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Training supervisors to support veterans at work: Effects on supervisor attitudes and employee sleep and stress

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The present study evaluates the effectiveness of a supervisor support training programme on both supervisor attitudes and employee sleep and stress outcomes by drawing on a multi-level rigorous randomized controlled trial in 35 organizations. Utilizing theory from the social support and training literatures, the purpose of the current study was to understand ways to improve the transition, and ultimately the health and well-being, of military veteran employees in the workplace via a supervisor support training intervention. Drawing on a sample of 982 supervisors and a subsample of 189 matched supervisor–employee dyads, the current study demonstrated that supervisor support training led to improved supervisor attitudes towards veteran employees. Additionally, supervisors' attitudes towards veteran employees at baseline significantly moderated the effects of the training on employee sleep and stress outcomes, suggesting that the training was more effective when supervisors started out with more positive attitudes towards veterans. These results demonstrate the importance of training supervisors to support employed veterans and employees more generally, and have implications for research, practice, and theory development.

Practitioner points

- The Veteran Supportive Supervisor Training (VSST) promotes more positive supervisor attitudes towards veteran employees.
- When supervisor attitudes towards veteran employees are more positive, the supportive supervisor training improves sleep and stress outcomes for veteran employees.
- The VSST effects suggest that the training has promise to be extended to other leadership support domains, such as supervisor support for health; to other types of vulnerable and underserved workers, such as those with disabilities; and to other employee well-being outcomes, such as engagement and satisfaction at work and at home.

With tens of thousands of U.S. veterans returning from Iraq and Afghanistan, and millions of international veterans residing worldwide, surprisingly little attention has been concentrated on their post-deployment transition into the civilian workforce.

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Ainspan, Penk, and Kearney (2018) argue that the numbers of veterans transitioning will continue to grow for some time, with current numbers in the United States alone reaching 200,000 per year. Out of a population of 237 million people in the United States, over 4 million have served in the military since Operations Iraqi Freedom and Enduring Freedom.

The rise in veterans of working age is not exclusive to the United States. For example, the United Kingdom expects a substantial rise in the percentage of veterans who are working age (i.e., age 16–64), from 37% in 2016 to 44% in 2028 (Ministry of Defence, 2019). Likewise, the transition from military service to civilian life is considered a challenge across many nations. For example, one out of four Canadian service members report that this transition is difficult (Department of Veterans Affairs Canada, 2014). Unfortunately, the transition process may be further complicated by the misconceptions and views that civilian colleagues and supervisors hold towards veteran employees, including misinformation and overestimation about the prevalence of veteran mental health issues (Ministry of Defence, 2018). Adler, Zamorski, and Britt (2011) argued that research should expand the focus from post-deployment mental health to a broader application of the psychology of transition to include home, work, and social factors that relate to the transition process. This view is consistent with Blackburn (2016) who discusses the importance of the psychosocial and support factors that are affected by, and can aid in, the transition process for Canadian veterans. In a recent special issue of *Psychological Services*, Ainspan, *et al.* (2018) discuss the state of knowledge of psychosocial approaches, such as supervisor support, to improving the transition process for veterans, who may carry both visible and invisible wounds resulting from their service.

As the numbers of transitioning veterans continue to grow, calls for more research on underserved populations such as veteran employees (e.g., Colella, Hebl, & King, 2017) are increasingly common and important to heed. Studies on veteran employees can have implications not only for veterans worldwide, but also for other populations who may face stigma in the workplace (Stone & Colella, 1996; Stone & Stone, 2015), because veterans are oftentimes stigmatized as being 'damaged' or of 'poorer' mental health than the general population (Britt, Black, Cheung, Pury, & Zinzow, 2018; Ministry of Defence, 2018). The present study aims to evaluate supervisor training to improve supervisors' support for veterans, on supervisors' attitudes towards veterans, and on veterans' own sleep and stress outcomes following transition to the civilian workforce. To achieve this, we evaluate the effects of the Veteran Supportive Supervisor Training (VSST) and extend understanding of the impact of prior supportive supervisor trainings (e.g., Hammer, Kossek, Anger, Bodner, & Zimmerman, 2011), more generally, to the new domain of support for veterans' well-being as they transition to the civilian workforce. The current study provides robust practical implications for organizations interested in developing veteran-friendly and supportive workplaces.

Thus, we seek to fill several important gaps in the extant literature using a randomized controlled trial (RCT) with data collected at baseline, and 3 and 9 months post-training. First, we focus on supportive supervisor training effects on improving supervisors' own attitudes towards a targeted vulnerable population (veterans), as a demonstration of training effectiveness. Second, drawing on social support theory we seek to extend the research on supervisor support training effects on employee outcomes of sleep and stress to a sample of veterans. Third, we draw on the theory of trainee motivation (i.e., Colquitt, LePine, & Noe, 2000) and suggestions that the pre-intervention context will impact intervention outcomes (Biron & Karanika-Murray, 2014), and focus on the moderating

effects of supervisor readiness for training and its impact on employee outcomes, contributing to the trainee readiness literature.

Finally, we accomplish this study by addressing the call for more training research using multi-level designs (Bell, Tannenbaum, Ford, Noe, & Kraiger, 2017) and theoretically based training outcomes (e.g., Arthur, Bennett, Edens, & Bell, 2003; Lacerenza, Reyes, Marlow, Joseph, & Salas, 2017). In their review of 100 years of training and development research, Bell *et al.* (2017) suggest that training research should move towards examining training effectiveness across different levels of analysis. The present study answers this call by examining both the effects of the training on the trainee (i.e., supervisor attitudes) and the more distal effects of supervisor training on employees (i.e., employee sleep and stress). Thus, the present study uses theory-driven training research in the development and evaluation of the VSST (e.g., Bell *et al.*, 2017).

In summary, the purpose of the present study is to contribute to theory and practice by drawing on social support theory (Cohen & Wills, 1985) and theory on training (e.g., Bell *et al.*, 2017; Colquitt *et al.*, 2000), and extending the practical applications of this research to future supervisor support trainings with other types of vulnerable populations. More specifically, we extend knowledge of existing supervisor support training by: (1) evaluating the effects of supervisor training on supervisors' own attitudes towards the target population (veterans), suggesting implications for future supervisor support training; (2) extending the study of supervisor support training of veterans to employee sleep and stress outcomes; (3) examining supervisor attitudes towards veterans at baseline, representing supervisor trainee motivation, as a moderator of the relationship between training effectiveness and the outcomes of employee sleep and stress; and (4) answering the call for training research to use more multi-level designs (see Figure 1).

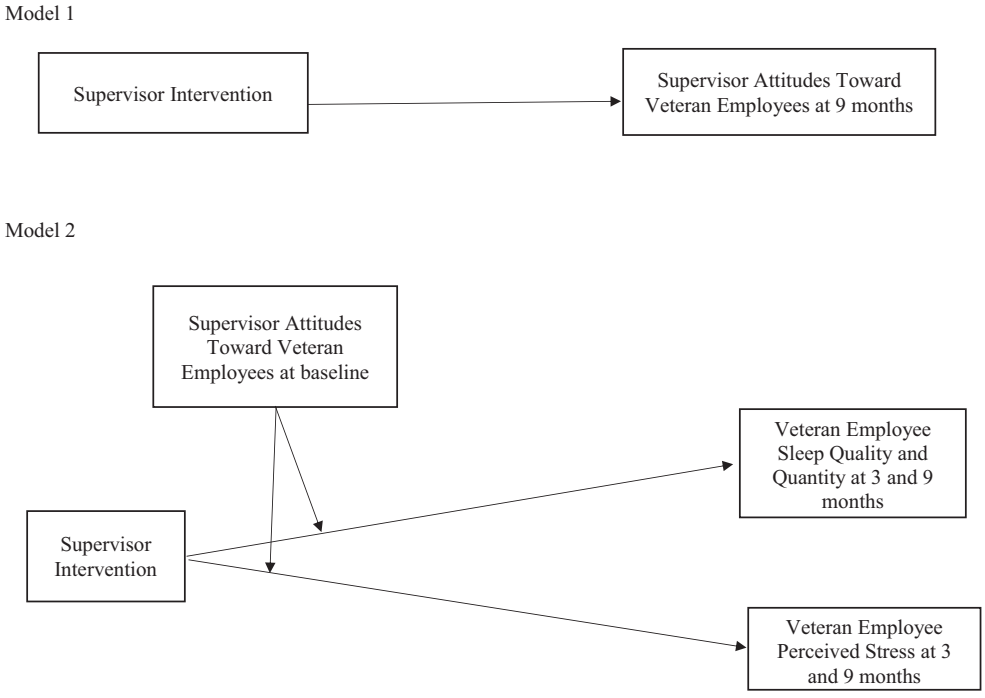

Figure 1. Hypothesized models of intervention effects on supervisors and veteran employees.

Veteran supportive supervisor training (VSST)

The VSST was designed as a computer-based training using theory-based learning principles such as self-paced instruction with intermittent quiz questions, and including behavioural self-monitoring as a way of improving the transfer of training (Olson & Winchester, 2008). The training effects are evaluated in line with theory-driven training research incorporating trainee motivation and evaluating the training's impact using a multi-level design (i.e., evaluation of supervisor and employee outcomes), as suggested by Bell *et al.* (2017), and using effectiveness criteria consistent with suggestions by Kirkpatrick (1994). Lacerenza *et al.* (2017) suggest that trainee attitudes are a measure of training effectiveness and are precursors to changing behaviours.

A goal of the VSST is to teach supervisors supportive behaviours they could enact to support veterans and all employees. The VSST also focuses on teaching supervisors about the needs of veterans specifically, as some behaviours in the VSST are specific only to veteran employees. The VSST draws on and modifies the four family supportive supervisor behaviours (FSSB) identified by Hammer, Kossek, Yragui, Bodner and Hanson (2009; emotional, instrumental, work–family management, and role-modelling behaviours), as well as focuses on reducing stigma towards veterans (Stone & Stone, 2015), and increases knowledge about both strengths that veterans bring to organizations and challenges they may face during and after transitions from military service.

See Hammer, Wan, Brockwood, Bodner and Mohr (2019) for a detailed description of the VSST. Briefly described here, the first module of the computer-based training focuses on creating a military-supportive culture, with emphasis on reducing stigma, and highlights positive attributes that veterans bring into the workplace. In addition, the training has a second module that focuses on behaviours supervisors could implement to be veteran-supportive. As part of this second module, the VSST relies on social learning theory to develop behavioural modelling to improve supervisors' interpersonal skills. The third module contains information on the importance of engaging in the behaviours on the job and tracking those behaviours as part of the behaviour tracking exercise that improves training transfer.

