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Stress Management Interventions: Improving Subjective Psychological Well-Being in the Workplace

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Abstract:

In this chapter we provide an overview of stress management interventions (SMI) and review the evidence for their effects on employee stress and well-being. We start by setting out a typology of SMI that classes SMI according to level (i.e., the individual-level or organisation-level) and focus (i.e., a 'primary' focus on altering the causes of stress or a 'secondary' or 'tertiary' focus on reducing stress itself). We then use this typology to describe key types of SMI, after which we review the evidence for those SMI with the most extensive evidence bases, namely secondary individual-level SMI that seek to reduce stress in employees (e.g., relaxation techniques, cognitive-behavioral therapy, mindfulness training) and primary organisational-level SMI that seek to remove the causes of stress by changing organisational practices (e.g., job redesign, changes to working time schedules). We conclude by suggesting that there is convincing evidence for both of these SMI approaches. However, the evidence base needs strengthening through more robust methodological designs (e.g., randomised control trials, broad based evaluations of intervention processes) and a better understanding of the contexts and individuals in which SMIs are most effective, how the implementation of SMIs affects outcomes, and the long-term impacts of SMIs.¹

Keywords: stress management interventions, evaluation, review, cognitive-behavioral therapy, mindfulness training, job redesign

Improving employee well-being and reducing stress can have a number of benefits for organizations, from increasing performance, improving relationships, to reducing sickness and absenteeism rates (De Neve, Diener, Tay & Xuereb, 2013; Warr, 2003). Stress management interventions refer to a class of activities that are used by organizations to improve employee well-being and reduce stress, principally by either addressing the causes of stress or by reducing the impact of stress on an individual. The aim of this chapter is to review the literature on stress management interventions to establish what we know about the effectiveness of different interventions in improving psychological well-being. It is split into three main sections. First, we introduce a typology of stress management interventions (SMI) and provide examples of the different types of intervention. Second, we discuss the evidence concerning the effectiveness of SMI, although before this we will briefly discuss methodological considerations used when evaluating interventions to provide the reader with some grounds for understanding the quality of evidence in this area. Finally, we conclude the chapter with an overview of what works best.

When reviewing the literature, we use a broad definition of subjective psychological well-being which enables us to include studies on burnout, anxiety, and depression, for example, as well as studies focusing directly on positive psychological well-being. Furthermore, as we are interested in psychological well-being we do not include studies that have looked at physical health or job attitudes, or those on well-being related outcomes at the organizational-level such as sickness and absenteeism. However, it is worth noting that these outcomes are related such that improvements in psychological well-being can lead to improvements in health, job satisfaction and absenteeism rates.

Stress Management Interventions: A Typology and Description

The stress management literature typically classifies interventions according to the 'focus' of stress

management and according to the ‘level’ at which the intervention takes place (DeFrank & Cooper, 1987; de Jonge & Dollard, 2002). With regard to the focus of stress management, interventions are categorized as primary, secondary or tertiary. The aim of *primary interventions* is to prevent stress from occurring by removing the sources of stress and enhancing the causes of well-being. *Secondary interventions* aim to reduce the severity or duration of stress once it has occurred and to prevent the level of stress becoming problematic. *Tertiary interventions* seek to rehabilitate and maximize functioning for those who are already experiencing or suffering from psychological ill-health.

With regard to the level of an intervention, a common and simple distinction is between individual and organizational levels. As the name suggests, *individual-level interventions* focus on helping employees to develop skills to manage, cope with and reduce stress, whereas *organizational-level interventions* make more systemic changes to organizational practices that either target all employees or a specific group of workers. A third category, individual-organizational level interventions, is used in some classifications. Such interventions are thought to differ from others in that they focus on changing the relationship between the individual and organization, e.g., peer support groups. However, as the distinction between organizational and individual-organizational level interventions is not always clear cut, we use the more parsimonious categorization of individual-level and organizational-level interventions.

Classifying stress management interventions (SMI) according to their focus and level implies that both individual and organizational-level interventions can be primary, secondary and tertiary in nature. This is illustrated in Table 1, along with examples of the different types of intervention in each category. Throughout the remainder of the chapter we describe the different types of SMI according to this classification.

