -.99$). Thus, only the intervention group significantly decreased its fatigue. Thus, Hypothesis 4 was supported. Figure 1 displays the significant differences in means between the IG and CG and shows the significant decrease of means within the intervention group over time for emotional exhaustion and fatigue.

INSERT TABLE 2 HERE

INSERT FIGURE 1 HERE

Intervention effects on hope and optimism in relation to caregivers' need for recovery

To test whether participants with higher versus lower need for recovery benefit differentially from the intervention, we ran analyses with the intervention group only ($n = 46$). To compare caregivers with a high versus low need for recovery (NFR), we divided the intervention group into two subgroups based on their T1 scores for NFR. We used the median split ($Mdn = 6$) to create similarly sized groups, which resulted in a group with high levels of NFR ($n = 24$) and a group with low levels of NFR ($n = 20$). Given the small sample sizes, we

conducted post-hoc power analyses which revealed an acceptable to satisfactory power to detect effects for hope ($1-\beta = 0.77$, $d = 0.75$, $\alpha = 0.05$), optimism ($1-\beta = 0.90$, $d = 0.93$, $\alpha = 0.05$), emotional exhaustion ($1-\beta = 1.00$, $d = 1.39$, $\alpha = 0.05$), and fatigue ($1-\beta = 0.94$, $d = 1.01$, $\alpha = 0.05$).

Our fifth hypothesis proposed that caregivers with an initially higher level of NFR would show stronger increases in hope and optimism than caregivers with a lower level of NFR and caregivers in the control group. The mixed between-within analysis of variance revealed a non-significant interaction of group by time for hope, $F(2, 65) = 2.14$, $p = .08$, $\eta^2_p = .06$, and optimism, $F(2, 65) = 0.74$, $p = .565$, $\eta^2_p = .02$. As post-hoc analyses, we conducted three MANOVAs to identify between-group differences at T1, T2, and T3, revealing that all groups (high NFR, low NFR, and control group) differed significantly for hope at T1, $F(2, 84) = 3.13$, $p = .049$, $\eta^2_p = .07$: The high NFR group showed lower means than low NFR group and the control group. In addition, the control group showed lower means than the low NFR group. The same was found for optimism at T1, $F(2, 84) = 4.91$, $p = .010$, $\eta^2_p = .11$. No differences between groups were found at T2 and T3. In summary, the high NFR group started with significantly lower means for hope and optimism before the intervention (at T1). After the intervention (at T2 and T3) this difference was no longer significant because participants in the high NFR group increased their average levels of hope and optimism.

Furthermore, we conducted pairwise comparisons to analyze how hope and optimism developed within the high NFR group versus the low NFR and control group, expecting a stronger increase of hope and optimism for the high NFR group. The pairwise comparisons showed a significant increase in hope only for the high NFR group: The means differed significantly between T1 ($M = 3.21$, $SD = .71$) and T2 ($M = 3.48$, $SD = .52$) with small effect sizes (see Table 3). The pairwise comparisons also showed a significant increase in optimism for the high NFR group. The means differed significantly between T1 ($M = 3.11$, $SD = .74$) and T3 ($M = 3.38$, $SD = .60$) with small effect sizes (see Table 3). Figure 2 shows that caregivers

with higher levels of NFR significantly increased their levels of hope and optimism across the time frame. For caregivers in the low NFR group and control group, the pairwise comparisons revealed no increase of hope and optimism from T1 to T2 or T3. As the test of group differences revealed a non-significant interaction of group by time, Hypothesis 5 was not supported. However, we found a trend that hope and optimism increase within the high NFR group after the intervention.

INSERT TABLE 3 HERE

INSERT FIGURE 2 HERE

Intervention effects on emotional exhaustion and fatigue in relation to caregivers' need for recovery

Our sixth hypothesis proposed that caregivers with an initially higher level of NFR would benefit more from the intervention as they would show a stronger decrease in emotional exhaustion and fatigue than caregivers with a lower level of NFR and caregivers in the control group. The mixed between-within analysis of variance revealed a significant interaction of group by time for emotional exhaustion, $F(2, 64) = 5.02, p = .001, \eta^2_p = .14$, and fatigue, $F(2, 65) = 4.01, p = .004, \eta^2_p = .11$.

