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Well-being through learning: a systematic review of learning interventions in the workplace and their impact on well-being

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ABSTRACT

The view that learning is central to well-being is widely held and the workplace is an important setting in which learning takes place. Evaluations of the effectiveness of well-being interventions in work settings are commonplace, but to date, there has been no systematic review of the effectiveness of learning interventions with regard to their impact on well-being. The review synthesizes evidence from 41 intervention studies, and although no studies report a negative impact on well-being, 14 show no effect on well-being, with 27 studies having a positive impact. We classify the studies according to the primary purpose of the learning intervention: to develop *personal resources* for well-being through learning; to develop *professional capabilities* through learning; to develop *leadership* skills through learning; and to improve organizational effectiveness through *organizational*-level learning. Although there is an abundance of workplace learning interventions, few are evaluated from a well-being perspective despite the commonly held assumption that learning yields positive emotional and psychological outcomes. The evidence indicates an important gap in our evaluation of and design of workplace learning interventions and their impact on well-being, beyond those focusing on personal resources. This raises important theoretical and practical challenges concerning the relationship between learning and well-being in the context of professional capability enhancement, leadership capability and organizational learning.

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Workplace learning; training; well-being; HRM; personal resources

Introduction

This paper details the evidence for the impact of learning interventions at work on subjective well-being using the systematic review methodology (Higgins & Green, 2008; Moher et al., 2015). For the purposes of this review, learning is understood as the process experienced by individuals when they engage in training programmes or education and development courses, with the purpose of acquiring the competencies or resources intended to meet current and future work demands (Jacobs & Park, 2009, p. 134). There is a further distinction to be made between formal learning, which comprises any intentional structured learning activities undertaken explicitly to gain knowledge or skills, and informal learning. In this review, we are concerned only with interventions, which consist of formal learning in work settings that measure their impact on subjective well-being. This definition includes learning arising from training focused on a narrow set of skills in addition to development programmes for enhancing professional and personal work-related capabilities. Therefore, in the context of this review, we use the terms training and learning when we refer to formal learning in work settings. We acknowledge the importance of informal learning – which is not structured and incidental, rather than intentional – and non-formal learning – organized activity that can have some learning objectives, but is less structured (Werquin, 2010; Jacobs & Park, 2009; Sambrook, 2005). However, these forms of learning are not within the scope of this review.

We look beyond training interventions designed to address poor well-being directly to include learning aimed at enhancing professional skills, leadership capability and organizational effectiveness. These latter forms of learning in the workplace are a critical element of work life and form a key theoretical anchor in models of organizational performance (Appelbaum, Bailey, Berg, & Kalleberg, 2000; Combs, Liu, Hall, & Ketchen, 2006; Michie & Sheehan-Quinn, 2001) and can help buffer work intensification and maximize productivity through protecting employee well-being (Tregaskis, Daniels, Glover, Butler, & Meyer, 2013). Despite these theoretical and empirical claims, the well-being benefits of these wider forms of learning in the workplace have received little systemic research attention. Arguably, this inattention stems from the view that theoretically well-being has been considered an indirect outcome or a second-order benefit to the primary outcomes of worker effectiveness. This contrasts starkly with learning interventions which are specifically designed to improve well-being, e.g., stress interventions, where theorization on individual well-being has received greatest scrutiny. Therefore, the aim of this review is to cast the net beyond questions of the effectiveness of well-being interventions and instead ask what the well-being impacts of workplace learning interventions are. By focusing on a review of intervention studies, we also seek to move the

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Supplemental data for this article can be accessed here.

evidence base beyond correlational claims of the relationship between learning and well-being towards an evidence base that addresses the casual relationship between learning and well-being.

There is a dearth of evidence examining the dynamic relationship between learning and well-being in the workplace and the casual factors involved. By evaluating learning interventions that measure an impact on well-being, we address this gap and begin to reveal the dynamics of the learning context, in which both individual and organizational factors may play a role. In understanding the contextual dynamics, we attempt to move beyond studies and findings that consider individual or organizational features of learning and well-being in isolation. Interventions can address learning and well-being by aiming to develop skills or personal resources at the individual level. Interventions can also seek to make changes to the organizational or occupational context, which can also translate into learning and well-being effects at the individual level (van der Klink et al., 2001, p. 270; see also Newman & Beehr, 1979). This distinction is important, and whilst there is evidence that both organizational- and individual-level approaches can be effective, the understanding of how organizational-level approaches combine with individual factors is not well understood in practical or theoretical terms (van der Klink et al., 2001).

There has been considerable attention directed at well-being in the workplace, but much of this work has focussed on other work-related factors that influence well-being. For example, there is a substantial body of literature on well-being and job quality (Daniels, Gedikli, Watson, Semkina, & Vaughn, 2017). Although training and development opportunities might be considered a key constituent of high-quality jobs, there has been scant attention to exploring the well-being impact of learning interventions themselves. Equally, there is considerable evidence on the pedagogic effectiveness of learning and training interventions in the workplace (Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012), but these have not been considered for their impact on well-being.

Within this journal, there has been extensive consideration of factors affecting employee well-being (see Ilies, Aw, & Pluut, 2015 for a review). Systematic reviews have also explored some of these factors influencing employee well-being, including job insecurity (Write, 1999) and workplace violence (Hogh & Viitasara, 2005), as well as considering employee well-being more directly (Meyers, van Woerkom, & Bakker, 2013 – effects of positive psychology interventions; Monteiro, Marques Pinto, & Roberto, 2015 – stress among journalists). However, to date, there has been no attempt to systematically review the well-being impact of workplace learning interventions, within this journal or more widely. While such a systematic review is clearly important for practitioners, it is important theoretically. Systematic reviews of intervention studies provide insight into causal relationships in field settings (Daniels, 2016; Aguinis & Edwards, 2014; Miller & Tsang, 2011; Daniels, Gedikli et al., 2017) and provide explanations of why and how outcomes have been successfully or unsuccessfully met and for whom.

Analysis of learning for its impact on well-being has been limited to interventions which actively seek to support workplace well-being, more typically considered well-being interventions, rather than learning interventions. Whilst these kinds of interventions are not to be dismissed, neither is the plethora of learning activities that occurs in organizations, which is not explicitly focussed on well-being. Organizations spend a substantial amount of time and money on training, which is considered to support organizational performance by developing a skilled workforce (Salas et al., 2012, p. 74). There is evidence that learning is associated with well-being (Duckworth & Cara, 2012; Michalos, 2008) and that well-being is associated with organizational performance (Whitman, Van Rooy, & Viswesvaran, 2010). This evidence suggests that there is good reason to think formal learning programmes in the workplace or training interventions are likely to have a positive impact on well-being. However, the evidence that learning is associated with well-being is limited; determining the causal relationship behind this association and potential mechanisms underpinning it has been a persistent challenge (Field, 2008; IFLL, 2009; Sabates & Hammond, 2008). Past evidence has also been concerned with the effects of learning in general and has not focused on the specific effects of workplace learning on well-being. There is then a key gap in our understanding of how effective learning interventions are in the workplace in terms of well-being. The analysis presented here makes three key contributions. First, we reveal the strength of the evidence regarding the well-being outcomes that can be generated through specific forms of learning interventions in the workplace. Second, we demonstrate the limitations in this knowledge base and suggest areas where further research would be particularly fruitful. Third, we consider the implications of the review for practice, in terms of the design of learning.

The relationship between learning and well-being in the context of work is critical because of the potential for employment conditions to operate as a pathway to a healthy workforce and the economic and societal impacts that follow (Boreham, Povey, & Tomaszewski, 2016; Daniels et al., 2017). Thus, the policy and practice benefits of an evidence base that provide guidance of effective design are considerable. Theoretically though, there is also a void between individual-level and organizational-level interventions to improve well-being. Much of the literature reviewing well-being or stress interventions have focussed on individual approaches to addressing staff well-being (Richardson, 2017). This literature takes little account of wider organizational factors that may be systemic and contribute to persistent pressures exogenous to the individual. By contrast, organizational learning or change programmes focus on processes and systems and overlook the needs of the individual learners, and there is little evidence of approaches that combine organizational change with individual tailoring (Richardson, 2017; Jacobs & Park, 2009). There is a need to develop theoretical frameworks that underpin combined approaches to learning and well-being at work and take account of the full range of organizational and individual factors (Sambrook, 2005).

The paper is set out in four main sections: this initial section reviews relevant literature on how learning at work has been understood to influence well-being at the individual and organizational level, also setting out how this review defines well-

being. In discussing the literature, we draw out existing evidence that frames this review and highlight key gaps that have informed our research question. In the second section, we outline the methods employed in the systematic review, setting out our inclusion criteria for studies, the manner in which searches were performed and the quality of evidence was assessed. The third section constitutes the key findings of the review. In the fourth and final section, we discuss some of the implications of the review for further research and practice.

Defining well-being

In this review, we focus on well-being outcomes in terms of subjective psychological well-being. According to Waterman (1993), subjective well-being is one of the two major components of psychological well-being. The other component, eudaimonic well-being is rooted in the idea of a "life well lived", of which learning is considered to be a key constituent (Michalos, 2008). Subjective well-being is comprised of subjective assessments of life or job satisfaction, positive affect (e.g., joy and enthusiasm) and the relative absence of negative affect (e.g., lack of anxiety and feeling calm). Therefore, it has both cognitive and affective dimensions (Diener, 1984; Ilies et al., 2015).

In this review, we are interested in the evidence base on the impact of learning on employees' subjective well-being. Job satisfaction is identified as a key construct in measuring subjective well-being of workers and one of the most frequently used (Bakker & Oerlemans, 2011; Fisher, 2010; Ilies et al., 2015), but the review is not limited to studies measuring well-being measured by job satisfaction. Since the review focuses on the well-being effects of work-related training, it is appropriate to use measures, like job satisfaction or burnout, although we do acknowledge the limitations of domain-specific measures (Warr, 2012). As noted earlier, subjective well-being includes both affective and cognitive dimensions, and although job satisfaction measures can include both of these elements, this is not always the case (Fisher, 2010).

It has been argued that job satisfaction cannot be equated to happiness or psychological well-being (Wright & Cropanzano, 2000). However, there is also strong evidence identifying a correlation between job satisfaction and a range of measures of psychological well-being (Faragher, Cass, & Cooper, 2005), and it remains a key measure. However, we were equally interested in more general measures of subjective well-being, such as happiness or life satisfaction and measures that capture affective or psychological components of subjective well-being such as depression, anxiety and job strain or burnout in the work context (Ilies et al., 2015), which can also be identified by objective indicators such as absenteeism (Schaufeli, Bakker, & Van Rhenen, 2009).