Table 1. A Typology of Stress Management Interventions

Intervention type	<i>Individual</i>	<i>Organisational</i>
<i>Primary</i>	Selection & Assessment Pre-employment medical examination	Job Redesign Working time and schedules Management training, e.g. mentoring
<i>Secondary</i>	Mindfulness training Health promotion, e.g., exercise Cognitive behavioral therapy Relaxation Meditation Personal and interpersonal skill training Acceptance and commitment therapy Psychosocial intervention training Coping skills training Resilience training	Improving communication and decision making Conflict management Peer support groups Coaching & career planning
<i>Tertiary</i>	Employee Assistance Programmes Counselling Posttraumatic stress assistance Disability management	Vocational rehabilitation Outplacement

Individual-Level Interventions

The aim of a primary individual-level intervention is to prevent stress from occurring in an employee. One means of achieving this is through selection and assessment procedures that select applicants who have the skills and abilities to manage the demands of the job and to screen out those who might be susceptible to experiencing stress in the target role, particularly in highly-stressful occupations (Bartone, Roland, Picano & Williams, 2008). Although such interventions are one way of managing stress and promoting well-being, they are rarely used (Giga, Cooper & Faragher, 2003).

Secondary individual-level interventions seek to equip employees with the skills and abilities to

manage stress and promote well-being, and to provide employees with opportunities to engage in stress-reducing activities. They include techniques such as relaxation, meditation, cognitive behavioural therapy, mindfulness training, and exercise programmes, as well as other techniques such as education and interpersonal skill development. Drawing on the emotion regulation literature (Gross, 1998), these techniques can be understood as promoting antecedent-focused emotion regulation strategies that seek to reduce or remove the causes of stress, or response-focused emotion regulation strategies that seek to reduce the level of stress experienced by individuals. It can also be noted that some individual-level interventions are multimodal, e.g., a combination of relaxation, CBT and mindfulness exercises. Such an approach might be used in the expectation that it will increase the likelihood of beneficial outcomes for both the individual and organization, as it can enable employees to develop a wide set of skills that can be used across different circumstances, provide employees with the opportunity to develop both antecedent and response-focused emotion regulation strategies, and increase the chance of meeting employees' needs. As secondary individual interventions are one of the more commonly used SMI, and there is a stronger evidence base for their effectiveness (which we outline later), we now detail the more widely used techniques.

Relaxation techniques are based on the assumption that states of relaxation and stress (i.e., highly-aroused negative states of well-being such as anxiety, tension and anger) are antithetical (Russell, 1979). In other words, you cannot be both relaxed and stressed at the same time, such that increasing levels of relaxation will necessarily entail lower levels of stress. Various methods are used to induce relaxation but all can be considered as response-focused emotion regulation strategies as they focus on reducing the symptoms of stress. Progressive muscle relaxation involves tensing and then relaxing different muscles throughout the body in a prescribed order. For example, a person might start by clenching and unclenching one hand then the other, then focus on the muscles in one forearm and then the other, and so on. The length, duration and range of muscles covered can vary but with practice employees can induce a deep state of muscle relaxation in minutes (Murphy, 2003). Meditation is another relaxation technique but one that focuses on a mental rather than physical process. Techniques typically involve sitting in a quiet place and repeating a word or sound while maintaining a passive mental state that excludes intrusive thoughts. Although meditation has its roots in religious practice, secular and standardized methods appropriate for clinical trials have been developed (Carrington et al., 1980). Muscle relaxation and meditation can also involve breathing techniques that focus on the inhalation and exhalation of breath as an additional means of achieving relaxation, although some interventions use breathing techniques alone.

Cognitive behavioral therapies (CBT) assume that maladaptive cognitions contribute to the maintenance of psychological distress and problematic behavioral responses to stress. CBT addresses this by helping the person to identify misconceptions about the nature and causes of stress, to test the validity of existing thoughts and understandings, and to develop new conceptions about stress. In addition, the behavioral element of CBT encourages the person to develop new behavioral responses to stressful events. CBT is thought to work by promoting antecedent-focused emotion strategies that help the person to reappraise and restructure their understanding of stress and stressful events (Hofmann & Asmundson, 2008). For example, Cecil and Forman (1990) conducted an intervention amongst teachers based on a method of CBT called stress inoculation training (Meichenbaum, 1977) that consists of three phases: education about stress and its causes; acquisition and rehearsal of skills in cognitive restructuring (e.g., identifying irrational thoughts and replacing them with rational thoughts); and developing and practising new cognitive, emotional and behavioral 'scripts' for responding to stressful events. Their evaluation revealed that the CBT intervention decreased stress to a greater extent than a peer support group and a passive listening group.