Again, as post-hoc analyses, we conducted three MANOVAs to identify between-group differences, at T1, T2, and T3, revealing that all groups (high NFR, low NFR, and control group) differed significantly for emotional exhaustion at T1, $F(2, 84) = 8.75, p < .001, \eta^2_p = .17$: The high NFR group showed higher means than the low NFR group and the control group. In addition, the control group showed higher means than the low NFR group. No differences between groups were found at T2 and T3. For fatigue, our results revealed that all groups differed significantly at T1, $F(2, 84) = 5.23, p = .007, \eta^2_p = .11$, and T2, $F(2, 70) = 3.73, p = .029, \eta^2_p = .10$: Again, the high NFR group showed higher means (at T1) than the low NFR group and control group, whereas the control group showed higher means than the low NFR group.

In summary, the high NFR group started out with significantly higher means for emotional exhaustion and fatigue before the intervention (at T1). For emotional exhaustion this difference was no longer significant directly after the intervention (at T2). For fatigue this difference was no longer significant after the follow-up (at T3) because participants in the high NFR group decreased their average levels of emotional exhaustion and fatigue over time.

Furthermore, we conducted pairwise comparisons to analyze how emotional exhaustion and fatigue developed over time within the low NFR group versus the high NFR group, expecting a stronger decrease of emotional exhaustion and fatigue for the high NFR group. The pairwise comparisons showed a significant reduction in emotional exhaustion for the high NFR group. Its means differed significantly between T1 ($M = 3.82, SD = .71$), T2 ($M = 3.30, SD = .79$), and T3 ($M = 3.05, SD = .85$) with large effect sizes (see Table 3). The pairwise comparisons also showed a significant reduction in fatigue for the high NFR group: Its means differed significantly between T1 ($M = 2.75, SD = .72$) and T2 ($M = 2.37, SD = .50$) and T1 and T3 ($M = 2.35, SD = .63$) with small and medium effect sizes (see Table 3). Thus, Hypothesis 6 was supported.

Figure 3 shows that caregivers with higher levels of NFR significantly decreased their levels of emotional exhaustion and fatigue across the time frame. For caregivers in the low NFR group and control group, the pairwise comparisons revealed no decrease of emotional exhaustion and fatigue from T1 to T2 or T3.

INSERT FIGURE 3 HERE

Discussion

The aim of this study was to investigate whether a short daily positive work reflection exercise performed during working hours that included elements of mindfulness and meaning-making would boost personal resources and reduce exhaustion. In line with our propositions, we found that our intervention significantly reduced emotional exhaustion and fatigue. A subgroup analysis revealed that primarily caregivers with a high need for recovery at baseline

benefited from the intervention with regard to these variables. Contrary to our expectations, we found no significant intervention effects for hope and optimism. However, further analyses revealed that caregivers with higher levels of need for recovery showed an increase in hope and optimism over time. Overall, these results demonstrate that a short, daily intervention can be beneficial to improve well-being outcomes. However, the subgroup analyses also indicated that employees in need should be the primary focus. To the best of our knowledge, this is the first intervention study that has examined the effects of an intervention promoting positive work reflection during working hours among a homogeneous sample of caregivers. Given that work occupies a large portion of employees' daily lives, we believe that this is a useful intervention for employees that can be conducted during work hours instead of using their leisure time. In the following, we will first discuss the findings regarding reducing exhaustion and then turn to those related to developing personal resources.