VSST effects on supervisor attitudes towards veterans

Previous work has suggested that veterans face stigma and misconceptions and that attributes and attitudes of observers (e.g., supervisors) can affect job-related expectancies and hiring decisions directed towards stigmatized groups (Stone & Colella, 1996), and towards veterans in particular (Stone & Stone, 2015). Thus, it is important that efforts are made to improve supervisor perceptions and attitudes towards veterans at work by training them to better understand the unique needs of this population and effective ways to provide support. One way to assess such training effectiveness is through changes in supervisors' attitudes towards veterans. While prior supervisor support training effectiveness evaluations have primarily examined employee perceptions as measures of training effectiveness (e.g., Odle-Dusseau, Hammer, Crain & Bodner, 2016), very little supervisor support training has focused on supervisor outcomes. We are not aware of any studies that have examined how supportive supervisor training geared towards veterans specifically changes supervisors' own attitudes towards veteran employees, the targets of such training. This is also important given the strong link between attitudes and behaviours (Ajzen & Fishbein, 1973), suggesting that improvements in supervisor attitudes would lead to improvements in how supervisors behaviourally support veterans at work. We draw on theories of effective training (Arthur *et al.*, 2003; Lacerenza *et al.*,

2017), to examine the impact of training supervisors about military culture and veteran-supportive behaviours on supervisors' own attitudes towards veterans, an underserved vulnerable population.

Veterans and supervisors alike have misconceptions and stigma perceptions associated with military veteran mental health and behaviours following transitions to home (Dickstein, Vogt, Handa, & Litz, 2010; Greene-Shortridge, Britt, & Castro, 2007). This is consistent with the work of Stone and Colella (1996) and Stone and Stone (2015), suggesting supervisor stereotypes towards veterans (e.g., perceiving veterans as generally mentally ill) could have profound implications for veteran job outcomes (e.g., hiring decisions), and therefore further complicate veteran transitions to the civilian workforce. Ainspan *et al.* (2018), Stone and Stone (2015), and others have noted that veterans are often stereotyped as having mental health challenges such as post-traumatic stress disorder (PTSD). Unfortunately, such stereotypes can foster further negative effects for stigmatized groups such as veterans. Dickstein *et al.* (2010) and others have suggested there is a need for training interventions aimed at reducing stigma associated with veterans.

Outside of the military context, supervisor training aimed at reducing misconceptions and stigma associated with employee mental health, called Mental Health Awareness Training (MHAT), was effective at improving managers' attitudes towards employees with mental health problems (Dimoff, Kelloway, & Burnstein, 2016). This is important as 30% of veterans of our recent wars experiences anxiety and depression (Seal, Bertenthal, Miner, Sen, & Marmar, 2007). Thus, training supervisors to support employees by providing information about the positive attributes of veterans in the workplace leading to improved positive attitudes towards their employed service members has the potential to improve their supportive behaviours and ultimately improve employee well-being.

Drawing on the MHAT's success, as well as the premise that increasing knowledge decreases stigma while enhancing the potential for the training to have further application, we evaluate the effectiveness of the VSST on supervisor attitudes towards veterans in civilian organizations. Examining the effectiveness of the supervisor training on improving supervisors' own attitudes towards veterans is also consistent with training evaluation criteria as suggested by Kirkpatrick (1994). Furthermore, we expect that when attitudes are improved, this has the potential to improve supervisor supportive behaviours provided to veterans based on the theory of planned behaviour (Ajzen & Fishbein, 1973). Specifically, we hypothesized that:

Hypothesis 1. The supervisor training will lead to improved supervisor attitudes towards veteran employees.

Social support, social relationships, and well-being

The present study draws upon social support theory, which suggests that social support has direct effects on health and well-being, as well as moderating effects of stressful situations on health outcomes (Cohen & Wills, 1985; House, 1981). Cohen and Wills (1985) contend that social relationships such as those between supervisors and employees can provide psychological resources and that such resources are related to improved health. The theory further suggests that specific support resources that are matched to specific needs, such as supervisor support for veteran reintegration into the workplace, improve the effects of the support on health and well-being outcomes for

veterans. Thus, supervisor support, specifically, has been conceived of as a psychological resource provided to employees that increases their health and well-being, especially when the support is matched to the needs of the employee (e.g., Kossek, Pichler, Bodner, & Hammer, 2011). This is also consistent with more recent theorizing by Umberson and Karas Montez (2010) who argued that support efforts and institutional policies should ensure that the type of support is matched to where it is most needed. Here, we are interested in the main effect of supervisor support on employee (veteran) well-being. Cohen and Wills (1985) suggest that 'the main effect model postulates that an increase in social support will result in an increase in wellbeing irrespective of the existing level of support' (p. 312).

Consistent with the main-effects hypothesis, measures of social support tend to show positive relationships with self-rated health cross-culturally (Kumar, Calvo, Avendano, Sivaramakrishnan, & Berkman, 2012). Social relationships are also known to decrease stress through the provision of support, which ultimately impacts health outcomes (Pietromonaco & Collins, 2017). In fact, a meta-analysis by Holt-Lunstad, Smith, and Layton (2010) shows that social relationships are more likely to be associated with mortality risk than smoking, exercise, and BMI. The authors suggest that this is primarily due to the resources social relationships provide (e.g., emotional, tangible) that buffer the negative effects of stress on health, as well as the direct effects of social relationships on health (e.g., social modelling of healthy behaviours), further supporting both the buffering and main-effects hypotheses. In the current study, we examine the VSST as a social-supportive resource for veterans, as the training provides supervisors with information about how to behaviourally enact support aimed at meeting the needs of transitioning veterans.

Supervisor support has been broadly related to a number of employee work-related attitudes and behaviours and employee well-being, as supervisors are seen as key support providers in the workplace, for example, such organizational outcomes as turnover, turnover intentions, and retention, such that higher supervisor support is related to lower levels of turnover and corresponding improved worker retention (Chenot, Benton, & Kim, 2009; Dawley, Andrews, & Bucklew, 2008; DeConnick & Johnson, 2009; Kuvaas & Dysvik, 2010), as well as employee well-being outcomes of sleep (e.g., Olson *et al.*, 2015) and psychological distress (Kossek *et al.*, 2019). More specifically, Odle-Dusseau *et al.* (2016) found that FSSB training improved employee job performance, organizational commitment, engagement, job satisfaction, and turnover intentions.

FSSB training has also been shown to improve employee well-being (e.g., Crain *et al.*, 2019; Kossek *et al.*, 2019), as workers face a number of job stressors that affect their performance, relationships at home, and physical and mental health (e.g., Hammer & Zimmerman, 2011), including sleep (Litwiller, Snyder, Taylor, & Steele, 2017). Past research shows that increasing organizational support for work and family by improving workplace culture and FSSB provided by supervisors affects the health and well-being of workers (Hammer *et al.*, 2011; Hammer, Kossek, Zimmerman, & Daniels, 2007). This line of research has focused on developing and evaluating interventions that target supervisors as the primary mechanism for increasing social support of employees' work–family, health, and well-being needs, in addition to broader organizational changes in policies, procedures, and culture.

Consistent with social support theory perspectives on matching unique support needs (Cutrona, 1990), and meta-analytic evidence that workplace social support is most effective when tailored to specific role demands (Kossek *et al.*, 2011), the present study extends social support research and theory. More specifically, we extend FSSB research to

veteran well-being outcomes through the lens of social support theory and the matching hypothesis, by training supervisors to meet veterans' support needs and in turn evaluate the effects on sleep and stress.

VSST and effects on veteran sleep and stress

As discussed above, social support is related to improvements in health and decreased stress (Cohen & Wills, 1985), and increasing supervisor support for work and family through training has been shown to have positive effects on sleep and stress outcomes of employees (e.g., Crain *et al.*, 2019; Olson *et al.*, 2015). The VSST, which focuses on improving veteran-specific supervisor support in the workplace, is a resource and thus expected to significantly improve sleep and stress outcomes for veteran employees.

Sleep health

Sleep is defined, consistent with Crain *et al.* (2019), as being made up of sleep quantity and sleep quality. Research exists on the correlates of both sleep quantity and sleep quality with a multitude of work and non-work outcomes including stress, performance, physical health, and well-being (e.g., Crain, Brossoit, & Fisher, 2017; Cropley, Dijk, & Stanley, 2006; Gunia, Sipos, LoPresti, & Adler, 2015; Lentino, Purvis, Murphy, & Deuster, 2013; Litwiller *et al.*, 2017; Minkel *et al.*, 2012). Results from a recent survey including 14,148 Active Duty, National Guard, and Reserve Component members found that 25.3% or 3,580 service members were considered to be poor sleepers (as indicated by scoring a total of 5 or 6 on the Pittsburgh Insomnia Rating Scale-2; Lentino *et al.*, 2013). This same study also found that poor sleepers were significantly less likely to have a healthy BMI, healthy eating habits, regular exercise, or score high in other dimensions of health such as emotional, social, family, or spiritual fitness, suggesting that improving veteran sleep outcomes is of critical importance. Other research has demonstrated that sleep complaints after returning from deployment are common for service members, with estimates of about 30% having issues even months after, and even higher for those with a traumatic brain injury (58.3%; Hoge, McGurk, Thomas, Cox, Engel & Castro, 2008). Sleep has also emerged as a critical factor affecting chronic disease outcomes, energy, willpower, procrastination, and performance at work (Kühnel, Sonnentag, Bledow, & Melchers, 2018; Litwiller *et al.*, 2017; Swanson *et al.*, 2011). It has been suggested that sleep can be improved through both individual approaches and organizational approaches (Litwiller *et al.*, 2017). Organizational approaches may involve changing work shifts, aligning work times with workers' chronotypes, providing flexibility in work schedule and/or place of work, and decreasing workplace stress through strategies such as supervisor support training (Crain *et al.*, 2019; Kühnel *et al.*, 2018), leading to improved sleep.

Stress and health

Work is considered the leading source of stress for most individuals and is steadily increasing among the working American population (American Psychological Association, 2017). Importantly, the effects of stress are related to employees both in their work and non-work lives, leading to reductions in job, psychological, and physical well-being. For instance, occupational stress (LaMontagne, Keegel, Louie, & Ostry, 2010) and, more specifically, work–life stress serve as a major workplace hazard (Hammer & Sauter, 2013) linked to chronic physical and psychological health outcomes, health behaviours, and

performance at work. The importance of social support for ameliorating workplace stress has been demonstrated (e.g., García-Herrero, Mariscal, Gutiérrez, & Ritzel, 2013). As described above, transition from military service to the civilian workforce is often very stressful. Reducing veteran employee stress may thus be critical to promoting overall veteran well-being.