The review did not privilege one measure over another, but sought to identify any studies that measured the impact of learning interventions on subjective well-being through a range of measures. We also extracted data from studies which measured well-being-related constructs, such as self-esteem although we did not consider measures of constructs like this as subjective well-being measures in themselves. Whilst self-esteem has been shown to be correlated with well-being, Diener and Diener (1995) argue that it is a distinctive concept. Others have also pointed out that although self-esteem is related to psychological well-being, elements of self-esteem, such as ego-defensiveness, can be negative for well-being (Neff, 2011).

Individual learning and well-being

To consider how the impact of individual learning on well-being can be understood, it is useful to look at theories of job demands and resources and how they relate to learning opportunities at work. According to the job-demand–resources model, learning opportunities provide the employee with the chance to learn new skills and enhance their knowledge base and self-efficacy (Bakker & Demerouti, 2007; see also Ângelo & Chambel, 2014; Bakker, Demerouti, & Schaufeli, 2003). These opportunities also provide employees with personal resources that better equip the individual to cope with psychologically and physiologically demanding work (Karasek & Theorell, 1992; Nikolova, Van Ruysseveldt, De Witte, & Syroit, 2014; Proost, Van Ruysseveldt, & Van Dijke, 2012; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991; Van Ruysseveldt, Verboon, & Smulders, 2011) and keep skills up to date and relevant over the life course (Molloy & Noe, 2010). The conservation of resources theory argues that individuals are motivated to develop, protect and replenish their personal resources (Hobfoll, 1989, 2001; see also Querstret, Cropley, Kruger, & Heron, 2016; Seppälä et al., 2015). If individuals are unable to rest to replenish their resources after a period of threat, they will experience stress or strain (Demerouti, Bakker, Geurts, & Taris, 2009; Fritz & Sonnentag, 2006; Kinnunen, Feldt, Siltaloppi, & Sonnentag, 2011). The effort-recovery theory points to different recovery strategies being necessary depending how resources have been depleted (Meijman & Mulder, 1998).

The opportunity to recover from workplace strain is key for individuals to be able to maintain well-being and performance in the workplace (van Wijhe, Peeters, Schaufeli, & Ouweneel, 2013). Much of this theorization has looked to individual-level solutions to building and restoring personal resources and support for learning opportunities as a means to this (for example, Querstret et al., 2016). Personal resources are regarded as important for both well-being and performance (Mastenbroek, Jaarsma, Scherpbier, van Beukelen, & Demerouti, 2014). Reviews have found that interventions aimed at developing self-regulatory personal-level resources generally have a positive impact on enhancing psychological well-being (Robertson, Cooper, Sarkar, & Curran, 2015; van der Klink, Blonk, Schene, & Van Dijk, 2001). The set of skills or capabilities grouped as personal resources are multiple and wide ranging: for example, mindfulness (Keng, Smoski, & Robins, 2011; Lomas et al., 2017; Spijkerman, Pots, & Bohlmeijer, 2016), resilience (Robertson et al., 2015) and stress management (Jones & Johnston, 2000; van der Klink et al., 2001).

Systematic reviews of interventions focused on personal-level resources do not consider the well-being impact of non-well-being-focused learning interventions. Furthermore, even within this particular type of learning intervention, some heterogeneous effects on well-being outcomes have been identified.

van der Klink et al. (2001) argue for greater attention to individual and organizational factors that might influence the effectiveness of stress management interventions, finding inconsistent results in their meta-analyses, for example, more systematic identification of individual risk factors for stress, to establish the particular need or relevance of the learning intervention. van der Klink et al. (2001) also underline the importance of tailoring interventions to individual needs when applied at an organizational level, noting that the strength of the evidence on the effectiveness of organizational-level stress management interventions is more limited. A systematic review of stress management interventions aimed at nursing professionals also underlined the need to understand the organizational factors. The review highlighted that a lack of attention to factors in the work environment may hinder the creation, application or relevance of the resources developed by individuals (Jones & Johnston, 2000).

Meta-analytic reviews suggest that effects of personal resources interventions can be short lived and we need to understand better how sustainable effects are and other factors that may have an impact (see, for example, Richardson & Rothstein, 2008; van der Klink et al., 2001). Existing reviews suggest that learning interventions aimed at developing personal resources to cope with stress and enhance well-being at work are generally effective, but more work is required to identify how individual, contextual and process factors influence their effectiveness. Moreover, a focus purely on learning related to maintaining and developing personal resources, in relation to self-management of well-being and stress, overlooks other forms of workplace learning and training and their potential contribution to well-being.

Organizational context, learning and well-being

The literature base on the human resource management (HRM)–performance link incorporates training and development as a key conceptual pillar reflecting the human capital investment strategy of the firm (Huselid, 1995). However, critics have argued that the emphasis on performance has often been at the expense of employee well-being (Baptiste, 2008; Guest, 2017). The design of work and human resourcing practices to provide employees with opportunities to learn is integral to retention, skill relevance and job enrichment, which can in turn impact on turnover and employee work attitudes (Meneghel, Borgogni, Miraglia, Salanova, & Martínez, 2016). Whilst research has extensively explored the relationship between HRM practices and performance, their impact on employee well-being has often been treated as secondary, despite the link between performance and well-being (Bryson, Forth, & Stokes, 2014; Whitman et al., 2010). There is though a substantial interest in employee well-being and HRM practices that cultivate a "healthy workplace" (Grawitch, Gottschalk, & Munz, 2006). There is also increasing interest in the quality of workers' lives as an end in itself, not just a means to increased performance (Daniels, Connolly et al., 2017; Ilies et al., 2015). The organizational environment is critical to take account of as it may explain why the outcomes of individual learning may not be realized or sustained and therefore fail to diffuse into positive organizational- or system-wide impacts, in terms of well-being and performance.

Sambrook (2005) notes a lack of conceptual frameworks that identify the various factors which effect learning at work, putting forward her own. This framework identifies the importance of organizational factors, such as work pressures, performance targets, organizational culture and structure as well as individual factors, such as motivation to learn, skills and confidence. These contextual factors interact with features of the learning process, such as the mode of learning delivery and type of learning materials provided, to influence the outcomes of learning at work. We would expect learning to enhance workers' ability to perform their job and thereby contribute to well-being by enabling them to cope better with workload, but job demands can also frustrate opportunities to engage in learning at work (Van Ruysseveldt et al., 2011).

Research suggests that learning opportunities, and the way in which the organizational context supports these and employees' fulfilment of them, are likely to be important for well-being. However, the mechanisms by which workplace learning supports well-being require further exploration (Van Ruysseveldt et al., 2011). Research has highlighted how features of work, like job demands and autonomy, combine with individual factors, like motivation to influence learning consequences or outcomes (Wielenga-Meijer, Taris, Kompier, & Wigboldus, 2010), but this has not explored the effects of learning interventions. Rather research has tended to focus on the links between job characteristics, organizational environment and informal learning processes, which are integrated into daily work routines. Although, this evidence on informal learning also suggests that learning interventions have the potential to enhance well-being (see Van Ruysseveldt et al., 2011 for example).

Training and development opportunities at work are understood as beneficial to both employee well-being and organizational performance (Grawitch et al., 2006). The perception of training opportunities and support for training within an organization has been linked to organizational commitment (Yang, Sanders, & Bumatay, 2012), yet there is also evidence that access to training can decrease commitment (Smeenk, Eisinga, Teelken, & Doorewaard, 2006). Job design also has an important influence on learning opportunities and their potential to positively influence health and well-being (Rau, 2006). These opportunities to learn also feed into employees' skill utilization which can further benefit well-being (Morrison, Cordery, Girardi, & Payne, 2005). In contrast, where learning opportunities are closed down, because of a focus on maximizing organizational production or performance, this can be at the expense of well-being (Lantz Friedrich, Sjöberg, & Friedrich, 2016).

The learning value of a job can be important not just for employee well-being in a current role, but employability beyond it (van der Heijden, Gorgievski & Lange, 2016). Given the negative well-being impact of unemployment (Paul & Moser, 2009), the role of learning in sustaining employment within a particular workplace or beyond it is also significant for well-being. A narrow focus on individual or organizational performance over and above well-being can be detrimental allowing "the rhetoric of the bottom line" to crowd out learning and well-being as legitimate objectives in themselves (Addleson, 2000). However, it is clear that the learning or

training opportunities employees experience are shaped by the organizational context and offer potential to enhance well-being (Rowden, 2002).

In sum, learning opportunities could have the potential to deliver important well-being outcomes for individuals and beyond. If individuals are able to develop capabilities to protect their own well-being or become more skilled and proficient in their work role, this will impact on work relations with colleagues and wider organizational outcomes. However, the empirical evidence base on the relationship between workplace learning and well-being outcomes (including work-related attitudes such as commitment, job satisfaction and anxiety) is limited (Chiva & Alegre, 2009; Rowden, 2002) and equivocal (Smeenk et al., 2006). In practice, the relationship between learning and well-being is more complex than suggested by theory (Aguinis & Kraiger, 2009), and contextual organizational factors need to be considered alongside individual-level learning processes.

Whilst the literature has underlined learning, training and development as integral to HRM practices, which support both well-being and organizational performance, there has not been a more systematic consideration of how learning interventions impact on employees' subjective well-being. There is a substantial literature exploring the way in which HRM and organizational context influence performance and employee well-being. The role of learning in supporting well-being remains underexplored. Despite a good deal of evidence suggesting learning interventions in the workplace can positively influence well-being, there has been very little systematic analysis of the effectiveness of learning interventions.

Research question

Existing reviews of work-based learning and well-being have tended to focus on personal self-regulatory resources. Often reviews have been limited to particular types of intervention, such as mindfulness, stress management training or resilience training, for example (Lomas et al., 2017; Robertson et al., 2015; van der Klink et al., 2001). This focus neglects other work-based learning interventions and there remain uncertainties over how characteristics of individuals, organizations and the training itself impact on the effectiveness of learning, particularly the influence of organizational contextual. Despite a widely held assumption that learning is good for well-being and that providing learning opportunities for employees can translate into greater organizational commitment and job satisfaction, the dynamic between learning interventions and well-being at work remains underexplored. Arguably, because of this assumption, existing research – including meta-analyses and reviews – has sought to analyse the learning processes only in terms of learning outcomes and not well-being outcomes (Cerasoli et al., 2014, see also Salas et al., 2008; Keith & Frese, 2008; Callahan, Kiker, & Cross, 2003; Colquitt, LePine, & Noe, 2000). There is also wider evidence that learning is important for well-being beyond the workplace (Dolan, Fujiwara, & Metcalfe, 2012; Duckworth & Cara, 2012; Inquiry for lifelong learning (IFLL), 2009). There is then good reason to explore the relationship between learning in work and well-being; to address these gaps, the current systematic review sought to answer the general question:

Within the context of work, to what extent are well-being outcomes influenced by learning outcomes and the characteristics of the learning process?