Reducing emotional exhaustion and fatigue

In line with our hypotheses, the intervention group benefited from the positive work reflection intervention by showing a significant decrease in emotional exhaustion and fatigue over time compared to the control group. Our results showed that there was a steady and significant decrease of emotional exhaustion and fatigue within the intervention group from T1 to T2 as well as from T1 to T3. Our results corroborate the findings of several other studies, which found that reflection on positive events (both general and work-related) can decrease emotional exhaustion and enhance well-being (Bono et al., 2013; Chan, 2011; Seligman et al., 2005). We note that in our study the intervention group started out with slightly higher values of emotional exhaustion and fatigue at T1 than the control group, which meant that they had more scope for improvement. As these differences were not significant, we do not regard this as a major limitation. However, future studies should randomly assign participants to intervention and control groups to reduce the likelihood of pre-existing differences between the groups.

When conducting subgroup analyses that take the baseline levels of need for recovery (NFR) among participants in the intervention group into account, we found decreases in emotional exhaustion and fatigue only for the high NFR group. As assumed, those with high NFR also had higher baseline levels of emotional exhaustion and fatigue compared to the participants in the low NFR group and control group. Thus, our results support the assumption that people benefit most from an intervention when their baseline level of exhaustion is high, that is, when they have a higher need to improve their well-being (Briner & Walshe, 2015).

In summary, the intervention effects on emotional exhaustion and fatigue confirm that a short daily positive (work) reflection session helps to prevent a decrease of energy and supports recovery from negative arousal (Tugade & Fredrickson, 2004).

Building hope and optimism through positive work reflection

In contrast to the effects on emotional exhaustion and fatigue, hope and optimism did not increase for the intervention group when comparing it with the control group. Our results contradict the findings of previous studies, which found that positive work reflection supports the building of personal resources (Cohn et al., 2009; Fredrickson et al., 2008; Grant & Gino, 2010). **The intervention (mindful experience of positive thoughts, emotions, and meaningful events) may not be sufficiently strong to foster hope and optimism over a rather short period of ten working days. Alternatively, our measures may not have been sensitive enough to capture fluctuations in personal resources over a period of ten days (T1 to T2) and four weeks (T1 to T3), respectively. Interestingly, when dividing the intervention group into a “high” and a “low” need for recovery (NFR) group, the pairwise comparisons showed that caregivers with a high NFR at baseline benefited from the intervention. More specifically, for the high NFR group, we found significant increases in hope between T1 and T2 and in optimism between T1 and T3. First, these improvements over time provide evidence that the process of building hope and optimism depends on the initial NFR or, in other words, the need to refill depleted resources. Second, with regard to the measures applied, we find more immediate effect for hope (from T1**

to T2), which was measured with items which refer to the present moment and thus have a stronger state component. For optimism, which was measured with items that have a stronger trait component effects need more time to evolve (from T1 to T3). We need to acknowledge, however, that we found these effects when focusing on the high NFR group only, but not in the test that compared the high NFR with the low NFR group and control group. Therefore, at this stage, we regard this finding as a trend which needs to be confirmed in future studies with a larger sample size.

When focusing on the baseline levels of hope and optimism, we found that the three subgroups (high NFR, low NFR, and control group) differed significantly in their baseline levels of hope and optimism. Caregivers with a high NFR had lower levels of personal resources (i.e., hope and optimism) than the control group which, in turn, had lower levels of personal resources than the low NFR group. This finding supports our assumption that NFR levels are related to levels of personal resources because only caregivers with a high NFR increased their levels of hope and optimism over time. These results are in line with the Conservation of Resources Theory (COR; Hobfoll, 1989) which states that it is particularly necessary to acquire new resources when the initial level of resources is low. As assumed, only the high NFR group (which shows low levels of personal resources at baseline) acquired new resources whereas the low NFR group seemed to conserve their personal resources instead of enhancing them. These findings corroborate the recommendation of Briner and Walshe (2015), who state that “intervening to increase the level of a particular resource in the target group [...] makes sense if that group has relatively low or underdeveloped levels” (p. 572). Another explanation as to why only the high NFR group enhanced their personal resources might be found in the nature of personal resources, as described by Muraven and Baumeister (2000). These authors argued that personal resources operate like a muscle. In line with COR (Hobfoll, 1989), if this muscle is used, its energy will be depleted over time and will need to be refilled. Thus, if people use their personal resources, they will be depleted over time and need to be refilled. However, this

