Routledge
Taylor & Francis Group

European Journal of Work and Organizational Psychology

ISSN: 1359-432X (Print) 1464-0643 (Online) Journal homepage: http://www.tandfonline.com/loi/pewo20

Meta-analytic evidence of the effectiveness of stress management at work

Claudia Kröll, Philipp Doebler & Stephan Nüesch

To cite this article: Claudia Kröll, Philipp Doebler & Stephan Nüesch (2017) Meta-analytic evidence of the effectiveness of stress management at work, European Journal of Work and Organizational Psychology, 26:5, 677-693, DOI: 10.1080/1359432X.2017.1347157

To link to this article: http://dx.doi.org/10.1080/1359432X.2017.1347157

EUROPEAN JOURNAL OF WORK AND ORGANIZATIONAL PSYCHOLOGY, 2017
VOL. 26, NO. 5, 677–693
https://doi.org/10.1080/1359432X.2017.1347157

Routledge
Taylor & Francis Group

Meta-analytic evidence of the effectiveness of stress management at work

Claudia Kröll[a], Philipp Doebler[b] and Stephan Nüesch[a]

[a]Business Management Group, University of Münster, Münster, Germany; [b]Institute of Psychology, University of Münster, Münster, Germany

ABSTRACT

To increase employees' psychological health and to achieve a competitive advantage, organizations are increasingly introducing flexible work arrangements (FWAs) and stress management training (SMT). This paper provides meta-analytic evidence of the effects of two forms of FWA (flexitime and telecommuting) and three forms of SMT (cognitive-behavioural skills training, relaxation techniques and multiple SMT) on employees' psychological health, job satisfaction, job performance and absenteeism. Applying the conservation of resource theory, we conjecture that both FWAs and SMT improve all four employee-related outcomes. Quantitative meta-analyses based on 43 primary studies and 22,882 employees show that both FWAs and SMT are positively associated with psychological health and job satisfaction. However, due to a lack of primary studies we were mostly unable to analyse the effects on performance and absenteeism. Although we found a large heterogeneity in the hypothesized relationships, additional moderator analyses of study quality, age, gender, duration and intention of intervention yielded no significant effects. We discuss limitations and implications for practice and for future research.

ARTICLE HISTORY
Received 29 April 2016
Accepted 15 June 2017

KEYWORDS
Psychological health; job satisfaction; job performance; absenteeism; Stress Management at Work

Introduction

An organization's ability to achieve and sustain a competitive advantage depends largely on the specific skills and knowledge supplied by its employees, its human resources (Wang, He, & Mahoney, 2009; Wright, McMahan, & McWilliams, 1994). The management of these human resources, however, has become increasingly difficult. Demographic and workplace changes such as a rising number of women in the labour force, an ageing population, a shortage of skilled workers and increasing globalization and competition have increased the pressure on employees (Beauregard & Henry, 2009). The result is an increase in mental psychological health problems like stress or depression (e.g., American Psychological Association, 2015; DeLongis, Folkman, & Lazarus, 1988; Richardson & Rothstein, 2008), and increased absenteeism (e.g., Halpern, 2005). Even if employees are not officially ill—presenteeism or other work pressure may force employees to continue to work—pressure in the workplace can still decrease job satisfaction and productivity (e.g., Gosselin, Lemyre, & Wayne, 2013). The resulting impairment of employees' ability to apply their specific skills and knowledge reduces an organization's competitiveness.

To increase employees' psychological health, job satisfaction and performance, organizations increasingly offer *flexible work arrangements*(*FWAs*) and/or *stress management training* (*SMT*) (e.g., Allen, Johnson, Kiburz, & Shockley, 2013; Richardson & Rothstein, 2008). FWAs give employees more flexibility in when and where they work. By focusing on the adaptation of the working conditions and environment to the needs and demands of employees and their work, FWAs are considered to be *primary preventive interventions* (e.g., Cooper & Cartwright, 1997; Lamontagne, Keegel, Louie, Ostry, & Landsbergis, 2007). SMT aims to improve employees' individual responses to work pressure (e.g., Allen et al., 2013; Ivancevich, Matteson, Freedman, & Phillips, 1990). Because SMT helps to reduce the negative consequences when pressure has already occurred (Cooper & Cartwright, 1997), SMT is considered to be a *secondary preventive intervention*. SMT helps to preserve resources by empowering employees to manage work-related stressors (e.g., Allen et al., 2013; Ivancevich et al., 1990).