Methods

Prior to carrying out the review, the research team developed a protocol outlining the process for the review and the criteria for including or excluding studies from the review. The protocol followed the best practice PRISMA-P reporting guidelines (Moher et al., 2015; Shamseer et al., 2015) and was registered on PROSPERO, the International Prospective Register for Systematic Reviews.

Criteria for including or excluding studies for the review

To operationalize the research questions, we were guided by the PICOS approach (Liberati et al., 2009; Shamseer et al., 2015; as recommended in anonymous et al., 2016). The PICOS acronym, which stands for population, intervention, comparators, outcomes and study design, was used to refine the research questions and develop the terms used in searching the literature.

Population

We considered any studies that focussed on links between well-being and learning processes or outcomes, or both, in a work context. This was not limited to the UK, although this is the focus of the research since the review seeks to inform policy and practice in the UK. Research undertaken in a similar developed economic contexts to the UK, for example, EU-15 countries, the USA, Australia and Japan, were all included. Studies in countries where economic conditions (and therefore work conditions and organizational context) differ markedly from the UK (e.g., EU accession countries and developing economies) were excluded. We focussed on studies undertaken in countries that are advanced industrial democracies because of the significant institutional factors likely to influence workplace learning and well-being, for example, greater levels of employment protection through legislation, employees' expectations of their work environment, health and safety legislation and widespread availability of vocational education and skills training.

Intervention

Our focus was on how work-based learning influences well-being in itself and potentially also through the learning outcomes produced by this process. In terms of learning outcomes and process, we were interested in a wide range, but only studies where learning took place within the work context that evaluated well-being outcomes were included. This included learning processes and outcomes which were not necessarily recognized with formal accreditation. Whilst we recognize that a learning and training programme might not typically be classified as an intervention as such, it can be

understood in this way. For the purpose of the review, any study which constituted an evaluation of an introduced learning process was considered an intervention. This definition excluded evaluations of perceived learning opportunities or learning environment within organizations and their effect on well-being, unless there was an attempt to change the learning environment through an intervention. We were interested in the relationship between learning outcomes and well-being, but we also included studies which did not explicitly measure learning outcomes, but that constituted an evaluation of a learning process and its impact on well-being.

Comparators

We were interested in different types of learning which might influence well-being at work but did not intend to make comparisons between specific forms of work-based learning. Ideally, we wanted to be able to compare groups who had been subject to a learning intervention in the workplace with a control group, who had not received the learning intervention. We also included studies which compared the effects of two different work-based learning interventions (although there were very few of these) and studies that measured well-being before and after a learning process with no control group. Including these study designs enabled us to explore the impact of learning on well-being and to compare how different learning interventions effected well-being. However, we did not have preconceived notions of what type of training we would compare and its effects.

Outcomes

Studies were included if they measured a change in subjective well-being. We did not restrict inclusion to one specific well-being outcome measure, and this is reflected in the broad range of search terms (see the supplementary material[1]). Although our focus was on subjective well-being, an inclusive approach was important, given the lack of research which explicitly explores the links between learning and well-being outcomes. Only studies which used subjective measures, e.g., self-report surveys, or objective indicators, e.g., days of sick leave taken, of subjective well-being were included. Where studies measured learning outcomes, we also recorded these. We included studies on the basis of whether they evaluated a learning process and measured well-being outcomes. We were also interested in formal learning outcome was measured, but many studies evaluated learning interventions without clearly formalized measurement of learning outcomes. We also recorded other outcomes that studies identified as being related to well-being.

Study design

We included intervention studies only (e.g., randomized controlled trials [RCTs], quasi-experiments and before and after qualitative case studies of interventions) since these provided more certain evidence of causality than studies reliant on retrospective evaluation of participation in learning programmes and their effects.

Other

We did not restrict studies based on publication type, but only included peer-reviewed empirical research that met the criteria specified earlier in the initial title sifts. The rationale for this being that there was greater assurance of quality and rigour. We excluded any review papers from the systematic review itself (relevant review material was discussed in the introductory section) only including papers which contained original empirical research. We restricted searches to English language databases because the research team did not have the capacity to search beyond this. However, some papers not in the English language were identified in our searches, since they were indexed in English even though the full papers were not in English. Where such papers were identified, they were included provided they met the inclusion criteria. We were able to draw on colleagues to assist in screening foreign language papers and to extract data in the case of one paper which was included. We restricted our searches to research published in the previous 10 years 2006–2016. This decision was based on the view that more recent research will use more rigorous methodologies and recent data but will also incorporate important findings from previous research.

Search terms

The search terms were developed on the basis of the research questions and the inclusion/exclusion criteria detailed earlier. In addition, we ran dummy searches and consulted experts in the field of learning and well-being on our proposed search terms and search strategy. Based on this feedback and the test searches, we made some minor modifications and developed the final search terms for each of the PICOS areas which are detailed in the supplementary material. Although the search terms include some concepts that are likely to be related to well-being and salient to learning, such as self-esteem, confidence and self-efficacy, these terms were not treated as well-being outcomes. They were included in the search strategy to identify any studies, which measured subjective well-being alongside these related constructs. This approach was taken because we did not want to overlook studies which measured the impact of a learning intervention on subjective well-being, but regarded it as a secondary outcome. For example, if a study measured the impact of an intervention only on self-esteem, it was not included, but if it measured the impact on self-esteem, as a primary outcome and job satisfaction as a secondary outcome, then it was included. All citation data were downloaded using reference management software (EndNote X7.4), and searches were performed up to 14 April 2016 and targeted the following databases: EconLit; PsycINFO; PubMed Central (PMC); Web of Science; Scopus; Business Source Complete; Academic Search Complete; Education Resource Information Centre (ERIC); and British education index (BEI).

Study selection

The studies were initially screened according to the date published and publication type, returning results of 1896 titles which then needed to be screened according to the inclusion criteria. This was performed independently by two review authors; following this initial title sift, the research team screened the studies according to their abstracts. The abstract sift was preceded by a pilot sift of 50 abstracts (chosen at random) whereby three reviewers screened the abstracts and met to discuss any differences and ensure consistency of interpretation. After both the title and abstract sift, reviewers met to check reliability and discuss any disagreements. If a consensus could not be reached, the study was put through to the next screening stage. Cohen's Kappa ratings for both sifts represented good levels of agreement between reviewers (range 0.74–0.86). All studies that made it through the abstract sift were then assessed as full papers to ascertain whether they did meet the inclusion criteria. These were all screened independently by two members of the review team. The papers excluded at this stage were removed either because they were not a peer-reviewed publication or they did not meet inclusion criteria for a number of other reasons (see Figure 1), which the review team had not been able to determine in earlier sifts. Cohen's Kappa scores again indicated a good level of agreement between the two reviewers (0.68).

Some of the papers screened were not in the English language, and these were reviewed by colleagues with appropriate language skills in the same department as the review authors and discussed with them. One made it through to extraction (Zimber, Gregersen, Kuhnert, & Nienhaus, 2010) and was therefore reviewed by a German-speaking colleague. Out of the original search results 45 papers made it through to the data extraction phase of the review, although a further 4 were rejected in this phase, this left 41 papers which were included in the final review. These are listed and numbered separately in the

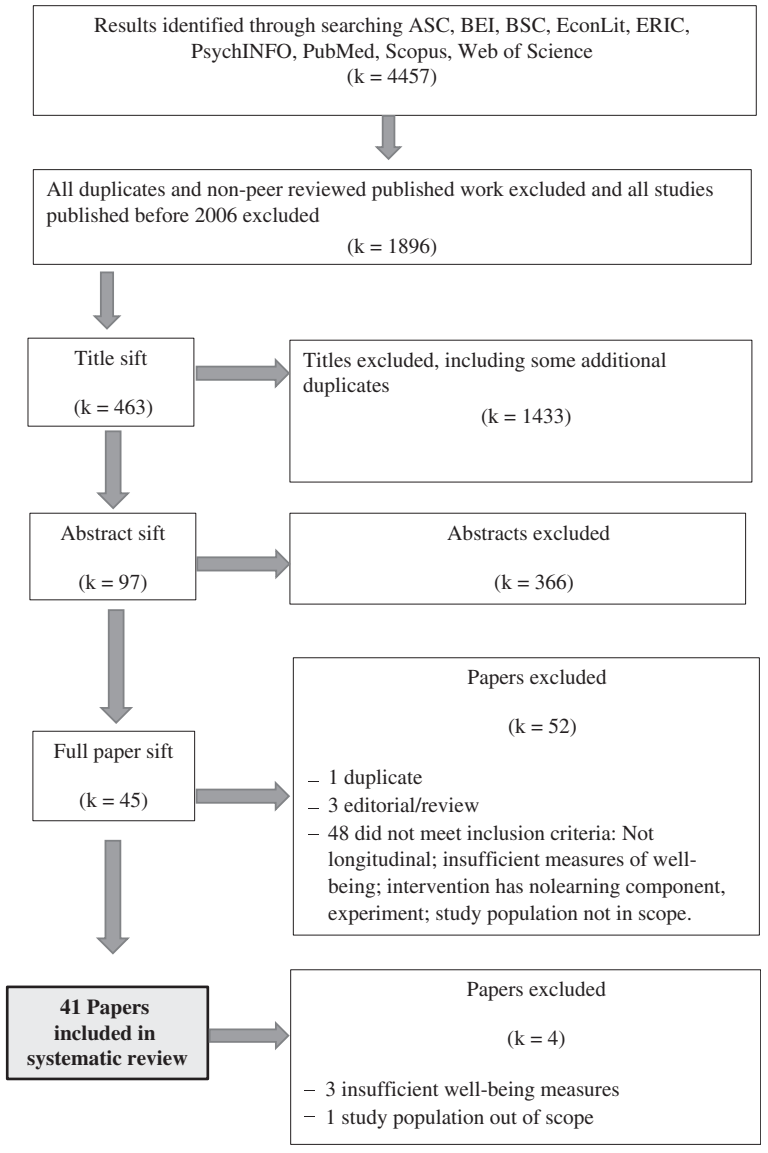

Figure 1. Flowchart of the search process for the review.

references section, and the numbers correspond to the tables detailing study details included in the supplementary material.