refilling is limited to a certain level so that the energy of the muscle (i.e., the personal resources) cannot be rebuilt endlessly. Thus, people are likely to have their own maximum level of personal resources that can be replenished. Going a step further, Muraven and Baumeister (2000) argue that if the muscle is used regularly, one can eventually widen this limitation so that the muscle grows stronger over time. With regard to personal resources this implies that people who draw on their personal resources regularly can strengthen them, so that over time these personal resources may grow. This assumption implies that the low NFR group, which started out with higher levels of personal resources, could perhaps further enhance these personal resources if they trained over a longer period of time. Future studies should therefore implement intervention designs that exceed several weeks to capture the development of resources over several months or years.

Limitations and implications for future research

Our study is not without limitations. First, 41% of the 44 caregivers in the control group dropped out between the first and the third measurements. Intervention studies with employees and organizational research surveys frequently record dropout rates of 50% or more (e.g. Flaxman & Bond, 2010; Hülshager et al., 2013; Nistor & Neubauer, 2010). The reasons for this can be the participants themselves, the environment, or the intervention design (Holder, 2007). First, in our study, the population tends to have a high workload and experience time pressure (Delp et al., 2010; Steege et al., 2015) which could have facilitated the high dropout rates. Furthermore, participants in the waitlist control group may have dropped out as they had to wait for approximately four weeks before receiving the intervention. Future studies could implement other control group designs, where participants receive an alternative intervention rather than no treatment. Participant dropout in the intervention group was lower, but performing the same intervention every day over the course of two weeks could also be a potential cause of dropout. Possibly, an intervention with more variety or different dosages of the intervention would reduce dropout and increase participants' commitment. According to Lyubomirsky and Layous

(2013), individuals have different preferences and training needs. Thus, it could be interesting to examine the effect of a positive reflection intervention using different exercises of positive thinking, exercises in gratitude, or a mindful experience of positive cognitions, and allow participants to choose the exercise (that fits best their situation and person).

Our attrition analyses revealed that the dropouts did not differ from the study participants with regard to the demographic variables or study variables, which increases the ecological validity of our results. The attrition analyses for the control group revealed that dropouts did not differ with regard to the demographic variables and most study variables from the “stayers”. We found higher levels of optimism at T1 for the dropouts. A reason for this might be that only participants who experience a need to improve their personal resources (i.e., optimism) continue interventions, supporting the assumptions of Briner and Walshe (2015) who argued that participants have to experience a need for improvement in order to stay committed throughout an intervention. Nevertheless, we see a need for future research to investigate the optimal duration of an intervention by examining how much time a participant has to invest compared to the time required to observe a measurable outcome.

Another limitation may be the self-selection of participants in the study, which could reduce the generalizability of our findings. *Even though we recruited through organizations we may only have motivated those caregivers who were interested in the intervention, who liked our approach or who were interested to improve their well-being to participate. While this is clearly a limitation, we would like to refer to Lyubomirsky, Dickerhoof, Boehm, and Sheldon (2011) who found that happiness interventions are most successful when participants wish to take part in the intervention. In their intervention study they found that participants who initially self-selected into the intervention group benefit most of the intervention compared to participants who were assigned to the intervention group. The authors draw on self-determination theory (Ryan & Deci, 2000) in arguing that controlled motivation supports participants to find meaning and purpose in an activity.*

Next, in order to test the intervention effect, we collected our data in the week after completion of the intervention and again two weeks later. Although the majority of stress intervention studies measure the effects immediately or up to a few weeks after the intervention (Richardson & Rothstein, 2008), it would be worthwhile to measure the effects of positive work reflection on personal resources and exhaustion after several months to draw conclusions on long-term effects.