Mindfulness training is an increasingly popular SMI that aims to promote states of mindfulness (i.e., paying attention to the experiences, thoughts and emotions occurring in the present moment in a non-judgmental, compassionate, accepting and non-reactive way) and new adaptive responses to negative thoughts and emotions (Kuyken et al., 2010). Mindfulness is thought to foster psychological well-being by primarily helping the person to dissociate negative thoughts and emotions from maladaptive behavioral and emotional responses. Mindfulness training can therefore be understood as a method that develops response-focused emotion regulation strategies. But mindfulness training has key differences from other methods that also encourage response-focused emotion regulation strategies, such as relaxation and meditation. In particular, in mindfulness training, negative thoughts and experiences are not avoided or suppressed (which can have negative consequences for well-being, Richards & Gross, 1999) and there is an emphasis on developing new and more adaptive responses.

Mindfulness therapies include acceptance and commitment therapy (Hayes, Luoma, Bond, Masuda, & Lillis, 2004) and mindfulness-based cognitive therapy (MBCT) (Segal, Williams & Teasdale, 2002). MBCT, for example, uses a range of methods, often conducted in groups with a trainer, such as body scanning, yoga and meditation exercises. The initial emphasis in MBCT is cultivating states of

mindfulness. At later stages, the emphasis moves towards identifying how negative thoughts trigger maladaptive responses, helping the person to accept those feelings, and encouraging the choice of more adaptive responses. Although mindfulness training has grown in popularity, few empirical studies have been conducted in organizational settings. An exception is a study by Hülsheger and colleagues who conducted a two-week, self-directed mindfulness intervention, based on MBCT protocols, with employees from a range of occupations. Their evaluation, using data collected from daily diaries completed by participants, showed that employees in the mindfulness training condition reported higher levels of daily mindfulness and lower levels of daily emotional exhaustion than those in a control group (Hülsheger, Alberts, Feinholdt & Lang, 2013).

Other types of secondary individual-level interventions have also been developed. Two popular initiatives include educational programmes that inform employees about stress and how it can be managed, and health promotion initiatives that are based on the assumption that a healthier lifestyle (e.g., more exercise, better diet) will improve well-being (Anger et al., 2015; Rongen, Robroek, van Lenthe, & Burdorf, 2013). In addition, personal skill development training in communication, goal setting and time management all aim to reduce stress by helping employees to prevent stressful situations from occurring, e.g., conflict, high workloads.

Lastly, tertiary individual-level interventions focus on individuals who are experiencing high or chronic levels of stress that may be impairing their ability to work. For example, employee assistance programmes (EAP) provide counselling and advice to those experiencing high-levels of stress or mental health problems, whether these issues are related to work or not (Bhagat, Steverson & Segovis, 2007; Csiernik, 2011; McLeod, 2008).

Organizational-Level Interventions

Primary organizational-level interventions aim to remove the causes of stress in organizations by changing organizational practices and policies, such as those concerned with leadership, working time, and occupational health and safety (Anger et al., 2015). The majority of primary organizational-level interventions reported in the literature are job redesign interventions that aim to modify job characteristics (e.g., job discretion, workload, ergonomic design) as a means of enhancing employee well-being, and they have a strong theoretical and empirical grounding in studies of job design that show job characteristics to be key antecedents of employee stress and well-being (Humphrey, Nahrgang & Morgeson, 2007; Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Job redesign interventions typically differ in scale, with some seeking to change one job characteristic, such as job discretion (Bond & Bunce, 2001), whereas others seek to change multiple job characteristics in the expectation that this will produce larger changes in well-being (Holman & Axtell, 2016).