Given the extensive links between social support and health, it is expected that supervisor support training that is aimed at improving social support and health and work outcomes specifically tied to the veteran population will have a positive impact on improving sleep quantity and quality and reducing stress.

Hypothesis 2. The supervisor training will lead to improved well-being outcomes, including (1) improved sleep quantity, (2) improved sleep quality, and (3) decreased perceived stress.

Moderating effects of supervisor attitudes towards veterans on employee sleep and stress

Supervisor support trainings are geared for and taken by supervisors, so we argue that trainee motivation (Colquitt *et al.*, 2000) of supervisors is important when evaluating the effectiveness of the supervisor training on employee outcomes. An aspect of trainee motivation is trainee attitudes, suggesting that when trainees have more positive attitudes towards the training content, training effectiveness will be improved (Noe, 1986). This perspective is consistent with training best practices that include considering the importance of trainee motivation on training outcomes (Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012).

In other words, we expect that the supervisor training will be more effective when supervisors have more positive attitudes towards veteran employees to begin with, demonstrating training readiness and motivation. Examining the training context factor of trainee readiness is critical to training theory (e.g., Bell *et al.*, 2017), and we argue here that when supervisors have more positive attitudes towards veterans, they will be more receptive and motivated to engage and learn from the training. The present study directly addresses training readiness as indicated by supervisors' own reports of their baseline attitudes towards veterans. These supervisor attitudes are examined as a moderator of training effectiveness, measured by employee outcomes of sleep and stress, contributing to both trainee motivation theory and practice. Such supervisor, or trainee readiness, has not been examined previously in research on supervisor support training effects.

Thus, while the VSST is designed to improve supervisor attitudes towards veterans at work, it is also expected that baseline trainee motivation, operationalized here as positive supervisor attitudes towards veterans, will help improve the effects of the training on employee sleep and stress because supervisors who already view veterans positively will be more eager and motivated to ensure they are providing support to veterans. Taken together, we hypothesize that:

Hypothesis 3. The relationship between supervisor training and (1) sleep quantity, (2) sleep quality, and (3) perceived stress will be moderated by baseline supervisor attitudes towards veteran employees.

Method

This study is based on a larger study that was conducted as a RCT. For a description of baseline data collection, as well as work, family, and health characteristics of the veterans involved in the larger study, see Hammer, Wan, Brockwood, Mohr and Carlson (2017). Further description of the larger study design, the VSST intervention, and the veteran participants can be found in Hammer *et al*. (2019). Informed consent was obtained from all participants prior to the start of data collection.

Study design and procedures

The larger study was designed as a two-group RCT, with a waitlist control. Organizations were recruited through a multitude of methods. The research staff used personal and professional contacts, attended and presented at veteran job fairs, Local Chamber of Commerce meetings, the Bureau of Labor and Industry, and human resource management association meetings. Organizations and industries known to have a high proportion of veterans, such as police and firefighting, were targeted more directly during recruitment. A total of 35 organizations were randomly assigned by the researchers into the intervention or waitlist control groups, following baseline data collection, with 16 organizations randomized to the training intervention group and 19 randomized to the waitlist control group, balancing across the groups for organization size. Randomization was determined by the researchers without input from organizational representatives and occurred at the organizational level after baseline surveys were administered, consistent with recommendations of Bodner and Bliese (2018).

Of the 35 organizations recruited for participation in the study, 16 organizations were randomized into the intervention group and 19 were assigned to the waitlist control group. Data were collected from veterans at baseline and then again at both 3 and 9 months following baseline. Data were collected from supervisors at baseline and 9 months. At the request of our organizational partners, data were not collected from supervisors at the 3-month point in order to reduce the burden on supervisors.

Once an organization was recruited, veterans were recruited primarily through company email addresses provided to the researchers, as well as recruitment through flyers, newsletters, and presentations. Eligibility requirements included employment at least 20 hr per week at a participating organization and service in the U.S. military after 31 December 2001 (i.e., post-9/11). Supervisors were recruited primarily through email lists that were provided by organizations to allow our research team to reach out to supervisors directly, though some organizations opted instead to send out email invitations provided by our research team. Because the training was designed to benefit all supervisors, regardless of whether they supervised a veteran, our research team encouraged all supervisors to participate, but followed up specifically with those supervisors who had been identified as the primary supervisor of a participating veteran. Veterans completed surveys during non-work hours and received $25 for each survey completed, while supervisors completed surveys and training during work hours and were not compensated for participation beyond their typical work compensation. A few organizations made the training mandatory upon request of the researchers, and even then, participation rates were around 75%.

VSST intervention

One to two months following the baseline survey, supervisors in the intervention organizations received the training through email, which contained links to the secure training page. Supervisors were given approximately 1 month to complete the training. This timing was chosen for both logistical and practical reasons. First, some organizations had thousands of employees and recruitment took longer than it did with other organizations that had fewer numbers of employees. The training link was left open for a full month to allow enough flexibility and time to encourage as many supervisors as possible to participate in the training. We had a complex follow-up protocol that included a trained research assistant contacting and encouraging supervisors to participate. Supervisors were contacted via phone and given verbal information about the benefits and importance of the training.

The VSST was designed to increase supportive behaviours that supervisors enact towards all types of employees, but with additional specific information aimed at supporting veteran employees. The VSST consisted of three components. The first component was an approximately 1-hr computer-based training to teach supportive behaviours, which included three modules: creating a culture of support for military (and non-military) employees, defining and identifying supportive supervisor behaviours in the areas of veteran and family support and performance support, and putting the supportive supervisor behaviours into practice. The second component was a 2-week behaviour tracking exercise to practice enacting the supportive behaviours learned in the computer-based training. Supervisors set goals for the total number of behaviours they would enact in the 2-week tracking period and were subsequently reminded each day via email to track their behaviours. The tracking activity required about 5 min per day throughout the 2-week tracking period. The third and final component of the intervention included supplementary activities called 'Above and Beyond' that provided additional information through three short training modules, as well as the opportunity for supervisors to engage in online discussion of the training and its material. Those supervisors who participated in the Above and Beyond activities received a higher level of certification, though all supervisors who completed the training received some degree of certification. In general, the training was developed using principles of learning theory that included self-paced instruction, intermittent quiz questions to increase engagement, and behavioural self-monitoring to increase the transfer of training to on the job behaviours. Additional details about the VSST intervention can be found in Hammer *et al*. (2019).

Participants

The 35 participating organizations represented a diverse range of industries and job types (e.g., government, construction and trades, professional services). A total of 1,825 supervisors completed the baseline survey, 982 (53.8%) of whom also completed the 9-month follow-up survey. The full supervisor sample was utilized in performing analyses of intervention effects on supervisor outcomes. To allow for the series of analyses assessing veteran outcomes as moderated by supervisor-level attitudes towards veteran employees, the supervisor sample was matched to the sample of veterans according to the identity of the primary and secondary supervisors indicated by each veteran. Of the 497 veterans who completed the baseline survey, 189 (38.0%) were matched to a participating supervisor who had completed the supervisor survey, leading to a total of 189 matched supervisor–employee dyads. Within the subsample of 189 matched veterans, 156 (82.5%) completed the 3-month survey and 138 (73.0%) completed the 9-month follow-up survey.

Of their supervisors, 113 (59.8%) completed the 9-month follow-up survey. As mentioned above, no 3-month survey was given to supervisors to reduce burden on the supervisors, so supervisor data do not exist at that time point.

Veterans were, on average, approximately 39 years old, 82.5% male, and 94.1% White, with 62.6% holding at least a college degree. Supervisors, on the other hand, averaged 49 years of age and were 66.7% male and 93.1% White. A total of 73.4% of supervisors held at least a college degree. The majority of both veterans (79.8%) and supervisors (84.6%) were married, with an average of one child per household. Supervisors reported supervising an average of nine employees each, with 3–4 of those employees being veterans. All veterans had served in the military, in line with eligibility requirements of the study, with a total of 18% still active in the National Guard or Reserve Component. About 25.4% of supervisors served in the military before or during the study. Additional sociodemographic information about both veterans and supervisors is available in Table 1.

Measures

All outcome measures of supervisor attitudes and employee sleep and stress were collected through self-reports. Scale scores were computed for each individual if at least 75% of item scores for the complete measure were non-missing, and all scale scores were coded such that higher scores indicate a greater degree or higher level of the construct.

Supervisor attitudes towards veteran employees at work

Supervisors' attitudes towards veteran employees in terms of value and satisfaction were measured at the baseline and 9-month time points by a four-item scale adapted from Gates *et al.* (2013). Item scores ranged from 1 (strongly disagree) to 5 (strongly agree), with higher scores representing more positive attitudes towards veteran employees. An example item is, 'The training and experience received by military service members makes that person a more valuable employee for my business'. See Table 2 for a list of items in the full scale. Cronbach's alpha for the scale was .70 at baseline for the full supervisor sample, and .75 at baseline for the sample of supervisors who were matched to veterans. A confirmatory factor analysis was performed to assess goodness of fit of the 4-item measure and establish that there was a relationship between the observed variables and latent construct. Model parameters revealed a non-significant chi-square ($\chi^2(2) = 1.21$; $p = .547$) and exceptional model fit (RMSEA = .000, CFI = 1.00, TLI = 1.001, SRMR = .005), despite a relatively small factor loading for the final item in comparison with other items. See Table 2 for factor loadings of each item.

Sleep quality and quantity

Sleep quality and quantity were measured at all three time points by items from the Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). Sleep quality was measured by the item, 'During the past 30 days, how would you rate your sleep quality overall?' with item scores ranging from 1 (very bad) to 4 (very good). Sleep quantity was measured by computing sleep time from two items: 'During the past 30 days, what time did you usually turn the lights off to go to sleep?' and 'During the past 30 days, what time did you usually get out of bed?'