The effectiveness of FWAs in improving the psychological health, performance, and attitudes of employees has been extensively researched but remains disputed. The comprehensive review of de Menezes and Kelliher (2011) concludes that while there is persuasive evidence for increased job satisfaction and reduced absenteeism, the effect on performance appears to be indirect and dependent on other factors, and FWAs not only relieve but can also be a source of stress. The mixed results are attributed on the one hand to the diverse methodology, variable definition and quality of the studies and on the other hand to the influence of unconsidered moderators of the relationships.

The effectiveness of SMT on the psychological health, performance and attitudes of employees has been less extensively studied than that of FWAs. Existing meta-analyses by Richardson and Rothstein (2008) and van der Klink, Blonk, Schene, and van Dijk (2001) have found small to moderate positive effects on psychological welfare and job satisfaction that depend on the kind of SMT offered, with cognitive–behavioural programmes being associated with consistently greater benefit.

As more recent studies have been able to profit from the increasing use of FWAs and SMT in the workplace providing

CONTACT Claudia Kröll Claudia.kroell@wiwi.uni-muenster.de
Present affiliation for Philipp Doebler is Statistical Methods in the Social Sciences, Faculty of Statistics, TU Dortmund University, Germany.

larger potential samples across a wider range of industries, an updated meta-analysis that includes this new research appears timely, valuable and potentially more generalizable.

We contribute to the existing meta-analytic literature (Baltes, Briggs, Huff, Wright, & Neuman, 1999; Gajendran & Harrison, 2007; Richardson & Rothstein, 2008; van der Klink et al., 2001) in four ways: First, whereas prior meta-analyses examined either FWAs or SMT, this meta-analysis is the first to jointly analyse FWAs and SMT using the same inclusion criteria and method. Both FWAs and SMT are interventions designed to reduce stress. However, they aim to achieve this by different means and at different stages and may therefore also differ in their effect on employees' outcomes.

Second, we take a closer look at the heterogeneity of the analysed relationships and test for potential moderators. In particular, we test the *quality of primary studies* as a potential moderator because low quality may attenuate or inflate the size of effects observed in studies (Baltes et al., 1999; Valentine & Cooper, 2008). We further test for *gender, age, duration* and *intensity of intervention* as potential moderators, because these factors are likely to moderate the effects of FWAs and SMT (e.g., Chow & Chew, 2006; Gajendran & Harrison, 2007; Masuda et al., 2012; Richardson & Rothstein, 2008; van der Hek & Plomp, 1997).

Third, we follow the advice of Morris (2008) and include only primary studies with a sample size greater than 10 and we disattenuate each effect size. This is important for developing valid cumulative knowledge.

Fourth, we follow the advice of De Menezes and Kelliher (2011) and Schmidt and Hunter (2015) and provide updated meta-analyses that include several studies of the effects of FWAs and SMT published in recent years.

Theoretical overview

We distinguish between different kinds of FWA and SMT when we analyse their effects. We subdivide FWAs into flexible scheduling of working time (*flextime*) and choice of work location (*telecommuting*). While flextime only gives employees discretion over when they work, telecommuting usually also gives employees discretion over when as well as where they work (Allen et al., 2013). In addition, we classify SMT into three categories according to their intention: whether to change employees' appraisal of stressful situations and their response to them (*cognitive–behavioural skills training*), to enable employees to reduce adverse reactions to stress (*relaxation techniques*) or to train a combination of these approaches (*multiple SMT*).

To predict and understand the effects of FWAs and SMT, we use the *conservation of resources (COR)* theory (Hobfoll, 1989). According to the COR theory, individuals want to obtain, retain, foster and protect resources. Resources are defined as anything that an individual values, whether material objects, like houses and cars, or immaterial reserves like energy, time, knowledge, psychological health, money and power. In this study, we focus on immaterial resources. Individuals avoid situations that might lead to the loss of valued resources (Hobfoll, 1989) and are motivated to enrich their resource pool to shelter themselves from future losses. Someone who is threatened by resource loss, who loses resources, or whose investment of resources fails to produce the expected gain experiences psychological stress (Hobfoll & Lilly, 1993).

We argue that both FWAs and SMT help to protect resources. A significant body of empirical research has shown that conservation of resources is positively related to employees' wellbeing, evidenced by more positive attitudes, such as job satisfaction (e.g., Sullivan & Bhagat, 1992) or improved psychological health (e.g., Slaski & Cartwright, 2003).