Data extraction

Data extraction sheets were designed to capture basic study details, e.g., title, authors and more detailed information about the nature of the learning process and key outcomes in relation to the study questions. These were piloted by all members of the review team prior to data being extracted, by taking one paper as a test case and discussing any differences in interpretation. The papers were then divided amongst three review authors and data were extracted independently. All data extracted were captured in excel spreadsheets to be interpreted for the findings of the systematic review. At the data extraction stage, the review authors also assessed the quality of each paper. Each reviewer had two papers double coded by another reviewer to ensure consistency of data extraction, and the reviewers met once again to discuss the findings and check consistency of data extraction.

Once all data had been extracted, the studies were categorized into different intervention types. They were summarized and reported in an evidence summary table, and the impact of different interventions was visualized using harvest plots (adapted from Ogilvie et al., 2008). A narrative review of the findings, evidence statements summarizing the evidence and quality ratings for the evidence (see next section) were drafted. The initial categorization was undertaken by one member of the team and then sense checked with the other team members, which resulted in further adaptations to the categorization and evidence statements.

Quality evaluation

The quality grading for the review findings was informed by guidance on complex interventions targeting well-being (Snape, Meads, Bagnall, Tregaskis, & Mansfield, 2016). This guidance sets out four categories of evidence: "Strong evidence", in which there is confidence that an intervention has an impact in stated group and context; "Promising evidence" which suggests an impact may occur but requires further investigation; "Initial evidence" which requires further investigation, and although an effect may occur, there is less confidence than for "promising evidence"; and "Very low-quality evidence" where there is insufficient evidence to make conclusions. Snape et al. (2016) developed these four categories of evidence from the GRADE approach specified in the Cochrane Centres handbook for quantitative studies (Higgins & Green, 2008) and the CERQual approach for qualitative studies (Lewin et al., 2015). The GRADE and CERQual approaches to rating evidence specify a range of factors that are considered in determining the strength of the evidence and therefore the effectiveness of interventions. Essentially the review team considered an intervention effective if it recorded a positive impact on well-being, but the evidence statements were underpinned by a consideration of the different factors outlined in Table 1. The review team used this guidance to evaluate the quality of the findings and the strength of the evidence, which is detailed in Table 2 which also details the justification for the evidence rating. Three members of the review team met to discuss and agree the evidence grading.

Table 1. Factors considered for rating the strength of the evidence.

GRADE

Factors which may limit the strength of the evidence:

- Study limitations
- Inconsistency of results
- Indirectness of evidence
- Imprecision
- Reporting bias

Factors which may enhance the strength of the evidence:

- A very large magnitude of effect
- A dose–response gradient
- All plausible biases would reduce an apparent treatment effect

CERQual

- Methodological limitations of the qualitative studies contributing to a review finding
- Relevance to the review question of the studies contributing to a review finding
- Coherence of the review finding
- Adequacy of data supporting a review finding.

Findings[2]

Broadly speaking, the 41 studies reviewed could be divided into learning or training that sought to directly impact on well-being and those which sought to have an impact on well-being more indirectly, through other learning processes. This distinction is not straightforward since interventions seeking to enhance professional or organizational competencies through learning interventions were also guided by the view that this would enhance employee well-being.

Stress management in the workplace can be understood using a framework which distinguishes between primary, secondary and tertiary interventions. Primary prevention is concerned with removing potential stressors, through job redesign for example. Secondary measures concentrate on individual responses to stress, such as meditation training, and tertiary measures constitute treatment for poor well-being or mental health, such as counselling (Nelson & Simmons, 2003). Whilst this is potentially a useful way of understanding well-being-focussed interventions in the workplace, we do not employ it here since not all of the interventions in the review aimed to address well-being as their primary objective.

Although a study's inclusion in the review was dependent on measuring the effects of an intervention on well-being, it was also dependent on it seeking to evaluate a learning process within the context of work and it is on the dynamic between learning and well-being the review focuses. However, in the case of some of the interventions, changes in well-being were treated as a measure of the effectiveness of a learning intervention. Of the 41 studies, 12 did not seek to measure learning outcomes that were distinct from well-being, simply measuring the effectiveness of the learning intervention by its impact on well-being outcomes (Abbott, Klein, Hamilton, & Rosenthal, 2009; Coogle, Head, & Parham, 2006; Flaxman & Bond, 2010b; Lloyd, Bond, & Flaxman, 2016; Mache,

Table 2. Summary of evidence statements and grade ratings.

Evidence statement	Quality rating and justification
1: Interventions focused on developing personal resources for well-being are effective regardless of the specific focus of the training. 22 studies (see supplementary Table 2(a) and Figure 3(a) in the supplementary material document for further details on individual studies).	*Strong evidence* – A high number of RCTs and studies showing positive results. However, many had relatively small sample sizes and lacked long-term follow-ups. Self-selection into the intervention group by individuals most likely to benefit and several studies which targeted at risk or vulnerable groups limit confidence in generalizability of finding.
2: Training focused on developing professional capabilities can produce positive well-being effects. Although training focused on developing professional capabilities may be more likely to have no effect rather than a positive impact on well-being, it is unlikely to have a negative impact. 10 studies (see supplementary Table 2(b) and Figure 3(b) in the supplementary material document for further details on individual studies).	*Initial evidence* – Although adverse effects are unlikely, the likelihood of positive well-being outcomes is too uncertain. More studies with larger samples and multiple and longer-term follow-ups needed to unpack issues around transfer and implementation of training.
3: Leadership training can be effective in improving well-being. Group-based learning which is more interactive is most likely to be effective for this form of training. 6 studies (see supplementary Table 2 (c) and Figure 3(c) in the supplementary material document for further details on individual studies).	*Initial evidence* – Inconsistent results and a small number of studies to support this finding. More work needed to understand transfer of training to supervisors themselves and their subordinates. Issues with implementation and uptake of training in some studies could limit well-being effects.
4: There is insufficient evidence to conclude how organizational-level learning interventions impact on well-being 3 studies (see supplementary Table 2 (d) and Figure 3(d) in the supplementary material document for further details on individual studies).	*Very low-quality evidence* – Further research needed. Very few studies exploring organizational learning and the complexity of interventions addressing this. Measuring the impact of organizational-level learning requires more empirical and conceptual work.
5: Learning processes that are predominantly online tend to be less effective than more extensive forms of learning in producing positive well-being outcomes 8 studies (see supplementary tables and Figure 3(e) in the supplementary material document for further details on individual studies).	*Initial evidence* – All studies were RCTs, but not consistent in their results. Studies showing no effect identify low uptake of training, partially due to learning process, and other factors such as organizational change and support of training as potential barriers. More work needed to understand the barriers to learning.

Vitzthum, Klapp, & Groneberg, 2015; Romanowska et al., 2011; Shonin, Van Gordon, Dunn, Singh, & Griffiths, 2014; Sutton, Williams, & Allinson, 2015; Taniguchi, Hirokawa, Tsuchiya, & Kawakami, 2007; Varekamp, Verbeek, de Boer, & Van Dijk, 2011; Williams, Brenner, Helms, & Williams, 2009; Zijlmans, Embregts, Gerits, Bosman, & Derksen, 2015). The rest of the studies measured both learning and well-being outcomes, although there was often a good deal of overlap between the two. For example, one study measured knowledge of stress control skills as a learning outcome and depression as a well-being outcome with the expectation that an increase in the former would translate into the latter (Kojima et al., 2010).

The studies were predominantly quantitative in their approach; 34 of 41 studies employed only quantitative methods, 6 were mixed-methods approaches (Biglan, Layton, Jones, Hankins, & Rusby, 2013; McGarrigle & Walsh, 2011; Morgan & Konrad, 2008; Nielsen, Randall, & Christensen, 2010; Stansfeld et al., 2015; Traeger et al., 2013) and one took a purely qualitative approach (Whiteside, Tsey, McCalman, Cadet-James, & Wilson, 2006). Although we were interested in both formal (i.e., recognized accreditation or qualification gained) and informal learning outcomes, only one intervention actually incorporated a formal learning outcome (Stansfeld et al., 2015), so we were unable to explore this dimension.

We present the studies included in the review in four different groups according to the focus of learning/training in the intervention. The predominant focus of learning determined its categorization, but these categories cannot be considered discrete, since there is some overlap between the groups, although we only include each study in one group. For example, we include in the first group of interventions, focussed on developing personal resources for well-being or coping with stress, an intervention that trained nurses in career identity skills (Yamagishi, Kobayashi, & Nakamura, 2008). The reason being that this intervention is primarily concerned with helping nurses to develop coping skills to deal with stressful workloads. Developing career identity skills is considered as a cognitive technique to more positively self-identify as a nurse and thereby foster personal resources to improve well-being. Therefore, whilst there is a professional development aspect to this intervention in terms of career goal planning, its primary focus was on personal resources for well-being.

Similarly in the second group of learning interventions, defined as addressing professional capabilities, there is some overlap with those focused on developing personal resources for well-being. One study evaluates a psychosocial intervention training programme for mental health staff with the expectation that this will improve professional practice and interaction with mental health service users and reduce burnout for staff (Redhead, Bradshaw, Braynion, & Doyle, 2011). Whilst it is hypothesized that the intervention will help staff to develop skills or resources to cope with stress, the primary focus is on professional development, and this is also the case in another intervention based on training to develop emotional intelligence (Zijlmans et al., 2015). This intervention focuses on staff working with people with intellectual disabilities and aims to better equip them to deal with challenging behaviour exhibited by individuals, by providing emotional intelligence training for staff. Whilst the intervention also aims to help staff deal with the stress they are likely to experience in this context, it does so through the provision of training to enhance their professional capabilities. Therefore, whilst interventions are categorized according to the primary purpose of the learning process, it is not straightforward to separate out learning aimed at enhancing well-being from learning aimed at enhancing professional capabilities since these two aims overlap to some extent.

In the case of the third group, learning interventions that constitute some form of leadership training, the interventions can also be regarded as having a dual focus on improving professional practice and well-being. However, these

interventions are more clearly distinguished by the aim of the training, which seeks to improve leadership behaviours and therefore impact on organizational and well-being outcomes.

The fourth group of interventions are distinguished by their aim to enhance organizational performance although there is some overlap with the other groups of interventions. Clearly, leadership training is intended to have an impact beyond the individual level. For example, one study in this group explores the impact of training to support transformational leadership on productivity as well as on well-being and leadership behaviours (Brown & May, 2012). We do not include this study in the fourth group of interventions focussed on organizational performance because the main aim of the learning intervention is to influence leadership behaviour. Where there is some overlap between categories of interventions, we discuss these effects in both relevant sections. However, we maintain a distinction between different types of learning intervention according to their primary focus on either developing personal resources for well-being; enhancing professional capabilities; developing leadership qualities and behaviours; and enhancing organizational performance.