Table 1. Sociodemographic and military background of matched supervisors and employees at baseline

Variable	Employees (N = 189) Mean (*SD*)/%	Supervisors (N = 189) Mean (*SD*)/%
Age	39.40 (9.56)	48.74 (8.92)
Male	82.5%	66.7%
White	94.1%	93.1%
College graduate or higher	62.6%	73.4%
Married or in a committed relationship	79.8%	84.6%
Number of children at home	1.11 (1.24)	0.94 (1.13)
Number of employees supervised		8.66 (2.25)
Number of veterans supervised		3.51 (3.26)
Past or current military service	100%	25.4%
Active in the military at baseline	18.0%	1.1%
Years in the military	13.00 (8.53)	
Years in last/recent rank	3.46 (2.80)	
Officer	17.2%	
Years since separated from military[a]	6.01 (3.43)	
Combat exposure	79.9%	
Deployment		
Ever deployed (domestic or international)	88.2%	
Years since last deployment[b]	7.69 (4.44)	
Number of deployments since 9/11[b]	3.58 (2.95)	
Total months deployed since 9/11[b]	17.62 (14.01)	
Scheduled to deploy in the next year[c]	14.7%	
Last[a]/Current[c] branch		
Army National Guard	25.1%	
Air National Guard	7.5%	
Army Reserves	8.0%	
Marine Reserves	11.8%	
Navy Reserves	21.9%	
Air Force Reserves	7.0%	
Coast Guard Reserves	0.5%	
Army	10.7%	
Navy	0.0%	
Air Force	6.4%	
Marine	0.0%	
Coast Guard	1.1%	

Note. A significant difference was found between supervisors in the intervention group and supervisors in the control group for number of veterans supervised, $t(139.71) = -2.643$, $p < .01$, with intervention group supervisors reporting they supervised more veterans (M = 4.27) than control group supervisors reported (M = 2.96). No significant differences were found between training and control groups ($p < .05$) for any other variables.

[a]Among separated military members.; [b]Among those who were deployed.; [c]Among active military members.

Perceived stress

Perceived stress was measured at all three time points by a four-item scale published by Cohen, Kamarck, and Mermelstein (1983). Item scores ranged from 1 (never) to 5 (very often), with higher scores representing more perceived stress. An example item is, 'In the

Table 2. Factor loadings for the four-item supervisor attitude construct

	Unstandardized	Standardized
MV1	1.00*** (0.00)	0.71*** (0.01)
MV2	1.22*** (0.04)	0.92*** (0.01)
MV3	1.10*** (0.03)	0.83*** (0.01)
MV4R	0.23*** (0.04)	0.14*** (0.03)

Note. MV1 = The training and experience received by military service members makes that person a more valuable employee for my business; MV2 = Veteran employees in my business are good team players; MV3 = Overall, I am satisfied with veteran employees in my business; MV4R (reverse-coded) = Employing National Guard and Reserve employees is challenging because of their military obligations. Model fit parameters for the four items were exceptional ($\chi^2(2) = 1.21$; $p = .547$, RMSEA = .000, CFI = 1.00, TLI = 1.001, SRMR = .005). Reliability was acceptable ($\alpha = .70$)
***$p < .001$.

last month, how often have you felt that you were unable to control the important things in your life?' Cronbach's alpha for the scale was .78 at baseline.

Analytical strategy

Results of basic descriptive analyses are provided for sociodemographic variables, as well as for all outcome variables. Comparative analyses (i.e., *t*-tests and ANOVAs) were conducted to explore the patterns in missing data using demographic variables, as well as the health and well-being measures that are the primary focus of the current study. Following exploratory and descriptive analyses, intervention effectiveness analyses were conducted using an intent-to-treat approach, which compares outcomes for those in organizations assigned to the intervention group (condition = 1) and for those in organizations assigned to the waitlist control group (condition = 0).

To account for nesting of employees and supervisors in the randomized organizations, we used a two-level analysis of covariance approach that controls for baseline values of the dependent variable. Main effects of the intervention on supervisors' attitudes towards veteran employees were conducted using all available supervisor data, consistent with recommendations from Bodner and Bliese (2018) for the 9-month time point ($n = 982$ supervisors). Moderated intervention effects on 3- and 9-month employee outcomes were conducted in separate models, using all available data from the smaller subsample of matched veteran–supervisor dyads for the 3-month ($n = 156$) and 9-month ($n = 138$) time points. This approach, recommended by Bodner and Bliese (2018), maximizes statistical power to detect intervention effects. Moderated intervention effects models for veterans included the moderator (i.e., supervisor attitudes towards veteran employees for each veteran's matched supervisor at baseline) and its interaction with the intervention condition indicator. All predictors were grand-mean-centred, including dependent variables at baseline and the moderator. Intervention analyses were conducted with Mplus version 7 (Muthen & Muthen, 2012). All other analyses were conducted with SPSS version 23.

Results

Tables 3 and 4 provide the descriptive statistics for the main study variables (employee well-being and supervisor attitudes towards veteran employees) at baseline, 3, and 9 months by condition, and Table 5 provides the correlations for the variables across all

Table 3. Descriptive statistics for supervisor attitudes towards veteran employees at baseline and 9 months by condition

	Training condition		Control condition	
Supervisor-level variable	Baseline n = 653 M (SD)	9 months n = 365 M (SD)	Baseline n = 1060 M (SD)	9 months n = 589 M (SD)
Supervisor attitudes towards veteran employees	3.88 (.61)	4.00 (.58)	3.84 (.59)	3.93 (.58)

Table 4. Descriptive statistics for veteran employee well-being variables at baseline, 3, and 9 months by condition

	Training condition			Control condition		
Employee-level variable	Baseline n = 78–79 M (SD)	3 months n = 68 M (SD)	9 months n = 58 M (SD)	Baseline n = 109–110 M (SD)	3 months n = 87–88 M (SD)	9 months n = 80 M (SD)
Sleep quantity	7.11 (1.24)	7.30 (1.22)	7.26 (1.16)	7.23 (1.18)	7.27 (1.08)	7.19 (1.17)
Sleep quality	2.46 (0.71)	2.59 (0.72)	2.59 (0.86)	2.46 (0.70)	2.56 (0.64)	2.56 (0.65)
Perceived stress	2.38 (0.86)	2.43 (0.74)	2.34 (0.92)	2.41 (0.84)	2.43 (0.64)	2.20 (0.77)

three time points. There were several significant sociodemographic differences between employees who participated in both baseline and 3-month surveys (n = 156, 82.5%) and employees who did not complete the 3-month survey (n = 33, 17.5%). Those who participated in both baseline and 3-month surveys were, on average, significantly older (M = 40.06 vs. M = 36.06, $t(47.95) = 2.39$, $p < .05$); had been in the military for significantly longer (M = 13.63 years vs. 9.79 years, $t(185) = 2.32$, $p < .05$); had supervisors with more positive attitudes towards veteran employees at baseline (M = 4.03 vs. M = 3.80, $t(182) = 2.12$, $p < .05$); perceived less stress at baseline (M = 2.33 vs. M = 2.76, $t(186) = -2.67$, $p < .01$); and reported sleeping better (M = 2.53 vs. M = 2.12, $t(187) = 3.12$, $p < .01$) than those who did not complete 3-month follow-up. There were no significant differences for other demographic variables, including age, number of dependent children, and a variety of other military status variables.

Analyses comparing employees who participated in both baseline and 9-month surveys (n = 138, 73.0%) and employees who did not complete the 9-month survey (n = 51, 27.0%) also showed several significant differences between the two groups. Those who completed both were, on average, significantly older (M = 39.81 vs. M = 36.42, $t(487) = 3.59$, $p < .001$); had supervisors with more positive attitudes towards veteran employees at baseline (M = 4.06 vs. M = 3.81, $t(182) = 2.74$, $p < .01$); perceived less stress at baseline (M = 2.29 vs. M = 2.69, $t(186) = -2.89$, $p < .01$); and reported sleeping better (M = 2.55 vs. M = 2.22, $t(187) = 2.97$, $p < .01$) than those who did not complete 9-month follow-up. There were no significant differences for other demographic and other health, work, and support variables in this study. Analyses comparing employees from the intervention group and employees from the control group revealed no significant differences across a variety of demographic variables at baseline, as well as across any of the focal variables for the current study.

Table 5. Correlations among key study variables across time points (matched veterans and supervisors)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Supervisor attitudes towards veteran employees (baseline)	3.99	.56	–										
2. Supervisor attitudes towards veteran employees (9 months)	4.03	.60	.69**	–									
3. Employee sleep quality (baseline)	2.46	.70	.09	.07	–								
4. Employee sleep quality (3 months)	2.57	.67	.11	.12	.66**	–							
5. Employee sleep quality (9 months)	2.57	.67	.07	.10	.56**	.63**	–						
6. Employee sleep quantity (baseline)	7.18	1.20	−.18*	.07	.10	.15	.21*	–					
7. Employee sleep quantity (3 months)	7.28	1.14	−.01	.10	.20*	.31**	.18*	.46**	–				
8. Employee sleep quantity (9 months)	7.22	1.16	.04	.20	.13	.27**	.15	.61**	.59**	–			
9. Employee perceived stress (baseline)	2.40	.85	.03	−.05	−.52**	−.32**	−.34**	.04	−.10	.00	–		
10. Employee perceived stress (3 months)	2.44	.68	.01	.03	−.38**	−.37**	−.40**	.59**	−.04	.01	.59**	–	
11. Employee perceived stress (9 months)	2.26	.83	−.02	−.19	−.40**	−.33**	−.30**	.67**	.56**	.00	.67**	.56**	–

Note. *$p < .05$, **$p < .01$ (p values do not account for nesting of employees in organizations). *Ns* = 81–188.

Tests of training effects

Supervisor direct training effects

A significant direct training effect on supervisors' attitudes towards veteran employees was observed. In particular, 9 months following the baseline survey and intervention, supervisors in the intervention group held significantly more positive attitudes towards veteran employees than supervisors in the control group (b = .08, SE = .03, p < .01), providing support for Hypothesis 1. Table 6 provides results of this model.

Employee direct training effects

There were no significant direct training effects observed for the effects of the training on employee sleep and stress outcomes at 3 or 9 months. Specifically, there were no improvements in sleep quality at 3(b = .07, SE = .07, p = .35) or 9 months (b = .07, SE = .10, p = .48), nor for sleep quantity at 3(b = .06, SE = .12, p = .59) or 9 months (b = .12, SE = .15, p = .41). Finally, there were no effects on perceived stress at 3 (b = -.05, SE = .10, p = .62) or 9 months (b = .10, SE = .07, p = .15). Hypothesis 2 was therefore not supported. Table 6 provides results of these models.

Tests of moderated training effects

Table 7 provides a summary of the following results of the analyses assessing the moderating effect of supervisor attitudes towards veteran employees on 3- and 9-month employee sleep quantity, sleep quality, and perceived stress.

Sleep quantity

Supervisor attitudes towards veteran employees did not significantly moderate the training effect on 3-month sleep quantity (b = .25, SE = .21, p = .22, $\Delta R^2_{\text{within}}$ = <.01, $\Delta R^2_{\text{between}}$ = <.001) or 9-month sleep quantity (b = −.02, SE = .27, p = .95, $\Delta R^2_{\text{within}}$ = <.01, $\Delta R^2_{\text{between}}$ = .06). Hypothesis H3a was therefore not supported.