Flexible work arrangements

FWAs are primary preventive interventions that help to protect employees' time resources by giving employees more control over when (flextime) and/or where (telecommuting) they work (Hill et al., 2008). Flextime, for example, reduces commuting time by allowing employees to choose working times that avoid having to travel during congested rush hours, while telecommuting eliminates commuting altogether (e.g., Golden, 2006). Furthermore, FWAs increase employees' control over the working schedule, allowing them to adjust their work to their non-work needs (Pierce & Newstrom, 1980).

The review by De Menezes and Kelliher (2011) shows that FWAs are positively related to the psychological health of employees. Thomas and Ganster (1995) show that flextime is negatively related to mental psychological health outcomes such as depression and thus improves employees' psychological health. Costa et al. (2004, 2006) found that flextime improves 19 possible psychological health disorders, e.g., hearing problems, vision problems, headache, stomach ache, heart disease, injury, stress, sleeping problems and anxiety. In line with COR theory and prior research, we assume that the conservation of resources enabled by FWAs is positively related to psychological health.

Hypothesis 1: Flextime (H1a) and telecommuting (H1b) are positively related to psychological health.

Flextime allows employees to flexibly choose their working hours to attend a doctor consultation, for example, or to do sports activities. Telecommuting can protect the resources of employees by allowing them to choose the timing of their breaks. Hence, fewer resources are lost in the process of juggling work and non-work roles (Grandey & Cropanzano, 1999). FWAs provide employees with opportunities to maintain or increase their personal resources and FWAs increase job satisfaction due to the increase of perceived autonomy (Hackman & Oldman, 1976). Thus, we assume that FWAs are positively related to job satisfaction.

Hypothesis 2: Flextime (H2a) and telecommuting (H2b) are positively related to job satisfaction.

Gajendran, Harrison and Delaney-Klinger (2014) show that telecommuting increases performance. Bloom, Liang, Roberts, and Ying (2014) found that employees of a travel agency working from home delivered 13% higher performance compared to employees working in the call-centre office. Bloom et al. (2014) explain this positive effect on performance by the reduced number of disruptions when working at home. Flextime helps employees to work in their most productive

time by considering their circadian rhythm (Pierce & Newstrom, 1980). For example, some employees might work more productively in the morning, while others work more productively in the afternoon. Overall, FWAs enable employees to modify their work schedule and workplace to better match when and where they work most effectively (e.g., Gajendran & Harrison, 2007).

Hypothesis 3: Flextime (H3a) and telecommuting (H3b) are positively related to performance.

Employees who work under FWAs will have to deal with fewer stressors at the workplace and hence will show improved psychological health (e.g., Kattenbach, Demerouti, & Nachreiner, 2010; Masuda et al., 2012). Improved psychological health reduces the number of sick days. The COR theory argues that when employees perceive their resources to be inadequate to handle the work demands, they try to change their situation (Grandey & Cropanzano, 1999; Hobfoll, 1989). By being absent from work, employees seek to regain resources lost to work stress (Grandey & Cropanzano, 1999). By giving employees increased flexibility over when and how to carry out work, FWAs provide employees the means to manage their resources and to reduce stress (Hall et al., 2006), alleviating the need for being absent.[1]

Hypothesis 4: Flextime (H4a) and telecommuting (H4b) are negatively related to absenteeism.

Stress management training

SMT is a secondary preventive intervention that aims to improve employees' ability to cope with stress and thereby safeguard employees' resources (Richardson & Rothstein, 2008). By teaching employees new coping strategies, SMT attempts to reduce the severity of stress symptoms and so prevent these from leading to serious psychological health problems. Cognitive–behavioural skills training, for example, is intended to change employees' appraisal of and responses to stress-inducing situations. Through better understanding and through use of these skills and strategies, employees gain knowledge and control, and expend less energy and time in their response to a potentially stressful situation. Exercising relaxation techniques, for example, can return an employee to a state of control and replenish energy levels so that subsequent stress-inducing situations do not continually sap energy from an ever-diminishing reserve.

If people can manage stress, the negative consequences of stress are typically reduced (Ivancevich et al., 1990; Richardson & Rothstein, 2008). Through cognitive–behavioural skills training and relaxation techniques, for example, employees learn to change their perspective on a situation. These stress management techniques increase the employee's ability to cope with the particular situation or object (Bond & Bunce, 2000), which in turn protects their resources and improves psychological health.

Hypothesis 5: Cognitive–behavioural skills training (H5a), relaxation techniques (H5b) and multiple SMT (H5c) are positively related to psychological health.