The key findings for each group are summarized in an evidence statement accompanied by a quality rating to denote the strength of the findings and presented in Table 2. The first four evidence statements are supported only by the studies in the relevant group, although we do acknowledge that some interventions can be considered to overlap between categories as discussed earlier. The final evidence statement relates to the impact of the learning process on well-being outcomes, which we explored in studies across the different groups of interventions.

Personal resources interventions

Interventions which focussed on improving or developing personal resources to enhance well-being or cope with stress formed the biggest group of studies captured in the review. On the whole, the evidence is generally indicative that these kinds of interventions are associated with positive well-being effects. Only 4 studies of the 22 in this category produced no effect, and there were no negative effects.

The specific nature of training in effective studies was diverse: problem solving (Ayres & Malouff, 2007; Varekamp et al., 2011), psychological flexibility (Biglan et al., 2013), sleep training (Ebert et al., 2015), happiness training (Feicht et al., 2013), mindfulness approaches (Flaxman & Bond, 2010a, 2010b; McGarrigle & Walsh, 2011), cognitive behavioural therapy [CBT] (Kojima et al., 2010; Proudfoot, Corr, Guest, & Dunn, 2009), stress management (Lloyd et al., 2016; Umanodan, Shimazu, Minami, & Kawakami, 2014), resilience training (Mache et al., 2015), meditation awareness training (Shonin et al., 2014), relaxation training (Taniguchi et al., 2007), psychosocial skills training (Traeger et al., 2013), empowerment (Whiteside et al., 2006) and coping skills (Williams et al., 2009). The diversity of approaches reporting positive effects suggests that the particular focus of this kind of training is not that important. Two studies sought to compare particular approaches: one compared two types of mindfulness training (acceptance and commitment therapy and stress inoculation training), but recorded no significant difference (Flaxman & Bond, 2010a). Another found CBT to be less effective than mindfulness training although both had a positive effect (Proudfoot et al., 2009).

The large number of studies and wide range of designs including many RCTs gives a high degree of confidence that this kind of learning intervention is strongly associated with positive well-being effects. There were 14 RCTs (1 cluster RCT and 1 including a qualitative element), 4 were non-equivalent control group designs and 4 were pre-post-test only, with no control group.

Evidence Statement 1: Interventions focussed on developing personal resources for well-being are effective regardless of the specific focus of the training.

This finding is perhaps unsurprising, given the conclusions of previous meta-analyses that have looked at similar interventions (Richardson & Rothstein, 2008; Spijkerman et al., 2016). In terms of the type of well-being outcomes being measured, there was a wide range of subjective well-being measures used across the studies, along with indirect well-being-related measures. We did not detect any particular association between the efficacy of interventions and the particular measures of well-being used. The choice of measure seemed to be shaped by the focus of the intervention and the population in the study. Therefore, many of the well-being measures in this group of studies were very direct measures of individual well-being, stress or affective states, such as depression (Abbott et al., 2009; Biglan et al., 2013; Ebert et al., 2015; Kojima et al., 2010; Williams et al., 2009; Yamagishi et al., 2008), stress (Abbott et al., 2009; Biglan et al., 2013; Feicht et al., 2013; McGarrigle & Walsh, 2011; Shonin et al., 2014; Tregaskis et al., 2013; Umanodan et al., 2014) and psychological distress (Mache et al., 2015; Proudfoot et al., 2009; Umanodan et al., 2009). Given the work context of the population, and a focus on addressing stress in the workplace, many of the intervention studies used job satisfaction (Ayres & Malouff, 2007; Biglan et al., 2013; Mache et al., 2015; Proudfoot et al., 2009; Shonin et al., 2014; Umanodan et al., 2014) and burnout (Biglan et al., 2013; Lloyd et al., 2016; Traeger et al., 2013; Varekamp et al., 2011) as well-being measures to assess the efficacy of the training.

Other well-being measures were used alongside those detailed here, and we do not discuss these at length because there did not seem to be any relationship between the efficacy of an intervention and the measure used. One study in this group evaluated the effect of a personal development programme focussed on improving staff well-being using empowerment as an outcome (Whiteside et al., 2006). This was treated as a well-being outcome because the study conceptualized increased feelings of self-worth as a key constituent of personal empowerment and evaluated this using qualitative methods. We considered a study to be effective if one or more indicators showed a statistically significant and

positive improvement in the well-being, or qualitative evidence that was valid and reliable, reported improved well-being and no negative effects were found.

Despite the high number of causally strong RCT designs, there are some considerations which might limit the generalizability of the evidence of the effectiveness of interventions in this group. First, the length of follow-up tended to be short, and only five studies showing a positive effect had a follow-up of 6 months or more (Biglan et al., 2013; Flaxman & Bond, 2010b; Lloyd et al., 2016; Varekamp et al., 2011; Williams et al., 2009), of these two had a top-up training session two months after the main training period had finished (Flaxman & Bond, 2010b; Varekamp et al., 2011). One of these studies had numerous follow-ups extending to 24 months post-training and was also an RCT giving very robust evidence of the longevity of effectiveness (Varekamp et al., 2011). The nature of the intervention though was quite specific and targeted a population particularly vulnerable to low well-being at work: Problem-solving learning aimed at addressing job maintenance for employees with chronic conditions. Only one other intervention implemented problem-solving training, and this was also work focussed and specifically geared towards employees with low job control (Ayres & Malouff, 2007). This intervention was also highly effective, but the follow-up only extended to 1 month. One example of a particularly short follow-up was an intervention where both control and intervention groups received a lecture about stress and the intervention group then received a further 10-min relaxation training exercise (Taniguchi et al., 2007). The only follow-up was immediately post-intervention and indicated a positive impact, but without longer follow-ups, it is difficult to assess how worthwhile such training is.

Another potential limitation is that the populations targeted by the interventions are particularly receptive to this kind of training, which might not be generalizable more widely and may be limited by ceiling effects. Interventions expressly focussed on developing personal resources for well-being tended to be targeted towards high-stress occupations (Biglan et al., 2013; Mache et al., 2015; Traeger et al., 2013), individuals already identified as exhibiting signs of stress (Ebert et al., 2015; Flaxman & Bond, 2010a; Proudfoot et al., 2009) or populations thought to be at risk of experiencing lower well-being (Ayres & Malouff, 2007; Lloyd et al., 2016; Varekamp et al., 2011). These kinds of interventions were also liable to encourage self-selection into the intervention on the basis of individual need, and the likely amplification effect of this was noted by one study (Flaxman & Bond, 2010b). Another study also noted an association between completion of the training and lower well-being scores at baseline (Umonadan et al., 209). This association indicates a potential bias through dropout rates, in addition to self-selection, which might further amplify positive effects on well-being. One further consideration is that many of the interventions were conducted by the authors of the studies (see, for example, Flaxman & Bond, 2010a, 2010b; McGarrigle & Walsh, 2011; Shonin et al., 2014). One of these studies evaluated the impact of a commercial coping skills training programme with members of the organization who delivered it also taking part in the evaluation. This does not mean we should reject the findings of these studies, but these potential conflicts of interest should be noted.

Looking at the interventions where there was no effect (Abbott et al., 2009; Sutton et al., 2015; Umanodan et al., 2014; Yamagishi et al., 2008) also suggests the need to be cautious in concluding that these types of training interventions are universally effective. Three studies showing no effect used online, computer-based methods which involved self-directed learning (Abbott et al., 2009; Umanodan et al., 2014; Yamagishi et al., 2008), one also included some offline support, but this was not really utilized (Abbott et al., 2009). This study had a high attrition rate which not only limits confidence in findings, but also suggests that uptake of the training was low. This is also indicated in one of the three studies with a much larger sample (Umanodan et al., 2014) which observed that many of the components of the learning process were only completed very close to the end of the course rather than at weekly intervals as intended.

The clustering of learning towards the end of the course meant that there was potentially a lack of time to put the learning into practice, particularly as follow-up measures were recorded shortly after the course finished. This late completion of the training also suggests that engagement was low; participants completing training at the last minute, as an obligation. The other intervention using online training also did not produce significant effects (Yamagishi et al., 2008). The other study showing no effect was of an intervention which implemented one-off workshops in two types of self-awareness training (Sutton et al., 2015). This had an unusual methodological design that made it difficult to discern the control comparison condition as an appropriate counterfactual and a convenience sampling strategy, both factors which limit confidence in findings.

Methodological considerations and a low number of studies with no effect (only 4 of 22) mean that although we should not assume these types of learning approaches are universally effective, the evidence is strong that in many situations, there are benefits for well-being. The studies showing no effect also indicate the importance of the learning process: Online individualized training may not be as effective as more interactive and extensive group-based learning. Although it should be noted that other studies evaluating short training interventions reported positive effects (Flaxman & Bond, 2010a; Kojima et al., 2010; Taniguchi et al., 2007; Traeger et al., 2013), so it may not be a decisive factor or the only decisive factor.

Three other studies included internet-based components of training, but this was generally part of a more blended approach to learning: A happiness training intervention guided learners via weekly emails, which also set homework for self-directed study (Feicht et al., 2013); a CBT training intervention which used group-based teaching and discussion alongside email-directed study (Kojima et al., 2010); and a sleep training intervention that was predominantly online but also included a diary element which was self-directed (Ebert et al., 2015). This intervention was aimed at people with sleep problems, so it is also likely the benefit of participation for individuals who would have engaged them regardless of format. This underlines

the earlier point that the effects of interventions which focus on personal resources for well-being are at least amplified if targeted to groups more in need and therefore more likely to benefit. The effectiveness of online learning processes is something which also came to light in the findings on leadership-focussed training. Consequently, we explore this further in the final section of this narrative analysis.

Professional learning interventions

This group of interventions is almost evenly split in terms of their effects, four having a positive effect and six having no discernible effect on the well-being outcomes measured. The evidence for no effect is stronger since it contains more RCTs as well as more studies, but this is relatively marginal. In total, there were three RCT designs in this group, all with no effect, three pre-post-test only with no control group design (one of which had no effect on well-being) and a further four studies with non-equivalent control group designs, two of which had a positive impact on well-being.

All, except one, studies (Butow et al., 2008) affected learning outcomes, although two studies did not distinguish between learning and well-being outcomes (Coogle et al., 2006; Zijlmans et al., 2015). This lack of distinction indicates that although this group of interventions was focussed on developing work competencies, there was overlap with well-being – some were well-being focussed, but sought to influence it by developing professional skills. Studies sought to improve well-being alongside work skills through conflict management training (Leon-Perez, Notelaers, & Leon-Rubio, 2016), psychosocial intervention training (Redhead et al., 2011) and workforce development to equip staff to deal with stress (Zimber et al., 2010).