Secondary organizational-level interventions aim to make organizational-wide changes that help employees cope better with stressful experiences. Such interventions include the introduction of peer support groups that enable employees to discuss the difficulties they face (Peterson, Bergstrom, Samuelsson, Asberg, & Nygren, 2008) and communication skills training courses that seek to improve the ability of all employees to manage stressful situations through, for instance, improved conflict management (Ghazavi, Lohrasbi, & Mehrabi, 2010; Leiter, Laschinger, Day & Oore, 2011). However, in practice, there is not always a clear distinction between primary and secondary organizational level interventions, particularly with regard to social support interventions which can remove a potential source of stress (i.e., a lack of social support) whilst also improving the ability of employees to cope with stressful events.

Implementing organizational-level interventions can be difficult and complex. This means that an important part of organizational-level interventions, particularly primary interventions that seek to change organizational practice, is the efficacy of the implementation process. In particular, reviews suggest that successful organizational-level interventions involve four key activities: *preparation*, i.e., securing support; *screening*, i.e., identifying the psychosocial risks; *action planning*, i.e., developing change initiatives; and *implementation*, i.e., embedding change initiatives within the organization (Nielsen, Randall, Holten & González, 2010). Another important characteristic of organizational-level interventions is the level of employee participation. For example, in a job redesign intervention conducted by Morgeson et al. (2006), only managers and external consultants were involved in developing and implementing job redesign changes. In contrast, in a job redesign intervention among knowledge workers in Denmark (Sørensen & Holman, 2014), employees participated throughout the intervention process by identifying, developing and implementing job redesign initiatives to reduce workload and modify work procedures. Employee participation is thought to be advantageous as it can improve the quality of change initiatives by drawing on employees' expertise to make them more contextually appropriate, and because it can increase commitment to implementing change initiatives, as employees have a greater sense of ownership of those change initiatives (LaMontagne, Keegel, Louie, Ostry, & Landsbergis, 2007). Participation can also

increase the sense of job control and responsibility, which is beneficial for well-being in its own right (Mikkelsen & Saksvik, 1998). But participation is not without risk: it can increase complexity by involving a wider range of stakeholders who may have competing ideas and motivations, increase frustration with the intervention process if employees are not experienced or skilled in participation, and raise costs by removing front-line employees from their jobs.

Some multimodal SMI combine individual- and organizational-level interventions. For example, ‘total worker health interventions’ integrate organizational-level health and safety programmes with individual level health promotion programmes (see Anger et al., 2015 for a review). An advantage of this approach is that the organizational-level intervention can reduce the causes of stress, while the individual-level intervention can enhance employees’ ability to deal with stress. Such an approach can be particularly important for employees exposed to higher demands, as they also tend to engage in more high-risk health behaviors (Anger et al., 2015). Other multimodal interventions occur just at the organizational level. For example, job redesign interventions have been implemented alongside changes to other organizational practices, in the expectation that this will augment the effects of the job redesign intervention (Daniels, Gedikli, Watson, Semkina, & Vaughn, 2017). Potential disadvantages of multimodal approaches are an increase in implementation complexity and that one intervention may reduce the effectiveness of the other.

What Works? Evaluating the Effectiveness of Stress Management Interventions

When selecting SMI it is clearly important to consider the evidence for their effectiveness in reducing stress and promoting well-being. In this section, we review the findings for those SMI that have a more substantial evidence base, namely secondary individual-level and primary organizational-level interventions². But before we do this, it is important to touch on the issues concerned with how best to evaluate interventions, as this provides a better understanding of the nature and quality of evidence available.

Based on the natural science paradigm, randomised control trial (RCT) designs are traditionally considered to be the optimal methodology for evaluating interventions. RCTs randomly allocate participants to experimental and control groups and then introduce the intervention to the experimental group. Change in the focal outcome is measured in both groups before and after the intervention. Randomization is used to control for the effects of context and participant differences, such that when change in the outcome in the experimental group is significantly different to that in the control group, the change is assumed to be caused by the intervention. RCTs are therefore thought to provide stronger evidence for the causal effects of an intervention than methodological designs that do not randomize individuals to groups, that do not have a control group, and those that do not have pre-intervention measurement.