Also, the measures applied in this study may not have been sensitive enough to detect fluctuations in study variables. Whereas, the measure for hope focuses on the present, the measures for optimism, emotional exhaustion and fatigue ask participants for a more general estimation of their attitudes and well-being. The correlations between study variables at T1, T2 and T3 indicate moderate stability over time for optimism and emotional exhaustion, but rather high stability for fatigue. Future studies should apply measures that more clearly assess the state-like components of study variables by focusing on the present moment, day or week.

Furthermore, with our intervention design that involves an intervention and control group, we can state that our intervention works and is better than only completing surveys. Thus, we can conclude that our results are not due to survey effects (Sitzmann & Wang, 2015). However, we do not know whether it is superior to alternative interventions or a placebo intervention. Therefore, future studies should ideally aim to compare this intervention with an alternative intervention and a non-intervention control group. Furthermore, an ideal design should include a placebo intervention in order to ensure that interventions effects do not result from demand characteristics (i.e., the possibility that participants score higher on personal resources or emotional exhaustion based on the instruction of the intervention), but from the intervention itself.

Finally, in response to the call to consider the participants' needs for an intervention when evaluating its effectiveness (Briner & Walshe, 2015), we split the intervention group into two subgroups with high and low NFR. We found significant evidence and small to large effect

sizes that caregivers with high NFR benefit more from the intervention. However, we have to acknowledge that these findings are based on a small sample. Future research should aim to test sub-samples of participants with varying needs with larger samples to produce results with stronger power.

Practical implications and conclusion

Our results are promising for health care organizations that wish to engage in workplace health promotion as we demonstrated that daily reflection about positive and meaningful work events over ten working days can reduce exhaustion among caregivers. Given that the intervention lasts only five minutes and can be conducted at any time during the working day, it can be easily integrated into the daily work routine. This is particularly important for caregivers who typically experience high workloads with few options for daily respite from work. Nevertheless, practitioners need to bear in mind that we have only tested for immediate effects and that person-level interventions typically do not sustain over time. Ideally, person-level interventions should be paired with interventions at a team level or organizational level. For example, a study on fostering self-efficacy at work has revealed that long-term effects over two years could only be achieved when an entire team participated in the intervention instead of single team members (Fülleman, Jenny, Brauchli, & Bauer, 2015). Furthermore, as workload is one of the core stressors among caregivers, interventions should pair person-level interventions with an improvement in working conditions.

In conclusion, this study reveals that daily positive work reflection reduces exhaustion among caregivers and shows trends toward boosting personal resources, particularly for persons who are in high need for recovery. This is in line with Briner and Walshe's (2015) proposition that participants in need benefit more from an intervention. This finding gives rise to the question as to whether all participants can benefit from an intervention or whether we need to consider subgroup differences. Thus, future research should take into account the initial level of resources and well-being among the study population and tailor interventions to participants

in need as the initial level of need impacts the effectiveness of the intervention. We conclude that mindful reflection of positive and meaningful events at work helps caregivers to replenish energy and to recover from exhaustion and fatigue, and thus fosters their well-being.

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Table 1

Zero-order correlations and reliability of all study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Hope T1	(.85)												
2. Hope T2	.63**	(.92)											
3. Hope T3	.37**	.53**	(.90)										
4. Optimism T1	.49**	.31**	.30*	(.80)									
5. Optimism T2	.35**	.31**	.26*	.41**	(.82)								
6. Optimism T3	.47**	.42**	.68**	.47**	.38**	(.88)							
7. Emotional Exhaustion T1	-.34**	-.04	-.14	-.28**	-.19	-.26*	(.84)						
8. Emotional Exhaustion T2	-.39**	-.31**	-.29*	-.40**	-.13	-.42**	.57**	(.90)					
9. Emotional Exhaustion T3	-.17	-.10	-.43**	-.25*	.00	-.43**	.48**	.66**	(.85)				
10. Fatigue T1	-.43**	-.25*	-.30*	-.46**	.01	-.34**	.60**	.61**	.53**	(.88)			
11. Fatigue T2	-.50**	-.30*	-.27*	-.35**	-.14	-.40**	.54**	.70**	.60**	.69**	(.84)		
12. Fatigue T3	-.39**	-.21	-.48**	-.39**	-.08	-.50**	.44**	.64**	.79**	.70**	.78**	(.89)	
13. Need for Recovery T1	-.44**	-.12**	-.16**	-.45**	-.06**	-.26**	.63**	.44**	.27**	.70**	.54**	.44**	(.84)