By offering SMT to employees, organizations enable employees to better cope with stress at the workplace (Richardson & Rothstein, 2008). In line with the COR theory, SMT helps individuals to adequately deal with work pressures, which improves job satisfaction (Bond & Buce, 2000). Moreover, organizations offering SMT document their willingness to help their employees to reduce negative stress symptoms before they lead to serious psychological health problems (Murphy & Sauter, 2003). This is in turn linked to increased job satisfaction (e.g., Baltes et al., 1999). Thus, we expect that SMT is positively related to job satisfaction.

Hypothesis 6: Cognitive–behavioural skills training (H6a), relaxation techniques (H6b) and multiple SMT (H6c) are positively related to job satisfaction.

In line with the COR theory, resources are considered valuable because they represent a means to gaining further resources. Work pressures distract employees and drain resources that are then not available for the work that needs to be done (Jamal, 1985). Because SMT enables employees to better protect their resources (Richardson & Rothstein, 2008), employees no longer display inadequate coping behaviour and have more resources, and especially time, for productive work. For example, cognitive–behavioural skills training is designed to change employees' appraisal of stressful situations (Bellarose & Chen, 1997). Relaxation techniques reduce adverse reactions to stress (Richardson & Rothstein, 2008), and multiple SMTs highlight the acquisition of both passive and active coping skills (van der Klink et al., 2001). We therefore expect SMT to increase performance.

Hypothesis 7: Cognitive–behavioural skills training (H7a), relaxation techniques (H7b) and multiple SMT (H7c) are positively related to performance.

Absenteeism can be explained as a reaction to a threat of resources (Schaufeli, Bakker, & Van Rhenen, 2009), a coping strategy that employees may use to deal with stressful situations when they feel unable to work. By providing employees with better coping strategies, SMT saves employees' resources. As a consequence, employees do not feel the need to escape from stressful work circumstances (Grandey & Cropanzano, 1999). In addition, SMT also improves employees' psychological health and so reduces sick days.

Hypothesis 8: Cognitive–behavioural skills training (H8a), relaxation techniques (H8b) and multiple SMT (H8c) are negatively related to absenteeism.

Moderators

Moderators are likely to weaken or strengthen the effects of FWAs and SMT on employee outcomes. We test the *intensity of the intervention* and the *duration of the intervention* as moderators because studies like Gajendran and Harrison (2007) or Richardson and Rothstein (2008) suggest that both factors

may influence the effects of FWAs and SMT. The moderating effect of the *mean age* of the employee is also tested because people of different ages have different self-concepts, identities, social interaction patterns and coping strategies (Heckhausen & Brim, 1997; ; Steverink & Lindenberg, 2006), which may influence their responses to FWAs and SMT. Employees of different age groups have different responsibilities and therefore different preferences for making use of FWAs and SMT (e.g., Kanfer & Ackerman, 2004).

Bianchi, Robinson and Milke (2006) show that although more women are present in the workforce today, they still spend just as many hours per week on caregiving activities as they did in the past, and many more hours than men. The ageing population means that the demand for caregiving activities for ageing relatives is increasing (Kelly et al., 2011). FWAs and SMT may therefore be more relevant to women, who must more commonly manage work and family demands than men (Scandura & Lankau, 1997). We therefore analyse the moderating effect of *gender*.

In addition, the measured effect sizes of FWAs and/or SMT in a study may depend on the quality of the primary study. Study quality is defined as the fit between concepts and operations, the clarity of causal interference, the generality of the findings and the precision of the outcome estimation. Low quality may attenuate or inflate the size of effects observed in primary studies (Baltes et al., 1999; Valentine & Cooper, 2008). We therefore include the *primary study quality* as moderator.

Method

Literature research

We conducted a search for relevant literature in the databases PsycInfo, PSYINDEX and ERIC using keywords that represented flexibility or stress management techniques, coupled with keywords that represented employees' attitudes. Keywords for flexibility included *flextime, flexible work schedules, telecommuting, telework* and *remote work*. Keywords for stress management techniques included *stress management intervention, relaxation, cognitive behavioural*, *mediation* and *deep breathing*. If a study met the inclusion criteria but did not report the necessary statistical data, we contacted the investigator. The reference lists of included studies were screened for additional related studies.

Inclusion criteria

The aim of this meta-analysis is to determine the effects of primary preventive interventions and secondary preventive interventions on employees. With the goal of assembling data from many different relevant primary studies into generalizable knowledge (Viechtbauer, 2010), we defined broad inclusion criteria. Furthermore, we have not restricted our analysis to peer-reviewed studies, but have also included work published in theses, dissertations, conference proceedings and research reports. This reduces or even avoids a publication bias (for more details, cf. Sutton, 2009).