In addition to the evaluation of individual studies, meta-analyses are used to provide a quantitative overview of multiple studies. A meta-analysis produces an overall effect size based on the individual studies selected for review. More confidence can be placed in meta-analytic results, as they are based on a larger sample that minimizes the likelihood of chance findings, and because the weaknesses of individual studies are balanced out. To explain this further, the results of one study could be accidental or influenced by something that was not investigated, whereas the results of a meta-analysis that combine data from multiple studies are much more likely to be a true reflection of an intervention’s real impact. A key issue in a meta-analysis is how to select studies for inclusion (e.g., RCT studies only), since the methodological quality of the studies chosen affects the confidence that can be placed in the findings.

However, several authors have questioned whether RCTs provide a sufficient and appropriate methodology for intervention evaluation (Cox, Karanika, Griffiths & Houdmont, 2007; Nielsen & Miraglia, 2017). Specifically, it is argued that RCTs are not always feasible in organizational settings where, for example, randomisation is not practical or ethical, or when an equivalent control group (consisting of similar participants to the experimental group) is not available. Randomization can also be considered a change in itself that may affect employee perceptions of the intervention and experiences of work (Nabe-Nielsen et al., 2015). Furthermore, RCTs tend to focus on changes in outcomes and do not evaluate how the quality of the implementation process or organizational context shapes the effects of an intervention. In response to these concerns, alternative intervention evaluation frameworks have been proposed. Cox et al. (2007) suggested a framework that covers both intervention outcomes and implementation processes. Examples of implementation process variables include managers’ advocacy of the intervention, workers’ engagement with the intervention, and the availability of resources to support implementation. Cox et al. argued that consideration of process variables enables identification of the mechanisms determining intervention outcomes. Indeed, failing to consider process variables could lead to

the erroneous conclusion that an intervention is ineffective when in fact the implementation was flawed. Nielsen and Abildgaard (2013) built on these insights to propose a longitudinal evaluation framework in which each of the intervention 'stages' (e.g., preparation, screening etc., as outlined earlier) are assessed separately to identify how each stage may influence subsequent stages and ultimately the outcome of the intervention. They also suggested that a range of intervention outcomes (e.g., changes in attitudes, working practices and well-being) should be addressed at each stage on the basis that these changes may become evident at different times.

Given the importance of intervention processes to the success of an intervention, and the limits of RCTs in organizational settings, it has been argued that assessments of the effectiveness of SMI should draw on systematic quantitative and qualitative evaluations and to include rigorous evaluations of SMI that do not meet the 'gold standard' of RCTs. Such an approach is thought to be particularly important in the evaluation of organizational-level SMI because, in comparison with individual SMI that tend to use existing techniques proven in other domains (e.g., CBT), organizational SMI are diverse in design and may be tailored to the organization, increasing the likelihood of outcomes being influenced by process and context variables. Indeed, in light of these issues, process evaluations are now more evident in SMI studies.

Evidence for Secondary Individual-Level Interventions

A number of meta-analyses and systematic reviews of the effects of secondary individual-level interventions on stress and well-being have been conducted (see Bhui, Dinos, Stansfeld & White, 2012, for a review of these reviews). Two of the more comprehensive meta-analyses are by van der Klink, Blonk, Schene and Van Dijk (2001) and Richardson and Rothstein (2008) (Table 2). Both cover CBT and relaxation interventions across all types of employees. The Richardson and Rothstein meta-analysis builds on the van der Klink et al. study by covering an extra ten years of research and including unpublished studies (accounting for publication bias towards significant findings) but has stricter inclusion criteria, as it only selects RCT-based studies. A wide range of individual interventions are also covered by Kuoppala, Lamminpää and Husman (2008) but their analysis focuses on 'psychological' (i.e., education, biofeedback) and health promotion interventions (e.g., exercise), while the meta-analysis by Conn et al. (2009) focuses exclusively on health promotion interventions, specifically exercise and physical activity.

Other meta-analyses focus on SMI in particular groups of workers. Ruotsalainen, Verbeek, Mariné and Serra's study (2015) covers CBT and relaxation methods in health care employees, while that by Regehr, Glancy, Pitts and LeBlanc (2014) focuses on individual-level interventions in physicians.