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

Table 2

Means, standard deviations, and results of the MANOVAs for study variables at pre (T1), post (T2), and follow-up (T3) comparing intervention and control group

Variable	Group	Mean (SD)			Results of MANOVA					
		Pre (T1)	Post (T2)	Follow-up (T3)	Pre (T1)		Post (T2)		Follow-up (T3)	
					Univariate F p -value	η^2_p	Univariate F p -value	η^2_p	Univariate F p -value	η^2_p
Hope	Intervention	3.42 (0.67)	3.52 (0.59)	3.51 (0.62)	0.12	.00	1.33	.02	1.12	.02
	Control	3.47 (0.69)	3.34 (0.75)	3.33 (0.81)	$p = .727$		$p = .252$		$p = .294$	
Optimism	Intervention	3.39 (0.74)	3.46 (0.65)	3.55 (0.66)	0.74	.01	0.08	.00	3.48	.05
	Control	3.51 (0.66)	3.54 (1.64)	3.24 (0.64)	$p = .392$		$p = .781$		$p = .067$	
Emotional Exhaustion	Intervention	3.34 (0.91)	2.97 (0.85)	2.94 (0.89)	0.75	.01	1.03	.01	4.67	.07
	Control	3.16 (1.02)	3.21 (1.23)	3.49 (1.20)	$p = .389$		$p = .314$		$p = .034$	
Fatigue	Intervention	2.48 (0.72)	2.17 (0.51)	2.21 (0.57)	0.88	.01	1.80	.02	4.18	.06
	Control	2.33 (0.79)	2.37 (0.78)	2.57 (0.90)	$p = .350$		$p = .184$		$p = .045$	

Note. $df = 1$; n (IG) Pre = 45, Post = 43, Follow-up = 43; n (CG) Pre = 43, Post = 30, Follow-up = 25; η^2_p = partial eta-squared

Table 3

Means, standard deviation, mean differences, and Cohen's d for study variables of the high and low NFR groups

Group	Variable	Mean (SD)			Mean differences between Pre (T1), Post (T2), and Follow-up (T3) measurements			
		Pre (T1)	Post (T2)	Follow-up (T3)	Pre (T1) to Post (T2) Δ (T1-T2)	Cohen's d	Pre (T1) to Follow-up (T3) Δ (T1-T3)	Cohens's d
High NFR	Hope	3.21 (.71)	3.48 (.52)	3.46 (.62)	-0.27*	-0.43	-0.25	-0.37
	Optimism	3.11 (.74)	3.32 (.58)	3.38 (.59)	-0.21	-0.32	-0.27*	-0.40
	Emotional exhaustion	3.82 (.71)	3.30 (.79)	3.05 (.85)	0.52**	0.69	0.77***	0.98
	Fatigue	2.75 (.72)	2.37 (.50)	2.35 (.63)	0.38***	0.61	0.40**	0.60
Low NFR	Hope	3.69 (.56)	3.55 (.69)	3.61 (.62)	0.14	0.22	0.08	0.15
	Optimism	3.75 (.64)	3.67 (.72)	3.77 (.70)	0.08	0.13	-0.02	-0.03
	Emotional exhaustion	2.78 (.79)	2.60 (.83)	2.81 (.97)	0.18	0.22	-0.03	-0.04
	Fatigue	2.11 (.54)	1.91 (.45)	2.04 (.46)	0.20	0.39	0.07	0.15

Note. NFR = need for recovery; n (High NFR) = 23; n (Low NFR) = 19; * $p < .05$ ** $p < .01$ *** $p < .001$.