To be included in this meta-analysis, a study had to meet the following criteria: (a) the effect of FWAs and/or SMT on one or more of our considered outcomes must be explored. (b) These effects must be clearly identifiable and attributable to one of the five sub-categories flextime, telecommuting, cognitive–behavioural skills training, relaxation techniques or multiple SMT. (c) The sample must only include employees. (d) These employees must not have been diagnosed with a major psychiatric disorder or clinically diagnosed disorder. (e) The study design must be a real experiment, a quasi-experiment or a field study, and (f) for a real or quasi-experiment the sample size must be at least 10 (Morris, 2008). (g) The study must have been published in English or German and after 1976, the year the APA Task Force on Psychological Health Research published a report that exhorted psychologists, including industrial/organizational psychologists, to take a role in examining the psychological health problems of Americans (Beehr & Newman, 1978; Richardson & Rothstein, 2008). (h) The reported statistical measures must include sample size, mean and standard deviation or measures that can be converted into a standardized mean (e.g., *t*-values).

Coding

Our coding guide was developed based on the recommendations of Lipsey and Wilson (2001). Six types of variables were coded: characteristics of study (publication year, study design, time of follow-up measurement), quality (multifaceted assessment of quality with the Study DIAD and the journal impact factor), sample (size, sex ratio, mean age, tenure, organization type and country), intervention (broad type: FWA vs. SMT, detailed type: telecommuting vs. flextime vs. relaxation vs. multimodal vs. cognitive–behavioural training, duration and assignment), outcome (instrument, label(s) of outcome(s), reference(s) and psychometric information) and effect size (size, statistical information needed to compute sample variance). To evaluate the coding decisions, two of the study authors independently coded each study. For this purpose, the two authors were provided with a standardized coding guide. After they had tested the procedure and the coding guide on a sample of studies, problems were discussed and conventions were defined. The interrater agreement rate (cf. Orwin & Vevea, 2009) was 91.6%. Thus, we judge the coding scheme to be reliable.

Predictors

In most primary studies, FWAs are measured as a dichotomous or categorical variable. This means that employees working under FWAs are compared to employees working under conventional work arrangements. Other studies measure FWAs on a continuous scale (e.g., 0 to 5 days with telecommuting). To examine dissimilarity in cumulative effect sizes between the two groups of indicators of FWAs, a subgroup analysis (Hedges & Olkin, 1985) was conducted. As the test did not reveal any systematic differences between the two types of indicators for flextime and telecommuting (Q_M = .28, *non significant*), the derived effect sizes can be treated as equivalent. No statistical adjustment is needed for any of the different categories of SMT.

Outcomes

In coding the outcome variables, we follow widely accepted definitions and their construct-label synonyms. In line with other meta-analyses (e.g., Richardson & Rothstein, 2008), we

conceptualize *psychological health* as the absence of negative conditions and feelings (Keyes, 1998) and as an aggregated latent construct of psychological measures (e.g., general mental psychological health, anxiety and depression). Most studies report multiple measurements of psychological health. To avoid subjective influence on the analysis process by selecting specific psychological health measures as being representative, we use the average of the outcomes for the overall analysis (Lipsey & Wilson, 2001). We include perceived stress, anxiety, depression and burnout as indicators for psychological health. *Job satisfaction* is defined as a positive emotional state resulting from the appraisal of one's job experience (Locke & Latham, 1990) and is coded when studies report a measure of job satisfaction or job dissatisfaction (reverse coded). *Job performance* is defined as employees' behaviour that is relevant to achieving the goals of the organization (Campbell, McHenry, & Wise, 1990) and is measured via external (e.g., supervisory ratings) and self-assessments. *Absenteeism* is defined as "a lack of physical presence at behavior setting when and where one is expected to be" (Harrison & Price, 2003, p. 204) and was measured objectively by the number of days per year an employee is recorded absent.