A conclusion that can be drawn from these meta-analyses is that there is good evidence that secondary individual-level interventions are effective in reducing stress and promoting well-being (Table 2). Meta-analytic studies report significant medium and large effect sizes for cognitive-behavioral therapies ($d=0.52$, van der Klink et al., 2001; $d=1.00$, Richardson & Rothstein, 2008), small and large effect sizes for relaxation techniques ($d=0.31$, van der Klink et al., 2001; $d=0.83$, Richardson & Rothstein, 2008) and small effect sizes for health promotion methods (RR=1.25, Kuoppala et al., 2008; $d=0.19$, Conn et al., 2009). These findings suggest that CBT has a comparatively larger effect on stress and well-being and van der Klink et al., (2001) found that effect sizes for CBT were significantly greater than those for relaxation methods. However, this finding must be treated with caution, as their analysis included effects across all outcomes, including those unrelated to employee well-being. Furthermore, as there are no comparisons between CBT, relaxation and other interventions, it is difficult to make claims about relative effectiveness of secondary individual-level interventions at this juncture. It can also be noted that existing meta-analyses of secondary individual-level SMI do not focus on mindfulness training as a separate category, although mindfulness studies are included in some meta-analysis (e.g., Regehr et al., 2014). This means that we lack a statistical summary of their effects and a comparison of mindfulness and other methods. Promisingly, most primary studies report positive effects of mindfulness training on psychological well-being (e.g., Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2005; Hülshager et al., 2013), whereas only a few studies have failed to yield supportive evidence (e.g., Malarkey, Jarjoura & Klatt, 2013; van Berkel, Boot, Proper, Bongers, & van der Beek, 2014).

Meta-analytic studies of multimodal secondary individual-level interventions report significant medium effect sizes ($d=0.48$, van der Klink et al., 2001; $d=0.60$ and 0.42 , Richardson & Rothstein, 2008). These effect sizes are not substantially different to studies of single secondary individual-level SMI, meaning that multimodal secondary individual-level SMI do not provide a clear advantage over single secondary individual-level SMI. But it is worth noting that Richardson and Rothstein (2008) found that the effects of multimodal SMI increase over time and their effects are longer lasting. One interpretation of this finding is that employees take longer to learn stress management techniques in multimodal SMI but, once learnt, their effects are stronger and more sustainable. Again, such a conclusion, while plausible, must be treated with caution for present purposes, as the comparison by Richardson and Rothstein included well-being and well-being related outcomes such as absenteeism and physiological responses.

Another important feature of research on secondary individual-level SMI is the heterogeneity and direction of effect sizes. In particular, effect sizes vary significantly and, to the best of our knowledge, almost all effects are positive in direction, even if they are non-significant. For example, in Van der Klink et al.'s (2001) meta-analysis, effect sizes across CBT and relaxation interventions ranged from 0.0 to 2.2, and 22 of the 35 studies reported non-significant findings. A similar heterogeneity in effect sizes is reported in other meta-analyses of SMI and in the literature on mindfulness training. This implies that although secondary individual-level SMI are not harmful to employee well-being, their positive effects are not realised in all contexts. The heterogeneity in effect sizes therefore suggests that implementation processes, contextual factors or participant differences (e.g., motivation, initial levels of well-being) may impact on the efficacy of secondary individual-level SMI. However, a lack of research and contradictory evidence prevent firm conclusions being drawn about the effects of context and implementation process on secondary individual-level SMI effectiveness (Van der Klink et al., 2001; Richardson & Rothstein, 2008; Rongen et al., 2013).