Sleep quality

Supervisor attitudes towards veteran employees did not significantly moderate the training effect on 3-month sleep quality (b = .09, SE = .13, p = .47, $\Delta R^2_{\text{within}}$ = <.001, $\Delta R^2_{\text{between}}$ = <.05). However, this moderated effect on sleep quality was significant at the 9-month time point (b = .29, SE = .15, p < .05, $\Delta R^2_{\text{within}}$ = <.05, $\Delta R^2_{\text{between}}$ = .10). Hypothesis H3b was therefore partially supported. We note that the effect sizes for these moderated findings are small in magnitude. Figure 2 provides a graphical representation of the significant interactive effect on 9-month sleep quality; descriptively, the moderated effect indicates that the training was more beneficial for employees when their supervisors held more positive attitudes towards veteran employees at baseline.

Perceived stress

Supervisor attitudes towards veteran employees also significantly moderated the training effect on both 3-month perceived stress (b = −.30, SE = .12, p < .01, $\Delta R^2_{\text{within}}$ = <.05, $\Delta R^2_{\text{between}}$ = .08) and 9-month perceived stress (b = −.31, SE = .16, p = .05,

Table 6. Model results of intervention effects on supervisor attitudes towards veteran employees, employee sleep quantity, employee sleep quality, and employee perceived stress

	DV: supervisor attitudes (9 months)		DV: employee sleep quantity (3 months)		DV: employee sleep quantity (9 months)	
	Est.	95% CI	Est.	95% CI	Est.	95% CI
Intercept	3.92***	(3.88, 3.97)	7.27***	(7.08, 7.45)	7.27***	(7.01, 7.52)
Intervention	0.08**	(0.02, 0.14)	0.06	(−0.17, 0.29)	0.12	(−0.17, 0.41)
Baseline of DV	0.55***	(0.51, 0.59)	0.46***	(0.26, 0.66)	0.65***	(0.44, 0.86)
Residual variance	0.22***	(0.20, 0.25)	1.02***	(0.46, 1.58)	0.83***	(0.48, 1.18)
Intercept variance	0.00	(−0.00, 0.00)	0.00	(−0.00, 0.01)	0.00	(−0.23, 0.23)
Model R^2 (within)	0.33***		0.21		0.37**	
Model R^2 (between)	0.80*		0.39		0.39	

	DV: employee sleep quality (3 months)		DV: employee sleep quality (9 months)		DV: employee perceived stress (3 months)		DV: employee perceived stress (9 months)	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Intercept	2.49***	(2.35, 2.64)	2.49***	(2.39, 2.60)	2.29***	(2.24, 2.35)	2.50***	(2.36, 2.65)
Intervention	0.07	(−0.08, 0.21)	0.07	(−0.12, 0.40)	0.10	(−0.03, 0.23)	−0.05	(−0.25, 0.15)
Baseline of DV	0.66***	(0.54, 0.78)	0.54***	(0.38, 0.70)	0.69***	(0.54, 0.83)	0.51***	(0.42, 0.61)
Residual variance	0.25***	(0.19, 0.31)	0.31***	(0.21, 0.40)	0.38***	(0.29, 0.48)	0.30***	(0.22, 0.38)
Intercept variance	0.00	(−0.03, 0.04)	0.00	(−0.04, 0.04)	0.00	(−0.01, 0.01)	0.00	(−0.01, 0.01)
Model R^2 (within)	0.44***		0.31**		0.44***		0.36***	
Model R^2 (between)	0.41		0.43		0.88		0.55	

Note. *$p < .05$. **$p < .01$. ***$p < .001$. DV = Dependent variable. Supervisor attitudes = supervisor attitudes towards veteran employees. Models controlled for baseline levels of outcome variable. All estimates listed represent unstandardized values. All continuous predictors are grand-mean-centred. $N = 906$ for supervisor outcome. *Ns* = 135–156 for employee outcomes.

ΔR^2_{within} = <.05, $\Delta R^2_{between}$ = <.05), providing support for Hypothesis H3c. Figures 3 and 4 provide a graphical representation of the significant interactive effects. Descriptively, these moderated effects indicate that the training was more beneficial for employees when their supervisors held more positive attitudes towards veteran employees at baseline.

Discussion

The present study evaluated the effectiveness of the VSST, a veteran supportive training programme for supervisors, with the hopes of improving supervisor attitudes towards veterans, as well as improving veteran sleep and health outcomes. Drawing on social support theory (Cohen & Wills, 1985; House, 1981) and using a theory-driven training research design (e.g., Arthur *et al.*, 2003; Bell *et al.*, 2017) and evaluation (e.g., Kirkpatrick, 1994; Lacerenza *et al.*, 2017), we examined the impact of the VSST on supervisors' own outcomes (i.e., attitudes towards veterans) at 9 months post-training, as well as on their employees' outcomes of sleep and stress at 3 and 9 months post-training. In addition, based on Colquitt *et al.*'s (2000) integrative theory of training motivation and suggestions by Biron and Karanika-Murray (2014) that intervention context impacts intervention outcomes, we examined how the veteran effects would be moderated by baseline supervisor attitudes towards veteran employees (i.e., an contextual indicator of trainee readiness and motivation).

Consistent with our hypotheses, we found that the training improved supervisor attitudes towards veterans at 9 months post-training. The training also improved sleep and stress of the veterans at 3 and 9 months post-training under conditions of more positive supervisor attitudes towards veteran employees, consistent with our expectations. There were no main effects of the training found on sleep and stress, however. Thus, this study contributes to our understanding of how to promote more positive supervisor attitudes towards veteran employees, identifies conditions necessary to observe significant health-promoting training effects on veterans, and contributes more broadly to the burgeoning literature on supervisor support training effects on health and well-being of employees, especially expanding research to vulnerable underserved populations. Below, we highlight several important theoretical and practical contributions.

Theoretical implications

Using theory in training development and evaluation, we demonstrated how supervisor support trainings can be extended to effects on improving supervisor attitudes towards a vulnerable population. The training was developed using learning principles of self-paced computer-based instruction with intermittent quizzes and behavioural self-monitoring, which have all been shown to be effective elements in successful training (e.g., Arthur *et al.*, 2003; Olson & Winchester, 2008). We evaluated the VSST using a multi-level design as suggested by recent training reviews (Bell *et al.*, 2017). We argue that improving supervisor attitudes can ultimately lead to improved supportive supervisor behaviours based on the theory of planned behaviour (Ajzen & Fishbein, 1973), and this has implications for the study of reduced stigma associated with other vulnerable populations at work (Colella *et al.*, 2017).

We used social support theory (e.g., Cohen & Wills, 1985) and trainee readiness theory (e.g., Colquitt *et al.*, 2000) to help clarify that context readiness, in the form of trainee

Table 7. Model results of intervention effects on employee sleep quantity, sleep quality, and perceived stress at 3- and 9-month follow-up as moderated by supervisor attitudes towards veteran employees

	DV: employee sleep quantity (3 months)		DV: employee sleep quantity (9 months)		DV: employee sleep quality (3 months)		DV: employee sleep quality (9 months)	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Intercept	7.28***	(7.09, 7.47)	7.29***	(7.05, 7.53)	2.50***	(2.34, 2.65)	2.48***	(2.38, 2.59)
Intervention	0.05	(−0.19, 0.29)	0.06	(−0.24, 0.36)	0.06	(−0.09, 0.21)	0.07	(−0.13, 0.26)
Baseline of DV	0.46***	(0.27, 0.65)	0.67***	(0.46, 0.87)	0.65***	(0.52, 0.78)	0.53***	(0.37, 0.69)
Supervisor attitudes	0.07	(−0.34, 0.48)	0.02	(−0.30, 0.35)	0.08	(−0.09, 24)	−0.06	(−0.26, 0.14)
Intervention*Sup. Attitudes	−0.02	(−0.55, 0.52)	0.25	(−0.15, 0.66)	0.09	(−0.16, 0.33)	0.29*	(0.00, 0.58)
Residual variance	1.03***	(0.46, 1.60)	0.83***	(0.47, 1.18)	0.25***	(0.19, 0.31)	0.30***	(0.20, 0.41)
Intercept variance	0.00	(−0.03, 0.03)	0.01	(−0.17, 0.18)	0.00	(−0.03, 0.03)	0.00	(−0.05, 0.05)
Model R^2 (within)	0.39***		0.21		0.45***		0.33**	
Model R^2 (between)	0.12		0.25		0.28		0.34	

	DV: employee perceived stress (3 months)		DV: employee perceived stress (9 months)	
	Est.	95% CI	Est.	95% CI
Intercept	2.50***	(2.35, 2.65)	2.28***	(2.22, 2.33)
Intervention	−0.03	(−0.22, 0.15)	0.14*	(0.02, 0.25)
Baseline of DV	0.51***	(0.41, 0.61)	0.67***	(0.54, 0.81)
Supervisor attitudes	0.07	(−0.10, 0.23)	−0.02	(−0.20, 0.16)
Intervention*Sup. Attitudes	−0.30**	(−0.53, −0.08)	−0.31	(−0.63, 0.01)
Residual variance	0.29***	(0.22, 0.37)	0.36***	(0.27, 0.46)
Intercept variance	0.00	(−0.02, 0.02)	0.00	(−0.01, 0.01)
Model R^2 (within)	0.37***		0.45***	
Model R^2 (between)	0.15		0.94	

Note. *$p < .05$. **$p < .01$. ***$p < .001$. DV = dependent variable. Supervisor attitudes = supervisor attitudes towards veteran employees. Models controlled for baseline levels of outcome variable. All estimates listed represent unstandardized values. All continuous predictors are grand-mean-centred. *Ns* = 134–153.