The work settings where the interventions were carried out are likely to be a key factor in the high degree of overlap between well-being and professional capabilities. All took place among health, mental health or social care, all settings where work necessitates a high degree of empathy and interpersonal and interactional skills which require emotional awareness and understanding. Many of the learning processes targeted communication and interaction skills (Butow et al., 2008; Clayton et al., 2013; Leon-Perez et al., 2016; Morgan & Konrad, 2008; Redhead et al., 2011; Zijlmans et al., 2015), which sought to facilitate emotional intelligence or understanding.

As might be expected with training geared towards professional development in the workplace, the well-being measures used in the studies tended to be work related; job satisfaction (Coogle et al., 2006; Hugenholtz, Schaafsma, Nieuwenhuijsen, & Van Dijk, 2008; Jones, Tyrer, Kalekzi, & Lancashire, 2008; Morgan & Konrad, 2008; Zimber et al., 2010) and burnout (Butow et al., 2008; Clayton et al., 2013; Jones et al., 2008; Redhead et al., 2011) were the most common measures along with some objective measures; absenteeism (Leon-Perez et al., 2016) and turnover (Clayton et al., 2013) were measured in two studies. The study measuring absenteeism used this as the only indicator of well-being. One other study in this group measured the effects of an emotional intelligence training, designed to improve staff-client interaction, by evaluating its impact on affective aspects of well-being. The study used emotional intelligence as the main outcome, which included general mood (Zijlmans et al., 2015). We considered general mood to be an affective measure of well-being, and the study also included measures of emotional reactions, such as depression and anxiety, and was specifically interested in the effect of emotional intelligence on the general functioning and well-being. As with the last group of interventions, there did not seem to be any observable relationship between the effects of interventions and particular outcomes or measures used. Therefore, we do not report in detail here the effects on specific well-being outcomes used; this information can be found in the supplementary summary tables.

It is difficult to identify precisely the determining factor which produced positive results for well-being compared to no effect. The learning processes implemented by the interventions are broad ranging and not clustered in any particular way. Likewise, follow-up periods are highly variable, and there does not seem to be any particular pattern here which might explain null results for well-being outcomes. The sample size of the studies could potentially be a contributory factor. Several studies had relatively small sample sizes and produced no effect (Butow et al., 2008; Clayton et al., 2013; Hugenholtz et al., 2008; Redhead et al., 2011), although one study with a small sample recorded significant positive effects on well-being (Jones et al., 2008). Furthermore, two studies that had no effect had larger samples (Morgan & Konrad, 2008; Zimber et al., 2010).

In the case of these two studies with larger samples, there were also contextual factors that could have played a role in the effectiveness of the intervention. The occupational group had a very high staff turnover in one study and the intervention took place at multiple sites with quite differential results (Morgan & Konrad, 2008). At one site, the intervention appeared to precipitate resignations, suggesting issues with implementation and/or receptiveness to the intervention. The other study with a large sample that produced no effect drew data for control and intervention from different sites and that may have influenced effects; there was also no longer-term follow-up of the control group making comparison difficult (Zimber et al., 2010). In addition, the impact measured by learning outcomes was quite marginal.

The focus of the intervention also appeared to have no influence on results, with interventions focused just on improving work- or task-related factors seemingly just as likely to produce no effects on well-being as those with a focus on improving well-being through professional skill development. Four interventions with null effects on well-being had work as the primary focus (Butow et al., 2008; Clayton et al., 2013; Hugenholtz et al., 2008; Morgan & Konrad, 2008) compared to three interventions with positive effects with a focus on work (Coogle et al., 2006; Jones et al., 2008; Zijlmans et al., 2015). Two interventions with a twin focus on work and well-being had null effects (Redhead et al., 2011; Zimber et al., 2010) compared to one study with dual focus that showed a positive effect (Leon-Perez et al., 2016).

One other potential contributing factor to the lack of effect in some of the studies is the particular professional group the intervention is applied to; three of the study populations with smaller sample sizes were aimed at medical doctors (Butow et al., 2008; Clayton et al., 2013; Hugenholtz et al., 2008). This is a high investment career that is generally well paid where job satisfaction is likely to be already high potentially producing a ceiling effect and confounding any well-being effect, as identified in one study (Hugenholtz et al., 2008). Two of these studies measured stress and burnout, but observed no effects in those outcomes (Butow et al., 2008; Clayton et al., 2013). The other study with a small sample which produced no effect overall showed differential effects for qualified and unqualified staff (Redhead et al., 2011). Unqualified staff experienced increased stress versus a decreased stress in qualified staff, following the training, although both effects were small. It is not possible to make any definitive evidence statement regarding occupation and the impact of learning on well-being, although the findings suggest that this needs to be considered in understanding the likely well-being impact of training.

In summary then we can say that professional-focussed training does not adversely affect well-being and it may well produce positive effects, but this is not assured. Given that this kind of training does not only target well-being, any benefits to well-being might be regarded as a positive side effect of training required for professional and organizational capabilities.

Evidence Statement 2: Training focussed on developing professional capabilities can produce positive well-being effects. Although training focussed on developing professional capabilities may be more likely to have no impact rather than a positive impact on well-being, training focussed on developing professional capabilities is unlikely to have a negative impact.

One major caveat to this statement is that this finding is limited to the organizational context which all of these studies are restricted to, health/social care. Such contexts are often characterized as demanding and stressful and are also heavily regulated and institutionalized. It may be that training for professional capabilities may have limited impact on well-being in such circumstances because issues related to work demands or institutional inertia override any potential benefits to well-being. This also points to a gap in evidence, namely that other organizational sectors where professional learning interventions have been implemented do not tend to record the well-being impact of the interventions or at least these were not identified in our review.

Leadership interventions

Overall, the evidence on leadership training is not conclusive, half of the studies had a positive effect (Nielsen et al., 2010; Odle-Dusseau, Hammer, Crain, & Bodner, 2015; Romanowska et al., 2011), but half had no effect on well-being (Brown & May, 2012; Kawakami, Takao, Kobayashi, & Tsutsumi, 2006; Stansfeld et al., 2015). Two of the studies which had no effect on well-being were online, self-directed forms of learning (Kawakami et al., 2006; Stansfield et al., 2015), the latter of which had no significant effect in terms of learning outcomes either. This is consistent with findings amongst the first group of interventions focussed on developing personal resources for well-being, where null results were associated with online training.

The other leadership training which had no effect showed increased transformational leadership behaviour and increases in employee satisfaction with supervisor, but this did not translate into improved well-being (Brown & May, 2012). This study also recorded increased performance, measured objectively, and it is possible that this may have increased job strain which may have offset any increase in well-being, although this was not measured. The follow-up measurement point was also much further from the training intervention than the other two studies which reported no effects (11.5 versus 3 months) which may be significant and the design did not include a control group for comparison. Like the group of interventions directed at professional learning, the interventions focussed on leadership measured well-being in relation to work. Three studies measured job satisfaction (Brown & May, 2012; Nielsen et al., 2010; Odle-Dusseau et al., 2015), one measured psychosocial distress of workers (Kawakami et al., 2006) and the other two studies included measures of psychological well-being, including job strain (Stansfield et al., 2015) and emotional exhaustion (Romanowska et al., 2011). As with the other groups of interventions, there was no discernible association between the type of well-being outcomes used and the efficacy of the interventions.

All of the studies producing positive well-being effects involved learning which was group based and more interactive and reflective (Nielsen et al., 2010; Odle-Dusseau et al., 2015; Romanowska et al., 2011). Two of the interventions also constituted longer and more involved training (Nielsen et al., 2010; Romanowska et al., 2011). Of these two interventions, one consisted of training managers to foster teamwork and how to embed this in their work practice (Nielsen et al., 2010) and the other compared two types of leadership training: Improving leadership through art-based training, exposing leaders to artistic performance and materials followed by reflection and was compared with "conventional" leadership training drawing on organizational theory including transformational leadership (Romanowska et al., 2011). In contrast, the third study which had a positive impact on well-being was a workshop, aimed at reducing work–family conflict amongst employees by training managers in family supportive behaviour (Odle-Dusseau et al., 2015). Although this was a one-off workshop, the intervention also included distribution of material for self-directed monitoring of the implementation of training.

The success of this intervention is notable in comparison to the two self-directed web-based training interventions which produced no result (Kawakami et al., 2006 & Stansfield et al., 2015) since all three aimed to enhance well-being of employees by training supervisors to recognize and better support their subordinates well-being and involved predominantly self-directed learning. The interactive group learning at the beginning of the training along with supporting materials may

be a decisive factor in enhancing the success of self-directed training in comparison to purely web-based training. That the intervention training managers in family supportive behaviour was successful despite its brevity is noteworthy, particularly if cost-effectiveness of interventions is a consideration. The large sample size and relatively long-term follow-up (10 months) enhance confidence in the findings of the study, although it lacked a control group. Positive effects at a longer-term follow-up might be considered to evidence a more effective training programme, but it is also observed in one study that a longer follow-up is likely to be needed to allow time for training effects to be embedded and transferred from supervisors to employees (Kawakami et al., 2006).

The other study that showed no significant effect on well-being outcomes (Brown & May, 2012), but could be regarded as effective in terms of the positive outcomes in leadership behaviour and productivity. These effects suggest that there is a balance to be struck between worker's well-being and other desirable organizational outcomes. Clearly, organizational context remains important, as noted by Stansfield et al. (2015). Stansfield et al. cite a climate of major organizational change, job insecurity and high stress/demands as potential reasons why the learning intervention was not successfully implemented, as evidenced by high attrition rates. In summary, none of the interventions produced negative effects, and half were effective in enhancing well-being. The evidence for the impact of this type of learning on well-being is therefore quite weak, particularly as the three studies showing no effect were the strongest design – RCTs. The remaining studies showing positive effects on well-being were two non-equivalent control group designs and one pre-post-test only with no control group design.

Evidence Statement 3: Leadership training can be effective in improving well-being, and group-based learning which is more interactive is most likely to be effective for this form of training.

One final point of consideration is the impact of this kind of training on leaders or supervisors compared to those they manage. Clearly, the number of subordinates involved in each intervention exceeded the number of managers, but for most studies, the overall number of leaders receiving training was too small for any meaningful separate analysis. Therefore, the main effects of the interventions were measured on subordinates or subordinates combined with leaders, and it was not always clear how this was separated out in the analysis, although no studies noted differential effects. It is not possible therefore to say anything about the different magnitude or nature of effects of the intervention on subordinates in comparison to leaders, although this may well be something worth exploring through further research.