Moderators

The *quality of primary studies* was measured via the Study Design and Implementation Assessment Device by Valentine and Cooper (2008). It judges four levels of quality, including the fit between concepts and operations, the clarity of causal interference, the generality of the findings and the precision of the outcome estimation. For the calculation of a quality score, a weighted average of the four scales was calculated with a range between 0 and 1. The mean quality of studies was .70. The *duration of FWAs/SMT* was coded as the exact treatment duration in weeks from the first treatment event to the last treatment event, excluding follow-up designs (M = 14.3, SD = 17.4). We coded the *intensity of FWAs/SMT* of at least 2.5 days per week or more than 90 min per training day as high intensity and of less than 2.5 days or less than 90 min per training day as low intensity (e.g., Gajendran & Harrison, 2007). We coded *gender* as the proportion of women and *age* as the mean age.

Meta-analytic techniques

The statistical freeware R (R Core Team, 2013), in particular the package "metafor" (Viechtbauer, 2010), was used to conduct the statistical analyses. All statistical tests were two-sided with a significance level of .05, except where otherwise noted.

Because we assume heterogeneity across FWAs, SMT and sample characteristics, the random effects model was considered to be the most appropriate technique for the current meta-analysis. Following this approach, the true effect size itself is seen as a random but normally distributed variable taking on different values in different studies (Raudenbush, 2009). The validity of this assumption of a random effects model was investigated in two ways. First, Cochran's (1954) Q-Test was used to investigate whether statistical homogeneity of the effect sizes could be assumed. In the presence of moderators, this test generalizes to the Q_E-Test for residual heterogeneity (Viechtbauer, 2007). Second, the I^2-statistic () was inspected, which represents the amount of variability across studies that is attributable to between-study differences rather than to sampling error variability. Since strict cut-off values for I^2 are potentially misleading, our interpretation of I^2 is based on recommendations by Higgins and Green (2011). To test the hypotheses, we conducted subgroup analyses with restricted maximum likelihood estimation (REML). As most of the primary studies reported mean differences between control and intervention groups, we calculated *Hedges' g* (cf. Hedges, 1981) to represent the intervention effects reported in the eligible studies. We ran random effects models only when we had at least three independent effect sizes.

To test for moderators, we conducted subgroup analyses with REML. The underlying random effects model should now be called a mixed effects model, because one moderator is added to the analysis (Viechtbauer, 2005). More precisely, mixed-effects models contain a random effects model within subgroups and a fixed effects model across subgroups. A significant test for the heterogeneity of true correlations across primary studies attributable to the moderator (Q_M) supports the presence of a moderating effect (Hedges & Olkin, 1985).

Random error of measurement in the outcome variables (i.e., insufficient reliability) produces systematic artefacts and the resulting attenuation was corrected (Schmidt, Huy, & Oh, 2009). This procedure could only be conducted for psychological health and job satisfaction, because for these outcomes reliability coefficients could be determined.[2] For studies that did not report reliabilities, an average reliability from the other primary studies that involved the same construct was imputed. This was the case for two psychological health indicators (Forman, 1982; Halpern, 2005) and two indicators of job satisfaction (Peters & Carlson, 1999; Siu, Cooper, & Phillips, 2013).

Results

Study characteristics

We found a total of 3,208 potentially relevant studies. The final study selection took place in two steps (see Figure 1). First, the abstracts of all studies were screened in order to decide whether the full text of the studies should be reviewed in detail. Most studies were excluded on an initial review of the abstract, either because they included inappropriate participants (e.g., students), they could be characterized as reviews or meta-analyses themselves or they were duplicates. When the decision was made to include a study but the full text was not available, the investigators were contacted. For included studies, the reference lists were screened for additional studies, repeating the process for these studies. This additional search resulted in 43 extra studies. After screening the abstracts, 129 studies remained. In a second step, all 129 studies were screened in detail. If a study met the inclusion criteria but did not report the necessary statistical data, the investigator was contacted. This involved 16 studies. Finally, 43 articles were included in this meta-analysis, representing 52 implementations and more specifically 28 of FWAs and 24 of SMT.

Table 1 summarizes the characteristics of the primary studies included in this meta-analysis. It shows the measured predictors and outcomes of each particular primary study, as