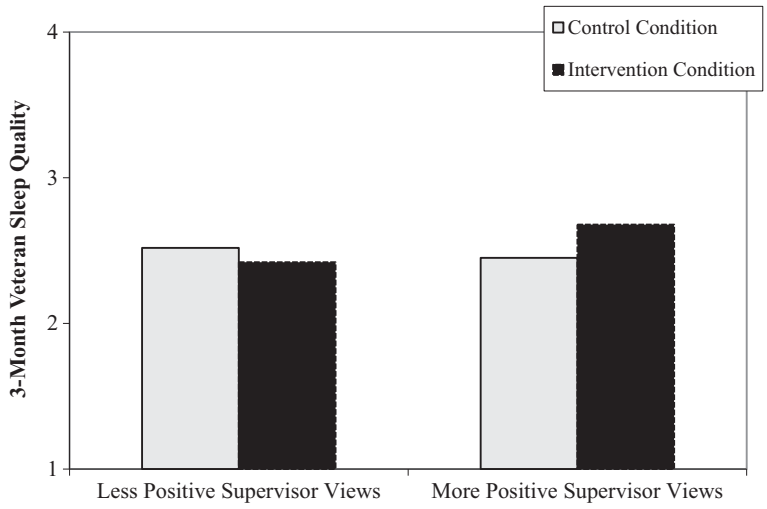

Figure 2. Graph of interactive effect of intervention and baseline supervisor attitudes towards veteran employees on 9-month veteran employee sleep quality.

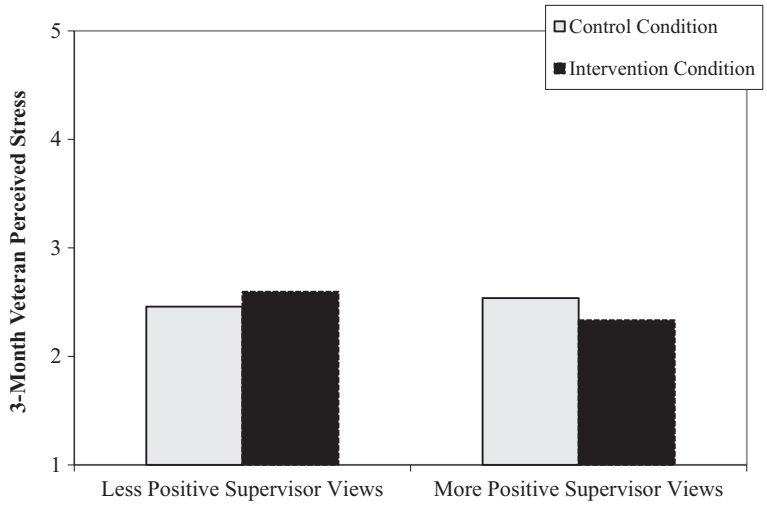

Figure 3. Graph of interactive effect of intervention and baseline supervisor attitudes towards veteran employees on 3-month veteran employee perceived stress.

readiness, can facilitate the health-promoting effects of the training on employees. More specifically, we found that when supervisors had more positive attitudes towards veterans, and hence were more motivated and ready for the training, veterans were able to reap the rewards of the training on their well-being outcomes. Furthermore, drawing on social support theory that shows strong ties between support and health, we have extended the implications of FSSB interventions (e.g., Hammer, Truxillo, Bodner, Pytlovany & Richman, 2019; Odle-Dusseau *et al.*, 2016) to demonstrate that supportive supervisor trainings can promote the health and well-being of a unique and underserved population in the workforce, when supervisors' attitudes towards that population are positive.

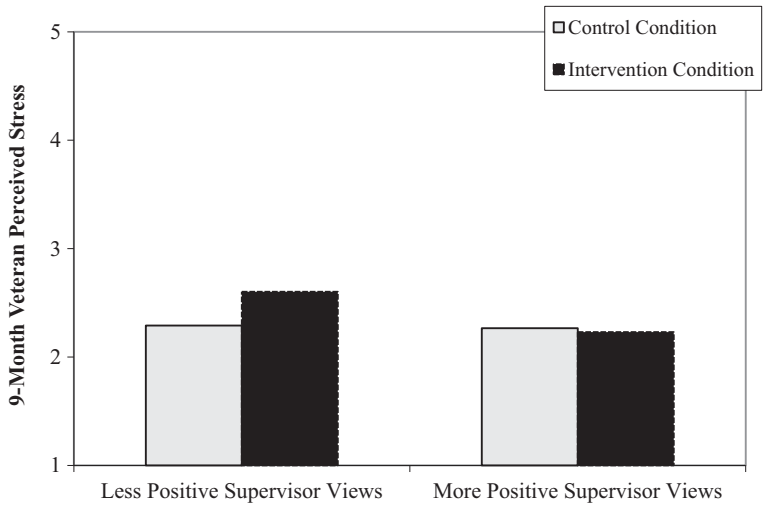

Figure 4. Graph of interactive effect of intervention and baseline supervisor attitudes towards veteran employees on 9-month veteran employee perceived stress.

Additionally, scholars have argued for more research on underserved populations in the workplace, including veterans (Colella *et al.*, 2017), as their experiences are not necessarily reflective of the general population. Our study addressed an important need in the veteran employment sector by identifying that there are steps organizations can take to better support the health of veterans in the workplace. The current study showed that the benefits of the VSST training include important physical health and psychological indicators: sleep and stress. As previously discussed, these indicators have important links to disease, as well as workplace functioning. Thus, researchers should consider trainings such as the VSST as one tool that can be used to promote veteran employee well-being. We also suggest that future research should investigate the effects of supervisor support training on other supervisor attitudes and behaviours, as well as on perceived stigma associated with underserved, vulnerable populations such as those with physical and emotional disabilities, underrepresented minorities, and those workers in low-wage precarious jobs that are not highly valued by organizational leadership.

These findings have further theoretical implication in the light of the failure to find significant direct effects of the supervisor social support training on veteran employee sleep and stress outcomes. While the importance of social relationships for health is not in question here (e.g., Holt-Lunstad *et al.*, 2010; Kumar *et al.*, 2012), the findings of the present study offer further evidence that these effects are context-dependent, at least when it comes to supervisor support. This is consistent with arguments that suggest that understanding the context under which interventions in organizations occur is as important as understanding their efficacy (e.g., Biron & Karanika-Murray, 2014). Factors such as trainee readiness, as well as other contextual factors as suggested by Bell *et al.* (2017), are critical for continued examination of supervisor training effectiveness, and help to understand the conditions under which trainings are effective.

Finally, the effect of the VSST on non-veteran employees is unknown. Given the focus of the study was on veteran outcomes, non-veterans were not assessed. However, we argue that this training, which is based on more general FSSB principles, may have

beneficial outcomes for all employees. Future research should examine a broader range of employees to determine whether the VSST benefits generalize to non-veterans.

Practical implications

One implication of supportive training for supervisors is that it leads to a positive shift in their attitudes towards veterans. Per Stone and Stone (2015), familiarity with veterans and the importance of understanding military culture can lead to more positive attitudes by helping individuals identify positive attributes of a group, combat negative stereotypes, and reduce stereotypes associated with veterans. Consistent with these arguments, we found that implementing a social support training that aims to increase supervisors' knowledge of the positive attributes veterans bring to work promotes more positive views of veteran employees. Military employees have reported feeling discriminated against in the civilian workforce (Keeling, Kintzle, & Castro, 2018), and in part, veterans' perceived workplace stigma is thought to explain poor well-being outcomes among veterans (Kelley, Britt, Adler, & Bliese, 2014). Veteran-perceived stigma is in general also associated with poor health behaviours, including problem drinking (Miller, Pedersen, & Marshall, 2017). Given the negative outcomes associated with stigma towards veterans, supervisors' attitudes towards veterans are a critical target that is expected to reduce the challenges faced by veterans in post-service employment. Therefore, our findings suggest that organizations that would like to reduce the occurrence of supervisors' negative stereotypical perceptions of veterans should utilize resources such as the supportive training, which contains realistic information about the challenges and positive attributes of these workers, in order to combat stereotypes. The high prevalence of organizationally based veteran support programmes that exist today indicates that many organizations are seeking to improve support for veterans and may be interested in, and benefit from, training to improve supervisors' attitudes towards veterans.

The practical implications of this study also extend to other groups of workers who are seen as vulnerable and underserved. Organizations should understand that the views their employed supervisors hold towards employees are critical in supporting the health and well-being of underserved populations in the workforce. We maintain that this training and trainings like it are applicable to other individuals who are part of groups that are subject to negative outcomes associated with any perceived stigma or real disability (Stone & Colella, 1996). Improving supervisor attitudes and support skills likely benefits non-veteran employees, too, and future research should examine this to determine effects on non-veteran employees. Further, the demonstration that the training can be effectively modified (i.e., adaptation of previous family supportive supervisor training to the current VSST) suggests that organizations can tailor supervisor behaviour trainings to support other underserved populations, thereby promoting a more diverse and healthier workforce within organizations. Thus, the advancement of diversity and inclusion programmes in organizations may benefit from such supervisor training programmes as suggested here that could help improve attitudes towards the targeted group of individuals.

Although we did not find main effects of the training on well-being outcomes, our finding that supervisor attitudes promote the effectiveness of the training at improving well-being outcomes leads us to conclude that the allocation of supportive resources to employees is important; however, it may not occur evenly across supervisors, with those supervisors who hold more positive attitudes having more positive influence on employee outcomes following the training. Specifically, the strength and magnitude of the

effectiveness of the training depends on supervisors having positive attitudes towards veteran employees to begin with. Because negative supervisor attitudes towards veterans can act as a barrier to the success of training, consistent with training effectiveness perspectives (Salas *et al.*, 2012), taking concrete steps to improve supervisor attitudes prior to and throughout the supervisor training is likely important for reducing training barriers and enhancing the effectiveness of such training.

The current study more broadly affirms the value of supervisor social support in the workplace, for employee sleep and health. As we reviewed, sleep and stress are critical components of both employee well-being and organizational functioning, and social support provides psychological resources that can promote improvements in sleep and stress. Veterans, specifically, may be at increased risk for both poor health and well-being outcomes, and may have trouble getting their support needs met (e.g., Lentino *et al.*, 2013). Furthermore, our findings are consistent with the matching hypothesis that suggests when support is more geared towards employee support needs, they will experience increased beneficial health and well-being effects. Broadly, findings from this study suggest that organizations can be more effective if they take care to ensure that supervisors are in tune with the support needs of their employees.

Extending the supervisor support training to other domains of leadership in need of development is important. Consistent with the concept of behavioural health leadership suggested by Adler, Saboe, Anderson, Sipos and Thomas (2014), extending training to domains beyond work–family support (Hammer *et al.*, 2011) and support for veteran transition into the workplace in the present study, to domains such as workplace violence prevention, sleep quality improvement, and training supervisors on more general culture of health issues is warranted and should be examined in future research.