This group of interventions could be perceived as overlapping with the next group of interventions that are defined as learning interventions focussed on organizational performance. However, whilst some of the interventions described in this group clearly sought to improve organizational performance (alongside other goals), they did not all have this explicit aim, but they all sought to train leaders, supervisors or managers. The effects of such interventions then are intended to go beyond the individual, even if they are targeted at individuals. The interventions in the next group are even broader in their reach, aiming to address organizational performance through learning interventions applied at an organizational level.

Organizational interventions

Interventions which focussed on learning directed at organizational performance and applied at an organizational level were complex, and although learning was a key component, all three of the studies in this category incorporated other components in the intervention. One study measured the impact of the intervention using a well-being at work scale comprised of a range of other measures and scales that included affective well-being (Kanste, Lipponen, Kaariainen, & Kyngas, 2010) and the other two studies measured well-being via job satisfaction (Kiedrowski, 2006; Roth, Markova, Monsur, & Severson, 2009).

Two of the interventions took place against a challenging organizational context (Kanste et al., 2010; Kiedrowski, 2006). It is not clear to what extent the context determined the impact of the interventions, but both had no significant effect on well-being despite indications that the learning process had an effect, as measured by other variables. In the study which did show a positive result, increased job satisfaction and an enhanced learning environment were associated with a teamworking intervention which incorporated training and aimed to enhance the learning environment in the organization (Roth et al., 2009). However, the strength of this finding is limited by the study design which did not include a control group and did not match individual-level data in the pre- and post-surveys. There were salient differences between this positive result and the two studies which observed no major change in well-being.

In one case, the intervention took place over two years, and although some changes were recorded in attitudes to work, this networking intervention, which sought to improve peer-to-peer learning, had no significant impact on well-being (Kanste et al., 2010). Methodological limitations may have contributed to this null result since there was no randomization and attrition rates suggests low uptake and limited implementation of the intervention. This intervention was driven by the need to foster professional networks in an isolated rural organizational setting, which posed challenges for organizational performance and worker well-being. The other intervention studied, which produced no significant impact on well-being, was also driven by poor organizational performance and low morale. The intervention which sought to transform an organization into a "learning organization" took place as part of a process of major organizational change including major restructuring and job losses (Kiedrowski, 2006). Therefore, it is difficult to attribute the lack of positive result in either case to the effectiveness of the learning interventions when both took place in challenging circumstances for the organizations concerned.

Two other studies from other categories sought to measure effects at the organizational level (Brown & May, 2012; Whiteside et al., 2006). The latter was an intervention seeking to improve personal resources, and it recorded the impact of training on empowerment using qualitative data. The intervention was predominantly focussed at the personal level, but also sought to capture the extent to which training had enhanced empowerment at the group and organization level. The other study was a leadership training intervention (Brown & May, 2012). Neither produced any effects on well-being at the organizational level although the leadership training was associated with increased performance, measured objectively. The evidence on organizational-level learning interventions is very limited, but it suggests that these interventions are not reliably effective in enhancing well-being, despite them having an impact on other measures. The low number of studies exploring organizational learning interventions and methodological limitations of those studies mean that our confidence in the evidence is very low. None of the studies were RCTs, and whilst the longer follow-up measures employed might be regarded as an advantage, this is not necessarily the case. Given the multiple organizational processes that can affect well-being particularly over a longer time period, this further lessens confidence that any well-being effects can be attributed straightforwardly to learning processes.

Evidence Statement 4: There is insufficient evidence to conclude how organizational-level learning interventions impact on well-being.

The lack of studies and inconsistent results in those identified by the review suggest the need for much more work to uncover how learning interventions applied at or above organizational level are linked to well-being. These kinds of interventions might also be considered as attempts to influence non-formal or informal learning through changes to the organizational environment to enhance both well-being and organizational performance. What the findings highlight is the difficulty in not only achieving this, but also in understanding the impact of interventions where numerous other factors and processes play a role in shaping learning and well-being outcomes. However, the one intervention that was successful in effecting well-being in this group suggests that there is potential for learning interventions applied at this scale to make a substantive difference to employee well-being. Notably, this intervention was not initiated in a particularly challenging organizational context, nor was it motivated by the desire to address low well-being or poor organizational performance, although it was expected that it would have a positive effect on both.

Learning process features

In reviewing the studies clustered in the first and third groups of interventions – those with a focus on developing personal resources or leadership training for well-being – it was noted that learning processes that were online seemed to be less effective. Consequently, we explored those interventions which utilized online methods comparing their effects on well-being.

In total, there were eight studies that used online methods, all of which were RCTs (Abbott et al., 2009; Ebert et al., 2015; Feicht et al., 2013; Kawakami et al., 2006; Kojima et al., 2010; Stansfield et al., 2015; Umanodan et al., 2014; Yamagishi et al., 2008). Only three had a positive effect on well-being and learning (Ebert et al., 2015; Feicht et al., 2013; Kojima et al., 2010) and five having no effect on well-being (Abbott et al., 2009; Kawakami et al., 2006; Stansfield et al., 2015; Umanodan et al., 2014; Yamagishi et al., 2008), despite three of those studies (Kawakami et al., 2006; Umanodan et al., 2014; Yamagishi et al., 2008) recording some positive impact of the learning process. This is a comparatively small number of studies, but if we look at the learning processes of the successful interventions, it is evident all employed online processes of learning alongside more extensive learning processes, such as group discussion or further self-directed exercises – "homework". Interventions also included prompts from facilitators and supervisors to continue with the training; however, this was also the case for some of the unsuccessful interventions.

One intervention tried to further incentivize participants by offering professional accreditation as part of the training (Stansfield et al., 2015). This study was the only study to offer a formally recognized learning outcome, by way of a certificate, but this produced no effect on either well-being or learning. Contextual factors seemed to play a major role in acting as a barrier to the intervention here, stressful working conditions and a lack of time and support for the training in particular. Whilst some of the studies, which had no positive effect on well-being, did utilize more extensive methods, other factors could also been influential. However, none of the interventions which were restricted to purely online methods were successful in impacting on well-being. All of the interventions targeted well-being as an outcome of the learning process, so an insufficient focus on well-being in the learning cannot be considered a decisive factor.

Evidence Statement 5: Learning processes that are predominantly online tend to be less effective than more extensive forms of learning in producing positive well-being outcomes.

Although the evidence suggests that online learning may not be as likely to be effective, it should be noted that there were successful interventions that incorporated online elements. Furthermore, many of the interventions used self-directed processes of learning, so that provided online modes of learning are targeted and supported in the right way they have the potential to be effective. Our confidence in this evidence statement is quite low because the results are inconsistent and there are other factors (i.e., stressful working conditions and lack of time or support for training) that are likely to also play a role in defining the success of the learning process.

Examining the features of non-online learning processes captured in the review suggested that processes of group-based leaning which involved multiple face-to-face sessions, usually spread over a period of time, with a trainer and with other learners were particularly effective. The design of these

courses built in new knowledge but were also interactive, enabling learners to reflect and to put this knowledge into practice. Tailoring or adjusting the course content to the work context and needs of the learner were both identified as important levers of success. Thus, these successful learning processes demanded high commitment from the learners and from the course designers, as such the costs would be higher than standard off-the-shelf courses or one-off events. However, there were also examples of quite short learning interventions with relatively little contact time or specialist input, indicating this kind of learning process can be successful, but careful consideration of design and implementation is likely to be needed to guarantee success. It is notable that, with one exception, none of the learning and development courses that measured well-being and learning outcomes was designed to award leaners with an accredited certificate/qualification. This hampered our ability to comment on the relationship between formal learning outcomes and well-being outcomes, although most of the interventions constituted formal learning processes.

Conclusions and implications

The review gathered evidence of the impact of workplace learning interventions on well-being. Bringing together the findings from 41 studies, it identifies the way in which different forms of learning in the workplace can have a positive impact on well-being. However, it also underlines a need for further studies of varied learning processes, in different sectoral contexts and with different occupational groups to further understand their implications for learning and well-being. The need for more and better evidence on the relationship between learning and well-being in the workplace is arguably the most significant finding of the review. Undoubtedly, there are numerous forms and types of learning that take place in the workplace, but it seems relatively few which measure well-being alongside learning. Where we did uncover evidence on work-focussed learning and its impact on well-being, this was very much limited to work settings where well-being is a fundamental aspect of work.

Implications for further research

The quality and depth of the evidence on interventions focussing on training to develop personal resources for well-being demonstrate that this kind of learning is beneficial for employees' well-being. Although there were no studies reporting negative effects on well-being, some interventions showed no effect, highlighting the importance of engaging the learner in the training and attention to contextual factors that may override or nullify any positive effect. There are numerous studies of this kind of intervention; although not always explicitly understood as a learning intervention, they typically involve training individuals to identify sources of stress and how to cope or manage these (see, for example, Querstret et al., 2016; van der Klink et al., 2001). Despite the review identifying a number of different approaches to learning to develop personal resources for well-being, it was not clear that one particular approach was more successful than another. Studies which compare different training approaches (see Flaxman & Bond, 2010a) are useful, but the review findings highlight that that future research would also be well directed at addressing questions around the relationship between the learning process and the outcomes, for example, regarding the difference between online and more extensive learning methods (Baumeister, Reichler, Munzinger, & Lin, 2014). Is the same type of intervention effective if delivered using different methods and what would this tell us about the learning process and its impact on well-being?

Also identified in the review was a short follow-up period for interventions consisting of training to develop personal resources for wellbeing. Therefore, research which looks to understand the longer-term well-being benefits would be informative, especially as some studies in the review suggested that a lack of significant effect might be due to insufficient time for the training to take effect because of a relatively short follow-up (Abbott et al., 2009). Further research might also do more to investigate which forms of personal resources training are more effective, since the review found many different approaches to have a positive impact on well-being. Alongside well-being outcomes, many studies in the personal resources group used other outcome measures or specific psychological constructs to demonstrate that well-being effects were directly supported by the training. It is therefore unlikely we can attribute increases in well-being to the experience of simply participating in interventions, regardless of their particular approach. Many of the studies recruited participants through self-selection or directly targeted a group identified as having a particular well-being need; furthermore, many also reported significant dropout and attrition rates. The ability then of individuals to take up training suited to their particular needs may be a crucial factor in the success of a range of learning approaches to supporting personal resources for well-being. It would therefore be beneficial to develop interventions that facilitate access to a wide range of approaches and study the effects of this as well as attempting to understand the criteria that influence individuals' selection of training.