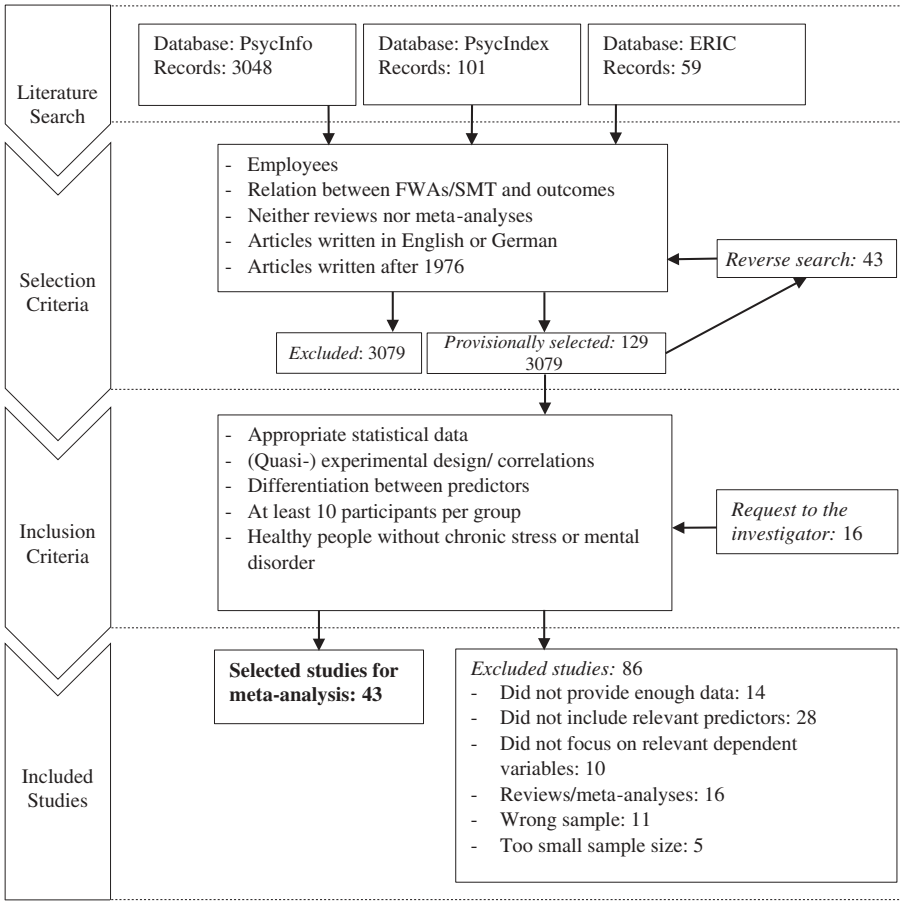

Figure 1. Schematic diagram of literature research and inclusion.

well as the instruments used. There was no uniform scale used for any construct. For example, job satisfaction was measured via six different scales. Furthermore, the quality score of each primary study is presented in Table 1. Some statistical data had to be transformed to Hedges' *g*, and the respective effect sizes are marked in Table 1. If the investigator of the primary study had to be contacted because of missing statistical data, this is also indicated in Table 1.

Meta-analytic results

The meta-analytic results in Table 2 support hypotheses H1a and H1b that flextime (g = .19, 95% CI = .07, .30) and telecommuting (g = .22, 95% CI = .01, .43) are positively related to psychological health. The Q_E values are highly significant (p < .001) and the I^2-statistics suggest that more than 85% of the total variance is due to between-study variance, supporting the assumption of a random effects model.

The second line in Table 2 shows that flextime (g = .25, 95% CI = .13, .37), but not telecommuting (g = .12, 95% CI = −.05, .29), is positively related to job satisfaction, which supports hypothesis H2a but not H2b. The significant Q_E values (p < .001) and the I^2-statistics also support the assumption of a random effects model.

The third line in Table 2 shows that flextime (g = .11, 95% CI = −.08, .30) and telecommuting (g = .07; 95% CI = −.11, .25) are not significantly related to job performance. Thus, our meta-analysis does not support hypotheses H3a and H3b. The Q_E values are statistically significant for flextime (p < .05) and for telecommuting (p < .01), and the I^2-statistics indicate that more than 56% of the observed variance stems from real difference between studies.

The fourth line in Table 2 shows that the effect of flextime on absenteeism was not statistically significant (g = −.02, 95% CI = −.07, .03), which does not support hypothesis H4a. The Q_E value was nonsignificant, indicating that the variance was due to sampling error. Unfortunately, hypothesis H4b that telecommuting decreases absenteeism could not be tested in our meta-analysis, as only one primary study was available.

The results in Table 3 show that cognitive–behavioural skills training (g = .43, 95% CI = .22, .63), relaxation techniques (g = .77, 95% CI = .27, 1.26) and multimodal SMT (g = .25, 95% CI = .09, .42) are positively related to psychological health, which supports hypotheses H5a, H5b and H5c. The Q_E values of cognitive–behavioural skills training and multimodal SMT were not significant, indicating that the variance in this sample of effect size was not greater than would be expected as a result of sampling error. While the I^2-statistic for multimodal SMT was equal to 0%, the I^2-statistic for cognitive–behavioural skills training was 21%. The Q_E value of relaxation techniques was highly significant (p < .001). The corresponding I^2-statistic indicates that 79% of total variance was due to between-study variance.