Figure 1. Development of means of emotional exhaustion and fatigue for the intervention and control groups across pre (T1), post (T2), and follow-up (T3) measurements.

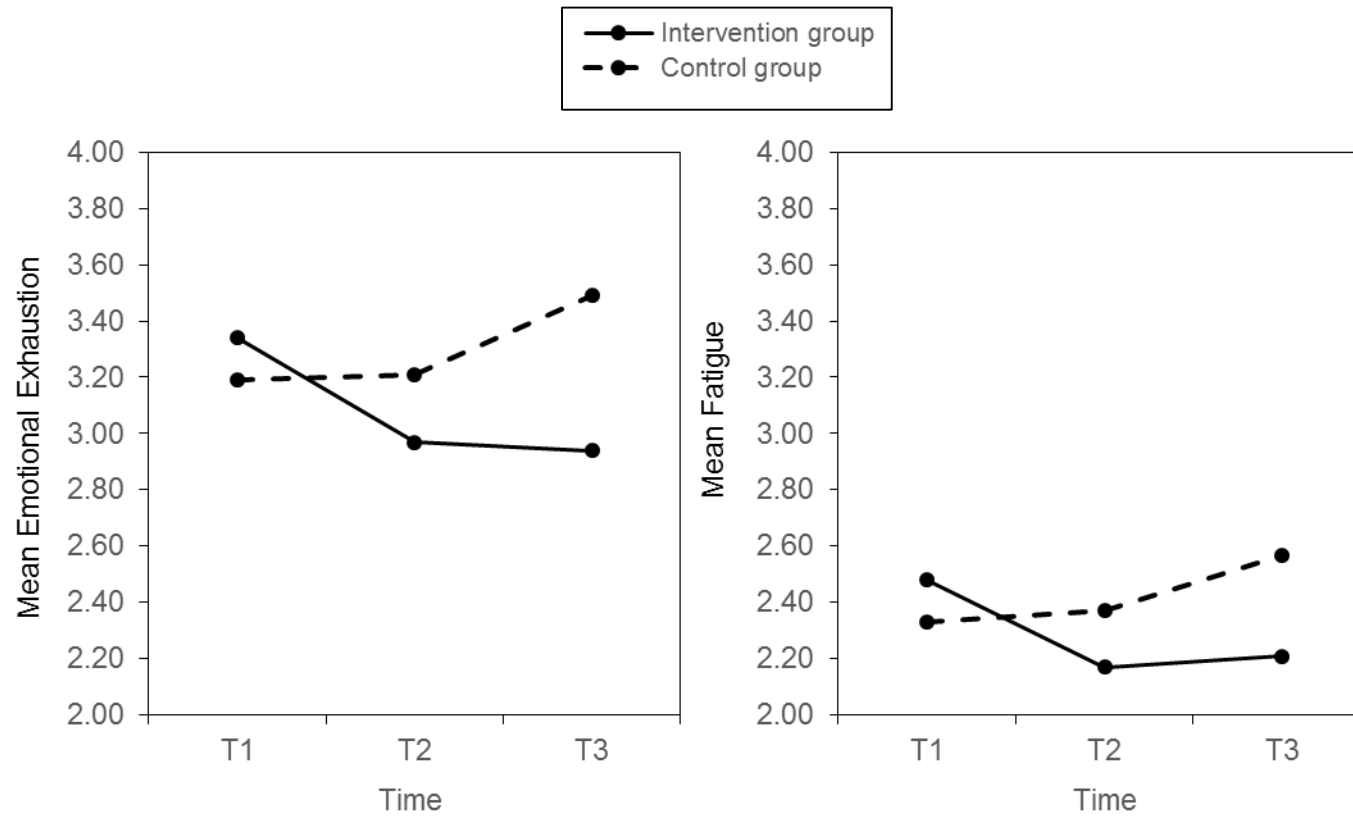


Figure 2. Development of means of hope and optimism for the high and low NFR groups across pre (T1), post (T2), and follow-up (T3) measurements.