Studies which expose individuals to training that are not tailored to a particular well-being need would also advance our understanding of the effectiveness of these kinds of interventions amongst the wider population. The review identified very few studies like this, although one study which was effective provides some initial evidence that learning to develop personal resources for well-being may be effective beyond specific groups/individuals experiencing or liable to experience stress. A problem-solving training intervention for flight attendants was effective, showing marked improvement in a range of well-being outcomes as well as problem-solving skills and efficacy (Ayres & Malouff, 2007). Although the authors of the study characterized flight attendants as an occupational group who experience low job control, the study population was not classified as experiencing stress beyond normal levels. What is also notable about this study is that the intervention sought to develop problem-solving abilities that flight attendants could use outside of their working life, aiming to increase life satisfaction as a way of influencing job satisfaction, whereas more typically interventions

tend to primarily address work-related well-being only. Further research to establish the benefits of learning programmes which help individuals to develop personal resources to support well-being in a more general sense might also be worthwhile. Enhancing well-being more generally could also enhance job satisfaction, which is likely to be beneficial to organizations as well as individuals.

The incorporation of this kind of training into occupational health services is to be welcomed, since they can be effective in relieving stress, particularly given the high incidence of mental health problems and their effect on absenteeism and reduced productivity. However, it does raise some questions, if training that protects and enhances personal resources for maintaining well-being is to become more commonplace; understanding how long lasting its effects are and whether these hold for repeated exposure to interventions will also be important.

There is also a danger that such responses to maintaining employees' well-being ignore more macro, structural causes of poor well-being both in the workplace and beyond. For instance, job insecurity is highly detrimental to well-being (Witte, 1999; Nikolova et al., 2014); therefore, focussing on the provision of personal resources training at the expense of addressing job insecurity would be ill advised. The limitations of improved access to psychological therapies more generally have been highlighted elsewhere (Marzillier & Hall, 2009), and there is evidence that training for personal well-being resources may be more effective if coupled with improvements in job design (Daniels Gedikli, et al., 2017). However, it is clear from this review that training directed at improving personal well-being resources can be effective in the short term and particularly for self-selected groups suffering stress.

Studies included in the review looked at a wide range of learning processes; all of these can be regarded as formal in the sense that they involved an organized programme of training or learning, albeit some of these were self-directed. However, there was only one intervention that offered a formal learning outcome as a result of the learning process. Whilst the review recognizes the importance of the non-formal outcomes of the learning process, understanding the impact of formal learning outcomes is likely to be important. Evidence has pointed to the importance of learning at work for future employability (van der Heijden, Gorgievski, & De Lange, 2016). In light of this, formal learning outcomes in addition to wider benefits of the learning experience may well be important in realizing well-being through work-related learning.

Around half of the studies came from the health or social care sector. This is perhaps unsurprising, given the caring nature and well-being-focussed outcomes of work in this sector. What is more surprising is that there is such little focus on the well-being outcomes of learning outside of this sector. Where studies did seek to measure well-being impacts of learning in other sectors, it was because the learning was well-being focussed in some way. This underlines a big gap in research, which limits our understanding of the impact of learning. There is a real need for studies which measure well-being outcomes alongside learning, which is not explicitly well-being focussed, to better understand its impact. Although the studies evaluating learning interventions focussed on professional skills were limited to particular contexts, the evidence indicates that these kinds of interventions could be effective more widely, but further research is necessary.

Successful learning interventions need not be purely focussed on well-being as the review demonstrates. Employee well-being is a major focus for research as is training and development, but there is a paucity of intervention studies which connect the two, which represents a major gap in research. As noted in the introductory sections, there is a good deal of evidence which suggests that learning aiming to develop professional competencies at work is likely to benefit well-being. There is also evidence that leadership interventions can also be effective in this regard (Kelloway & Barling, 2010). Although the studies included in the review lend further support to this evidence, further analysis of interventions would be beneficial.

Many, but not, all of the studies measured learning outcomes. However, the link between learning outcomes associated with specific training interventions and the development of work-based competencies was not well explored. Further intervention studies which are longitudinally evaluated will be useful in understanding the extent to which learning opportunities translate into the development of work competencies (Van Ruysseveldt et al., 2011) and have an impact on well-being and other outcomes. It could be argued that those interventions less directly targeting well-being should not be judged on their effectiveness in improving well-being according to the same criteria as those more explicitly aimed at improving well-being. However, the fact that all of the studies measured impact on well-being suggests that all expected to have some impact in this respect. Furthermore, these interventions can be considered to influence well-being by acting in a preventative way through improving job competencies or work organization. The additional benefit of those learning interventions not purely targeting well-being is that, if successful, they are also likely to have beneficial effects on performance and other organizational outcomes.

What the review highlights is the value in considering well-being and embedding it in the design of learning and training processes in the workplace in a much broader sense. Although tracking the effects of learning on well-being through these processes is likely to require a different approach to evaluation than interventions targeting personal resources for well-being in a much more direct way, this is something that future research could consider.

Further intervention evidence will only be useful if the details of the intervention are adequately described and reported. The consistency and quality with which interventions are reported is a major barrier for both researchers and practitioners seeking to replicate and test or apply interventions, and this applies to workplace interventions as it does to medical interventions (Hoffman et al. 2014). Given the proliferation of workplace interventions, including those targeting learning we echo calls elsewhere for more standardized reporting of intervention procedures (Hoffman et al. 2014) in order to improve the evidence base. The ability of this review to understand the implications of different characteristics of

interventions (for example, style and intensity of delivering the learning intervention) for learning and well-being outcomes was hampered by a lack of detail and consistency in how interventions were reported. Given the multiple processes and factors at play, more rigorous reporting and evaluation would be helpful, since effects are not always predictable. For instance, in an analysis of learning characteristics of jobs, van der Heijden et al. (2016) find that the learning value of a job did not predict occupational expertise as we might expect, yet it did support more general personal development that in turn supported employability. The well-being impact of learning interventions are not only complex, but often indirect, especially in the case of leadership training and organizational interventions. As Kelloway and Barling (2010) observe, the main effect of leadership interventions is intended to be experienced by those who do not participate in the intervention – the employees or subordinates of leaders who have participated in the intervention. Such interventions are complex to evaluate, and timing appropriate follow-ups to capture anticipated, and unanticipated, effects is challenging, particularly given the indirectness expected effects.

Across all of the intervention groups discussed in the review, the wider organizational context played a role in impacting on the success of particular interventions and indeed in shaping the interventions themselves. In the case of organizational-level interventions, the literature is particularly underdeveloped, and whilst further intervention studies or RCTs may be beneficial to advance research, this may not be the most appropriate or feasible approach in this area. Longitudinal research that takes a qualitative approach is likely to be better equipped to shed more light on how organizational-level processes can support well-being through learning, although this might be allied with a quantitative approach. Bringing the dynamics of learning, in context, to the fore through multidisciplinary and longitudinal designs which combine qualitative sense-making approaches and hypothesis testing is likely to be particularly powerful in strengthening the evidence base. For example, excessive job strain, work intensification, job insecurity, poor management–employer relations and poorly aligned HRM practices can all reduce engagement in a learning process. Disengagement will have a negative impact on the learning and well-being outcomes derived from learning or offset any positive gains in well-being derived from a training programme or change programme. Attending to such contextual issues through engaging stakeholders which go beyond learner and trainer to include key organizational, customer/patient/consumer or labour representatives is important (see Beer, Boselie, & Brewster, 2015; Tregaskis et al., 2013).

Implications for practice

We have highlighted the potential of workplace learning to deliver well-being, but this needs to be taken forward not only in terms of research but also in practice. Employers provide a multitude of training and development opportunities and have influenced employee well-being through occupational health services. Well-being outcomes can be considered as part of the design of training and development or other learning opportunities, and ideally the effectiveness of such practices should be tracked through evaluation. The use of more generic well-being measures in evaluation would be useful for both employers and researchers in the field to compare learning processes in terms of their outcomes for well-being. Whilst we recognize that well-being is not necessarily the overriding or immediate aim of learning, it is often with well-being in mind that learning opportunities are taken up. The well-being benefit might be derived through career progression, enhanced personal skills, confidence or simply the pleasure of learning, but more can be done to understand the specific mechanisms by which learning benefits well-being rather than simply assuming it is the case. Well-being as an additional indicator in examining the health and progress of nations has come into sharp focus, over the last 5 years (Bache & Reardon, 2013; OECD, 2015; Stiglitz, Sen, & Fitoussi, 2009; World Happiness Report, 2015). Likewise the well-being of employees has become increasingly important for employers, and learning can play an important role, but to fully understand this potential requires scrutiny of the casual mechanisms at play, alongside observational evidence and theorization.

The review also observed that less interactive, web-based self-directed learning seemed to be less effective than more extensive approaches. Although the review presented relatively strong evidence for the effectiveness of personal resource-focussed training, the lack of success recorded in some studies led us to caveat this finding. Providers and employers need to be cautious in drawing on the extant research and developing and applying a one-size-fits-all approach. Whilst online learning can deliver positive outcomes, in a cost-effective manner, it needs to be delivered in a way that engages the learner and gives them the time and space to engage with the training. Providers and/or employers therefore need to think carefully about how online learning is designed and delivered to ensure quality and effectiveness (McGuire & Gubbins, 2010; Sambrook, 2005, p.116). The learning audience also needs to be considered, learning interventions which effectively target those most in need and most likely to benefit stand a much better chance of succeeding. On the contrary, those which do not develop applicable skills that individuals cannot put into practice may not be beneficial for both the individual and the organization.

Across the review, we found no negative outcomes arising as a result of learning processes, so it is unlikely that an ineffective intervention represents a risk to well-being. Learning to enhance professional capabilities, which links closely to the professional demands of the job, also has potential spillover benefits for well-being, in addition to development of skilled expertise. Employers and training providers can do more to understand the wider benefits of professional training. Particularly as well-being is likely to be an important consideration as firms and professions seek to build sustainable performance in dynamic sociopolitical contexts despite well-being not being explicitly embedded in many professional training programmes to date.

Notes

1. Supplementary material also includes harvest plots and succinct summary tables, which were developed from the original more extensive data extraction sheets and are available because they were too substantial to include in the review. They can be accessed at https://www.researchgate.net/publication/322399495_Supplementary_material_-_Well-being_through_learning_A_systematic_review_of_learning_interventions_in_the_workplace_and_their_impact_on_well-being .
2. See Tables 2(a–d) in the supplementary material document for further detail on individual studies.

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