Table 2. Meta-Analyses of Stress Management Intervention Effectiveness

Intervention type	Effect size (Cohen's d unless stated)		N	Authors	Date	Outcome reported
Individual-Level						
<i>Cognitive-behavioral</i>	0.52	Large	14	van der Klink et al.	2001	Well-being
	1.00	Large	5	Richardson & Rothstein	2008	Well-being
	-0.25	No effect	4	Ruotsalainen et al.	2015	Stress (up to 1 month follow up)
	-0.28	Small	6	Ruotsalainen et al.	2015	Stress (1-6 month follow up)
<i>Relaxation</i>	0.31	Small	14	van der Klink et al.	2001	Well-being
	0.83	Large	5	Richardson & Rothstein	2008	Well-being
	-0.48	Medium	4	Ruotsalainen et al.	2015	Stress (up to 1 month follow up)
	-0.49	Medium	13	Ruotsalainen et al.	2015	Stress (1-6 month follow up)
<i>Health Promotion</i>	1.25 (RR)	Small	3	Kuoppala et al.	2008	Well-being
	0.19	Small	12	Conn et al.	2009	Stress
<i>Multimodal</i>	0.48	Medium	8	van der Klink et al.	2001	Well-being
	0.60/0.42	Medium	5/12	Richardson & Rothstein	2008	Well-being(low stress/low anxiety)
Organizational-Level						
<i>All Organizational-Level</i>	0.08	No effect	5	van der Klink et al.	2001	Well-being

	-0.31/0.17	No effect	2/3	Richardson & Rothstein	2008	Well-Being/Mental Health
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Note: RR = Risk Ratio; Cohen's *d* effect sizes, 0.2 = small, 0.5 = medium, 0.8 = large. Effect sizes are uncorrected for reliabilities.

Evidence for Primary Organizational-Level Interventions

On the basis of existing meta-analyses, it could be concluded that primary organizational-level SMI do not improve employee well-being or reduce stress. Drawing on small samples of primary and secondary organizational-level interventions largely based on RCT designs, meta-analytic studies report small non-significant effect sizes ($d=0.08$, Van der Klink et al., 2001; $d=-0.31$ for well-being and $d=0.17$ for mental health, Richardson & Rothstein, 2008).³

In contrast, qualitative reviews of organizational-level SMI, which draw on a wider range of studies, including quasi-experiments without randomization, offer a 'cautiously positive' interpretation of the effectiveness of well-designed organizational interventions (Bhui et al., 2012; Daniels et al., 2017; Egan, Bambra, Thomas, Petticrew, Whitehead, & Thomson, 2007; LaMontagne et al., 2007; Semmer, 2006, p518). Moreover, since these reviews, other organizational interventions have been conducted that further point to the positive effects of job redesign and social support interventions on employee well-being (Ahola et al., 2012; Bourbonnais et al., 2006; LeBlanc, Hox, Schaufeli, Taris, & Peeters, 2007; Linzer et al., 2015; Peterson et al., 2008; Sørensen & Holman, 2014). In particular, job redesign studies by Bond, Flaxman and Bunce (2008) and Holman and Axtell (2016) show that job redesign interventions alter job characteristics (e.g., job discretion, feedback) which in turn lead to improvements in employee well-being. These studies therefore confirm theoretical proposals that changes in job characteristics are a mechanism through which job redesign interventions influence employee well-being. Other studies point to the long-term impact of job redesign interventions. Kawakami et al. (1997) and Bourbonnais, Brisson and Vézina (2011) reported that improvements in job characteristics and well-being in the intervention group were sustained, respectively, one and three years after the intervention.

For multimodal organizational-level SMI, qualitative reviews all conclude that there is some evidence for their efficacy (Anger et al., 2015; Daniels et al., 2017; Egan et al., 2007; Kompier, Aust, van den Berg & Siegrist, 2000). However, what is less clear is whether their different parts have combined or additive effects on well-being, and whether they are more effective than potentially less-complex organizational interventions that focus on changing one discrete practice (i.e., only job design).

Despite a growing evidence base for the positive effects of organizational-level interventions, the continuing heterogeneity of their effects must be recognised, as some studies report no effect on well-being (Ghazavi et al., 2010; Leiter et al., 2011; Logan & Ganster, 2005; Uchiyama et al., 2013) and a very small number report negative effects (Ryan et al., 2005; Dahl-Jørgensen & Saksvik, 2005). One explanation for this heterogeneity, as we have already noted, is that implementation processes and contextual factors impact on the effectiveness of organizational SMI. In recognition of this, an increasing number of studies of organizational SMI evaluate and report on the nature of the implementation process. For instance, a job redesign study conducted by Dahl-Jørgensen & Saksvik (2005) across two different sites found that, in one of the sites, emotional exhaustion increased in the experimental group six months after the end of the intervention. Their qualitative process evaluation found that in this site the quality of the implementation process was low (in part due to high work demands and low management support), that some employees saw the intervention as a burden, and that other concurrent changes may have impacted negatively on employee stress, such as increased workload.