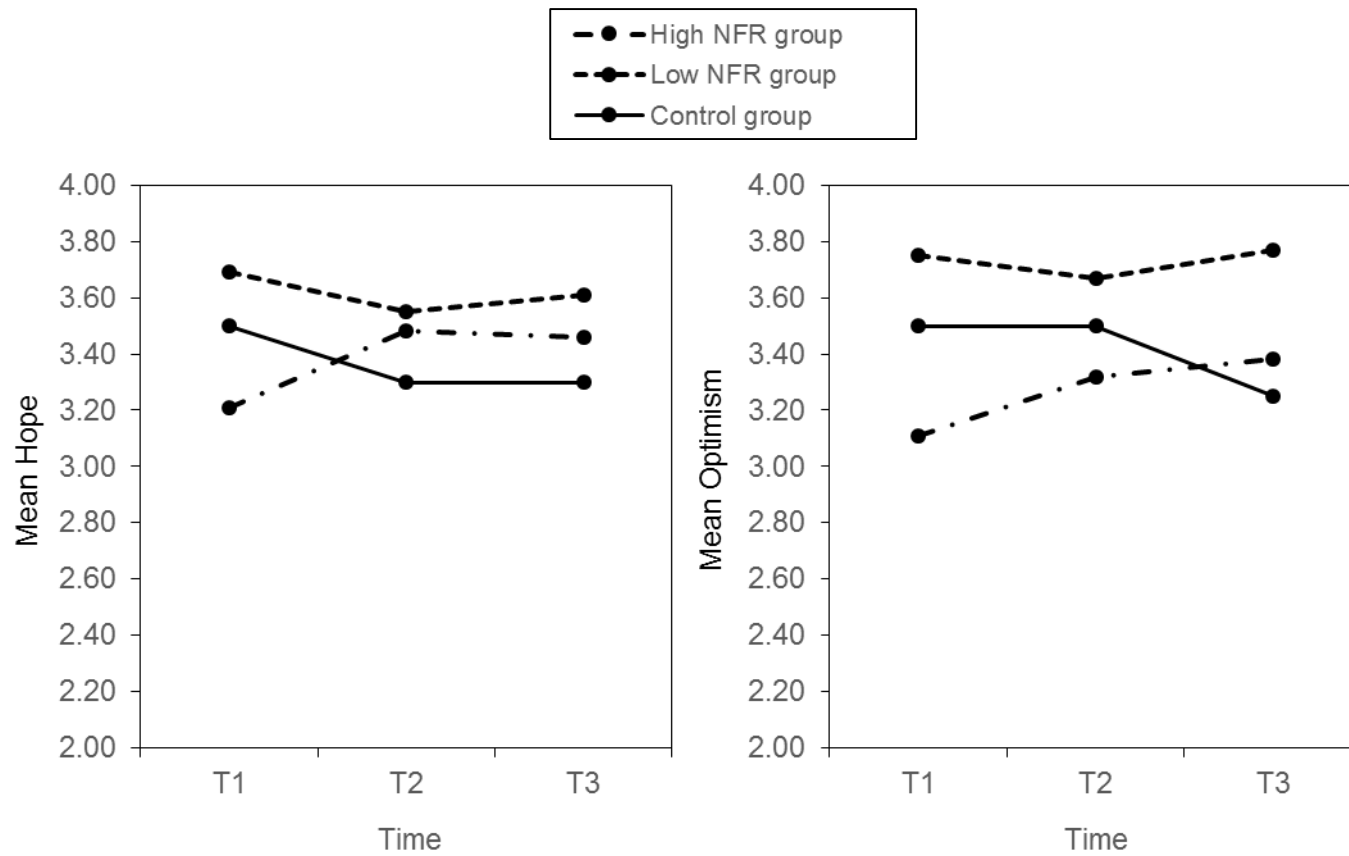


Figure 3. Development of means of emotional exhaustion and fatigue for the high and low NFR groups across pre (T1), post (T2), and follow-up (T3) measurements.