Finally, this study provides a useful framework for understanding complex methodological studies. This study was based on a RCT across 35 different organizations, with organization as the randomized unit. We used a rigorous intent-to-treat analysis to evaluate the effectiveness of the supervisor training on employee outcomes over time. As Hammer and Perry (2019) have described, conducting complex organizational interventions is challenging and requires resources, and thus, such studies are few and far between, but have important health-promoting benefits for employees. Furthermore, the study used multi-source data to evaluate the supervisor training on employee outcomes. While our employee effects were small, they were based on an intervention that targeted supervisors and were moderated by supervisor baseline attitudes. Thus, we argue that the effects on employee sleep and stress outcomes are particularly robust due to the multi-source nature of our randomized controlled evaluation, and hence make a methodological contribution to organizational research.

Limitations

Despite the contributions of the current study, we note several limitations as well. First, our moderated effects were relatively small in magnitude. Despite this limitation, we note that even small changes in sleep and stress can promote well-being, and as mentioned above, these were found using a rigorous research design, including multiple waves of data, an intervention, and multi-source data. Because interventions target a host of factors to improve well-being, quantifying their effects on well-being often proves challenging. For instance, the effects of the training may produce small day-to-day changes that help to prevent longer-term negative outcomes, but producing large-scale changes in health and well-being is often limited by contextual factors. That said, even

small detected effects are expected to serve as a protective factor against disease, considering that stress reduction is associated with physical improvements (Davidson, & McEwen, 2012). Likewise, our findings were not supported at the 3 months, and this is possibly due to the fact that changes in support may not have an immediate effect on health and well-being outcomes, but instead may take time to develop. Future research should continue to explore both the short-term and longer-term well-being effects of trainings similar to the VSST.

An additional limitation of our study is that employees who completed follow-up surveys reported better sleep quality and less stress, and had supervisors who had more positive attitudes towards veterans. This presents a potential issue in terms of selection bias, and thus poses as a limitation of the current study. It may be that those who needed the training most are those from whom we did not obtain follow-up information. Based on our current findings, our moderated effect sizes would have likely been larger if we had been able to obtain follow-up data from all individuals. Future efforts should seek to improve retention of those employees for whom we hope the training could most benefit.

Additionally, this study examined the specific effects of the VSST, a training focused on supporting a particular subgroup of employees, namely veterans. While we argue that many of the larger structural components of the training are based on the more general FSSB training and thus are applicable to supervisors of all types of employees, the generalizability of the training effectiveness to non-veterans was not tested. Anecdotal evidence from qualitative supervisor reports clearly indicates that many of the supervisors believed the information provided in the VSST was important and helpful for supervising all types of employees. Future research should consider examining the impact of the VSST training on non-veteran employees as well.

Conclusion

The current study examined the effectiveness of supportive supervisor training on critical employee well-being outcomes, as well as supervisor attitudes towards their employees. Specifically, we found that the VSST improves sleep quality and reduces stress when supervisor attitudes towards veteran employees are more positive at baseline. Further, the present study demonstrated that the VSST is one method to improve supervisor attitudes towards veterans, and we expect that those attitudes lead to increased supportive behaviours exhibited by the supervisors. This, in turn, should improve the transition process for veterans in the civilian workforce. Together, these findings suggest that the VSST can improve supervisors' attitudes towards veteran employees and promote well-being among veteran employees, and have implications for other vulnerable groups of workers.

Finally, the veteran transition process has implications globally with the increasing numbers of service members of working age (Ainspan *et al.*, 2018; Ministry of Defence, 2019). With these increased numbers comes the need for more research on how to better support veterans, who are a marginalized underserved population, but this need also extends to other vulnerable workers, frequently facing stigma at work (e.g., Stone & Colella, 1996; Stone & Stone, 2015). This research is one step towards improving the workplace culture for employees, and in particular, former service members, enhancing their transition back home. This study also suggests positive implications of supervisor support training for employee well-being more generally, and encourages the expansion of such training to other domains such as supervisor support for health and well-being.

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Data availability statement

The data utilized in the current study are available from the first author upon reasonable request.

References

Adler, A. B., Saboe, K. N., Anderson, J., Sipos, M. L., & Thomas, J. L. (2014). Behavioral health leadership: New directions in occupational mental health. *Current Psychiatry Reports*, *16*, 1–7. https://doi.org/10.1007/s11920-014-0484-6

Adler, A. B., Zamorski, M., & Britt, T. W. (2011). The psychology of transition: Adapting to home after deployment. In A. B. Adler, P. D. Bliese & C. A. Castro (Eds.), *Deployment psychology: Evidence-based strategies to promote mental health in the military* (pp. 153–174). Washington, DC: American Psychological Association. https://doi.org/10.1037/12300-006

Ainspan, N., Penk, W., & Kearney, L. (2018). Psychosocial approaches to improving the military-to-civilian transition process. *Psychological Services*, *15*, 129–134. https://doi.org/10.1037/ser0000259

Ajzen, I., & Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behaviors. *Journal of Personality and Social Psychology*, *27*, 41–57. https://doi.org/10.1037/h0034440

American Psychological Association. (2017). *Stress in America: The State of Our Nation. Stress in America™ Survey*. Washington, DC: American Psychological Association.

Arthur, W., Bennett, W. J., Edens, P. S., & Bell, S. T. (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *Journal of Applied Psychology*, *88*, 234–245. https://doi.org/10.1037/0021-9010.88.2.234

Bell, B. S., Tannenbaum, S. I., Ford, J. K., Noe, R. A., & Kraiger, K. (2017). 100 years of training and development research: What we know and where we should go. *Journal of Applied Psychology*, *102*, 305–323. https://doi.org/10.1037/apl0000142

Biron, C., & Karanika-Murray, M. (2014). Process evaluation for organizational stress and well-being interventions: Implications for theory, method, and practice. *International Journal of Stress Management*, *21*, 85–111. https://doi.org/10.1037/a0033227

Blackburn, D. (2016). Transitioning from military to civilian life: Examining the final step in a military career. *Canadian Military Journal*, *16*, 53–61.

Bodner, T., & Bliese, P. (2018). Detecting and differentiating the direction of change and intervention effects in randomized trials. *Journal of Applied Psychology*, *103*(1), 37–53. https://doi.org/10.1037/apl0000251

Britt, T., Black, K., Cheung, J., Pury, C., & Zinzow, H. (2018). Unit training to increase support for military personnel with mental health problems. *Work & Stress*, *32*, 281–296. https://doi.org/10.1080/02678373.2018.1445671

Buysse, D. J., Reynolds, III, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research*, *28*, 193–213. https://doi.org/10.1016/0165-1781(89)90047-4

Chenot, D., Benton, A. D., & Kim, H. (2009). The influence of supervisor support, peer support, and organizational culture among early career social workers in child welfare services. *Child Welfare*, *88*, 129–148.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*, 385–396. https://doi.org/10.2307/2136404

Cohen, S., & Wills, T. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*, 310–357. https://doi.org/10.1037/0033-2909.98.2.310

Colella, A., Hebl, M., & King, E. (2017). One hundred years of discrimination research in the Journal of Applied Psychology: A sobering synopsis. *Journal of Applied Psychology*, *102*, 500–513. https://doi.org/10.1037/apl0000084

Colquitt, J. A., LePine, J. A., & Noe, R. A. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology*, *85*, 678–707. https://doi.org/10.1037/0021-9010.85.5.678

Crain, T., Brossoit, L., & Fisher, R. (2017). Work, Nonwork, and Sleep (WNS): A review and conceptual framework. *Journal of Business and Psychology*, *33*, 675–697. https://doi.org/10.1007/s10869-017-9521-x

Crain, T., Hammer, L., Bodner, T., Olson, R., Kossek, E., Moen, P., & Buxton, O. (2019). Sustaining sleep: Results from the randomized controlled Work, Family, and Health Study. *Journal of Occupational Health Psychology*, *24*(1), 180–197. https://doi.org/10.1037/ocp0000122

Cropley, M., Dijk, D.-J., & Stanley, N. (2006). Job strain, work rumination, and sleep in school teachers. *European Journal of Work and Organizational Psychology*, *15*, 181–196. https://doi.org/10.1080/13594320500513913

Cutrona, C. E. (1990). Stress and social support – In search of optimal matching. *Journal of Social and Clinical Psychology*, *9*, 3–14. https://doi.org/10.1521/jscp.1990.9.1.3

Davidson, R. J., & McEwen, B. S. (2012). Social influences on neuroplasticity: Stress and interventions to promote well-being. *Nature Neuroscience*, *15*, 689–695. https://doi.org/10.1038/nn.3093

Dawley, D., Andrews, M., & Bucklew, N. (2008). Mentoring, supervisor support, and perceived organizational support: What matters most? *Leadership & Organization Development Journal*, *29*, 235–247. https://doi.org/10.1108/01437730810861290

DeConnick, J. B., & Johnson, J. T. (2009). The effects of perceived supervisor support, perceived organizational support, and organizational justice on turnover among salespeople. *Journal of Personal Selling & Sales Management*, *29*, 333–350. https://doi.org/10.2753/PSS08853134290403

Department of Veterans Affairs Canada. (2014). *Survey on transition to civilian life: Report on regular force veterans – Executive summary*. Retrieved from http://www.veterans.gc.ca/eng/about-us/research-directorate/publications/reports/survey-trans-exec

Dickstein, B. D., Vogt, D. S., Handa, S., & Litz, B. T. (2010). Targeting self-stigma in returning military personnel and veterans: A review of intervention strategies. *Military Psychology*, *22*, 224–236. https://doi.org/10.1080/08995600903417399

Dimoff, J. K., Kelloway, E. K., & Burnstein, M. D. (2016). Mental Health Awareness Training (MHAT): The development and evaluation of an intervention for workplace leaders. *International Journal of Stress Management*, *23*, 167–189. https://doi.org/10.1037/a0039479

García-Herrero, S., Mariscal, M. A., Gutiérrez, J. M., & Ritzel, D. O. (2013). Using Bayesian networks to analyze occupational stress caused by work demands: Preventing stress through social support. *Accident Analysis & Prevention*, *57*, 114–123. https://doi.org/10.1016/j.aap.2013.04.009

Gates, S. M., McGovern, G., Waggoner, I., Winkler, J. D., Pierson, A., Andrews, L., & Buryk, P. (2013). *Supporting employers in the Reserve Operational Forces Era*. Santa Monica, CA: RAND National Security Research Division.