More generally, the empirical literature on intervention implementation has helped to confirm models of implementation processes outlined earlier (Cox et al., 2007; Nielsen et al., 2010). This literature suggests that attending to and supporting process-related activities at key stages (e.g., preparation and gaining support, screening for psychosocial risks, action planning, and implementation) can enhance the quality of implementation processes by increasing implementation intensity (i.e., greater time spent on intervention activities), providing support for employees (e.g., training in change process, communication skills), securing the necessary resources and fostering the implementation of change (Daniels et al., 2017; Kompier, Cooper & Guerts, 2000; Murta, Sanderson, & Oldenburg, 2007; Nielsen et al., 2010; Semmer, 2006; Sørensen, 2016), and fostering employee participation throughout all intervention activities (LaMontagne et al., 2007; Nielsen, Randall & Albertsen, 2007).

In addition, evidence suggests that organizational and participant characteristics can shape SMI effectiveness. For example, downsizing, poor management-employee relations and problematic HR practices may reduce employees' motivation to participate, prevent changes being implemented or

counteract the positive effects of an intervention, such that augmenting interventions with wider changes in HR practices may be one means of reducing the risk of the organizational context impeding an SMI (Daniels et al., 2017). However, a lack of research prevents firmer conclusions being drawn about the effects of organizational context on SMI. With regard to participant characteristics (e.g., demographics, traits and attitudes), although they might be expected to influence SMI outcomes, few studies have systematically examined this issue (Egan et al., 2007; Rongen et al., 2013). The best evidence suggests that work redesign interventions are more effective when participants have an openness and willingness to change (Bond et al., 2008; Cunningham et al., 2002; Nytrø et al., 2000), make more positive appraisals of the intervention itself (Nielsen et al., 2007), and have previous experience of participation in decision-making procedures (Mikkelsen, Saksvik & Landsbergis, 2000). Motivated employees with the ability to participate in change processes therefore appear important to the success of organizational-level SMI, possibly because they are more likely to implement or respond positively to the types of change underpinning these interventions.

Conclusion

Our review of stress management interventions shows that organizations and managers have at their disposal a range of techniques and practices that can be used to reduce stress and promote the well-being of employees. There is a relatively convincing evidence-base for the effectiveness of secondary individual-level SMI, especially CBT, relaxation techniques, and mindfulness training, and the strength of the evidence base is growing for primary organizational-level interventions, particularly job redesign. Another encouraging conclusion that can be drawn from existing research is that we are gaining a better understanding of why interventions succeed, particularly that the success of organizational-level interventions appears to depend on the quality of implementation processes and employee participation. However, it is important to temper these positive conclusions with the fact that they may be skewed by publication bias and that they are based on studies with a range of methodological limitations. Indeed, there is a need to improve the quality of the evidence base on SMI by conducting more studies of higher methodological rigour and not just RCT designs. Rather, studies are needed using broad evaluation frameworks to assess quantitatively and qualitatively SMI outcomes and the effects of intervention processes on SMI effectiveness. In addition, we also know relatively little about the contexts in which SMI are most effective, particularly with regard to individual-level SMI, for which workers SMI are most beneficial, and the relative effectiveness of interventions, particularly because studies do not use comparable measures of well-being. Knowledge of these issues could help to target SMI more effectively and provide practical support where needed. Finally, questions remain about the long-term impact of SMI, as few studies assess the sustained benefits of SMI. Clearly, this has important implications for the management of SMI. Do organizations conduct SMI infrequently and reap the long-term benefits, or is sustained and continuing effort needed to ensure that well-being remains high?

Footnotes

¹Authors' contributions were equal.

²For reviews of other SMI, such as tertiary individual-level interventions, see Csiernik (2011) and McLeod (2008).

³Ruotsalainen et al. (2015) provide a meta-analysis of particular types of organisational intervention but the sample sizes are very small and they provide no effect size based on all interventions.

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