Greene-Shortridge, T. M., Britt, T. W., & Castro, C. A. (2007). The stigma of mental health problems in the military. *Military Medicine*, *172*, 157–161. https://doi.org/10.7205/MILMED.172.2.157

Gunia, B., Sipos, M., LoPresti, M., & Adler, A. (2015). Sleep leadership in high-risk occupations: An investigation of soldiers on peacekeeping and combat missions. *Military Psychology*, *27*, 197–211. https://doi.org/10.1037/mil0000078

Hammer, L. B., Kossek, E. E., Anger, W. K., Bodner, T., & Zimmerman, K. L. (2011). Clarifying work-family intervention processes: The roles of work-family conflict and family-supportive supervisor behaviors. *Journal of Applied Psychology*, *96*(1), 134–150. https://doi.org/10.1037/a0020927

Hammer, L. B., Kossek, E. E., Yragui, N. L., Bodner, T. E., & Hanson, G. C. (2009). Development and validation of a multidimensional measure of family supportive supervisor behaviors (FSSB). *Journal of Management*, *35*, 837–856. https://doi.org/10.1177/0149206308328510

Hammer, L. B., Kossek, E. E., Zimmerman, K., & Daniels, R. (2007). Clarifying the construct of family-supportive supervisory behaviors (FSSB): A multilevel perspective. In P. L. Perrewe & D. C. Ganster (Eds.), *Research in occupational stress and well-being* (pp. 6, 165–204). Bingley, UK: Emerald Group. https://doi.org/10.1016/S1479-3555(06)06005-7

Hammer, L. B., & Perry, M. (2019). Reducing work-life stress: The place for integrated interventions. In H. L. Hudson, J. A. S. Nigam, S. L. Sauter, L. C. Chosewood, A. L. Schill & J. Howard (Eds.), *Total worker health: Integrative approaches to safety, health, and well-being*. Washington, DC: American Psychological Association.

Hammer, L. B., & Sauter, S. (2013). Total Worker Health and work–life stress. *Journal of Occupational and Environmental Medicine*, *55*, S25–S29. https://doi.org/10.1097/JOM.0000000000000043

Hammer, L. B., Truxillo, D. M., Bodner, T., Pytlovany, A. C., & Richman, A. (2019). Exploration of the impact of organisational context on a workplace safety and health intervention. *Work & Stress*, *33*, 192–210. https://doi.org/10.1080/02678373.2018.1496159

Hammer, L. B., & Zimmerman, K. L. (2011). Quality of work life. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology (Vol. 3), Maintaining, expanding, and contracting the organization* (pp. 399–431). Washington, DC: American Psychological Association.

Hammer, L. B., Wan, W. H., Brockwood, K. J., Mohr, C. D., & Carlson, K. F. (2017). Military, work, and health characteristics of veterans and reservists from the Study for Employment Retention of Veterans (SERVe). *Military Psychology*, *29*, 491–512. https://doi.org/10.1037/mil0000196

Hammer, L. B., Wan, W. H., Brockwood, K. J., Bodner, T., & Mohr, C. D. (2019). Supervisor support training effects on veterans in the workplace: Effects on health and work outcomes. *Journal of Applied Psychology*, *104*, 52–69. https://doi.org/10.1037/apl0000354

Hoge, C., McGurk, D., Thomas, J., Cox, A., Engel, C., & Castro, C. (2008). Mild traumatic brain injury in U.S. soldiers returning from Iraq. *New England Journal of Medicine*, *358*, 453–463. https://doi.org/10.1056/NEJMoa072972

Holt-Lunstad, J., Smith, T., & Layton, J. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Med*, *7*, E1000316. https://doi.org/10.1371/journal.pmed.1000316

House, J. S. (1981). *Work stress and social support*. Reading, MA: Addison-Wesley.

Keeling, M., Kintzle, S., & Castro, C. A. (2018). Exploring US veterans' post-service employment experiences. *Military Psychology*, *30*(1), 63–69. https://doi.org/10.1080/08995605.2017.1420976

Kelley, C. L., Britt, T. W., Adler, A. B., & Bliese, P. D. (2014). Perceived organizational support, posttraumatic stress disorder symptoms, and stigma in soldiers returning from combat. *Psychological Services*, *11*, 229–234. https://doi.org/10.1037/a0034892

Kirkpatrick, D. L. (1994). *Evaluating training programs: The four levels*. San Francisco, NC: Berret-Koehler.

Kossek, E. E., Pichler, S., Bodner, T., & Hammer, L. B. (2011). Workplace social support and work-family conflict: A meta-analysis clarifying the influence of general and work-family-specific supervisor and organizational support. *Personnel Psychology*, *64*, 289–313. https://doi.org/10.1111/j.1744-6570.2011.01211.x

Kossek, E. E., Thompson, R. J., Lawson, K. M., Bodner, T., Perrigino, M. B., Hammer, L. B., . . . Wipfli, B. (2019). Caring for the elderly at work and home: Can a randomized organizational intervention improve psychological health? *Journal of Occupational Health Psychology*, *24*, 36–54. https://doi.org/10.1037/ocp0000104

Kühnel, J., Sonnentag, S., Bledow, R., & Melchers, K. G. (2018). The relevance of sleep and circadian misalignment for procrastination among shift workers. *Journal of Occupational and Organizational Psychology*, *91*(1), 110–133. https://doi.org/10.1111/joop.12191

Kumar, S., Calvo, R., Avendano, M., Sivaramakrishnan, K., & Berkman, L. F. (2012). Social support, volunteering and health around the world: Cross-national evidence from 139 countries. *Social Science & Medicine*, *75*, 696–706. https://doi.org/10.1016/j.socscimed.2011.11.017

Kuvaas, B., & Dysvik, A. (2010). Exploring alternative relationships between perceived investment in employee development, perceived supervisor support and employee outcomes. *Human Resource Management Journal*, *20*, 138–156. https://doi.org/10.1111/j.1748-8583.2009.00120.x

Lacerenza, C. N., Reyes, D. L., Marlow, S. L., Joseph, D. L., & Salas, E. (2017). Leadership training design, delivery, and implementation: A meta-analysis. *Journal of Applied Psychology*, *102*, 1686–1718. https://doi.org/10.1037/apl0000241

LaMontagne, A. D., Keegel, T., Louie, A. M., & Ostry, A. (2010). Job stress as a preventable upstream determinant of common mental disorders: A review for practitioners and policy-makers. *Advances in Mental Health*, *9*, 17–35. https://doi.org/10.5172/jamh.9.1.17

Lentino, C. V., Purvis, D. L., Murphy, K. J., & Deuster, P. A. (2013). Sleep as a component of the performance triad: The importance of sleep in a military population. *U.S. Army Medical Department Journal*, *2013*, 98–108.

Litwiller, B., Snyder, L. A., Taylor, W. D., & Steele, L. M. (2017). The relationship between sleep and work: A meta-analysis. *Journal of Applied Psychology*, *102*, 682–699. https://doi.org/10.1037/apl0000169

Miller, S. M., Pedersen, E. R., & Marshall, G. N. (2017). Combat experience and problem drinking in veterans: Exploring the roles of PTSD, coping motives, and perceived stigma. *Addictive Behaviors*, *66*, 90–95. https://doi.org/10.1016/j.addbeh.2016.11.011

Ministry of Defence. (2018). *Mental Health and the Armed Forces, Part One: The Scale of mental health issues. House of Commons Defence Committee 11th report of 2017–19*.

Ministry of Defence. (2019). *Population Projections: UK Armed Forces Veterans residing in Great Britain, 2016 to 2028*. Bristol, UK: Defence Statistics Health. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/775151/20190107_Enclosure_1_Population_Projections_-_UK_Armed_Forces_Veterans_residing_in_Great_Britain_-_2016_to_2028.pdf

Minkel, J. D., Banks, S., Htaik, O., Moreta, M. C., Jones, C. W., McGlinchey, E. L., . . . Dinges, D. F. (2012). Sleep deprivation and stressors: Evidence for elevated negative affect in response to mild stressors when sleep deprived. *Emotion*, *12*, 1015–1020. https://doi.org/10.1037/a0026871

Muthen, L. K., & Muthen, B. (2012). *1998–2012. Mplus user's guide* (7th ed.). Los Angeles, CA: Muthen & Muthen.

Noe, R. A. (1986). Trainee attributes and attitudes: Neglected influences on training effectiveness. *Academy of Management Review*, *11*, 736–749. https://doi.org/10.2307/258393

Odle-Dusseau, H. N., Hammer, L. B., Crain, T. L., & Bodner, T. E. (2016). The influence of family-supportive supervisor training on employee job performance and attitudes: An organizational work–family intervention. *Journal of Occupational Health Psychology*, *21*, 296–308. https://doi.org/10.1037/a0039961

Olson, R., Crain, T. L., Bodner, T. E., King, R., Hammer, L. B., Klein, L. C., . . . Buxton, O. M. (2015). A workplace intervention improves sleep: Results from the randomized controlled Work, Family, and Health Study. *Sleep Health*, *1*(1), 55–65. https://doi.org/10.1016/j.sleh.2014.11.003

Olson, R., & Winchester, J. (2008). Behavioral self-monitoring of safety and productivity in the workplace: A methodological primer and quantitative literature review. *Journal of Organizational Behavior Management*, *28*, 9–75. https://doi.org/10.1080/01608060802006823

Pietromonaco, P., & Collins, N. (2017). Interpersonal mechanisms linking close relationships to health. *The American Psychologist*, *72*, 531–542. https://doi.org/10.1037/amp0000129

Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations: What matters in practice. *Psychological Science in the Public Interest*, *13*, 74–101. https://doi.org/10.1177/1529100612436661

Seal, K. H., Bertenthal, D., Miner, C. R., Sen, S., & Marmar, C. (2007). Bringing the war back home: Mental health disorders among US veterans returning from Iraq and Afghanistan seen at Department of Veterans Affairs facilities. *Archives of Internal Medicine*, *167*, 476–482. https://doi.org/10.1001/archinte.167.5.476

Stone, C., & Stone, D. L. (2015). Factors affecting hiring decisions about veterans. *Human Resource Management Review*, *25*, 68–79. https://doi.org/10.1016/j.hrmr.2014.06.003

Stone, D., & Colella, A. (1996). A model of factors affecting the treatment of disabled individuals in organizations. *The Academy of Management Review*, *21*, 352–401. https://doi.org/10.5465/amr.1996.9605060216

Swanson, L., Arnedt, J., Rosekind, M., Belenky, G., Balkin, T., & Drake, C. (2011). Sleep disorders and work performance: Findings from the 2008 National Sleep Foundation Sleep in America poll. *Journal of Sleep Research*, *20*, 487–494. https://doi.org/10.1111/j.1365-2869.2010.00890.x

Umberson, D., & Karas Montez, J. (2010). Social relationships and health: A flashpoint for health policy. *Journal of Health and Social Behavior*, *51*(1_suppl.), S54–S66. https://doi.org/10.1177/0022146510383501

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