Because the number of primary studies with job satisfaction as dependent variable and a form of SMT as predictor was only three or more for multimodal SMT, but neither for cognitive–behavioural skills training nor for relaxation techniques,

Table 1. Characteristics of the primary studies included in the meta-analysis.

Author(s) and year	Interventions per study	Sample size[a] and description[b]		Intervention type	Treatment components	Outcome measured[c]	Study quality
Anderson, Coffey, and Byerly (2002)[e]	A	Multiple organizations, USA (N = 2,248)	FWA	Flextime	Flexible work schedules	Stress, job satisfaction (both Anderson et al., 2002), absenteeism (objective)	0.54
Bond and Bunce (2000)	A	Office (N = 44, T = 24, C = 20)	SMT	Cognitive–behavioural intervention	Acceptance and commitment therapy	General health (GHQ-12), depression (BDI), intrinsic job satisfaction	0.83
Brinkborg, Michanek, Hesser and Berglund (2011)	A	Office, Europe (N = 106, T = 70, C = 36)	SMT	Cognitive–behavioural intervention	Acceptance and commitment therapy	General mental health (GHQ-12), perceived stress (PSS), burnout (MBI)	1.00
Cecil and Forman (1990)	A	Education (N = 37, T = 17, C = 20)	SMT	Multimodal	Stress Inoculation Training: relaxation, cognitive–behavioural skills	Professional distress, emotional manifestations strength (both TSI), school stress, task-based stress, job satisfaction (all SISS)	0.75
Chow and Chew (2006)[e]	A	Office, Asia (N = 147, T = 91, C = 56)	FWA	Flextime	Flexibility in working hours	Productivity	0.59
de Jong and Emmelkamp (2000)	A	Multiple organizations, Europe (N = 86, T = 45, C = 41)	SMT	Multimodal	Relaxation, cognitive–behavioural skills, problem-solving, assertiveness training (taught by clinical psychologist)	Psychological distress (GHQ-12), distress in assertiveness (SIB), daily hassles (SRLE), somatic or psychosomatic complaints (PCQ), trait anxiety (STAI-T), role overload, dissatisfaction with quality at work (both OSQ), absenteeism	0.80
Dubrin (1991)	A	Office, USA (N = 67, T = 34, C = 33)	FWA	Telecommuting		Job satisfaction (MSQ)	0.80
Dunham, Pierce, and Castanada (1987)	A	Office, USA (N = 102, T = 55, C = 47)	FWA	Flextime	Flexible work schedules	Psychological stress, general job satisfaction (MSQ)	0.72
Flaxman and Bond (2010)	A	Office, Europe (N = 191, T = 104, C = 87)	SMT	Cognitive–behavioural intervention	Acceptance and commitment therapy	Psychological distress (GHQ-12)	0.84
Fonner and Roloff (2010)[e]	A	Office (N = 192, T = 89, C = 103)	FWA	Telecommuting		Stress from meetings and interruptions (Fonner & Roloff, 2010), global job satisfaction	0.66
Forman (1982)	A	Education, USA (N = 24, T = 12, C = 12)	SMT	Multimodal	Relaxation, cognitive–behavioural skills	Stress, state anxiety, trait anxiety (all STAI-T)	0.82
Ganster, Mayes, Sime, and Tharp (1982)	A	Office (N = 79, T = 40, C = 39)	SMT	Multimodal	Cognitive–behavioural skills, progressive muscle relaxation	Anxiety depression	0.84
Golden (2006)[e]	A	Office, USA (N = 294)	FWA	Telecommuting		Overall job satisfaction (MOAQ)	0.80
Golden and Veiga (2005)[e]	A	Office (N = 321)	FWA	Telecommuting		Overall job satisfaction (MOAQ)	0.55
Halpern (2005)[e]	A	Multiple organizations, USA (N = 3,552)	FWA	Flextime	Flexible work schedules	Work-related stress, absenteeism	0.38
Hartfiel, Havenhand, Khalsa, Clarke, and Krayer (2011)	A	Education, Europe (N = 40, T = 20, C = 20)	SMT	Relaxation technique	Yoga, meditation, breathing	Composed-anxious, elated-depressed, energized-tired (all POMS-Bi)	0.88
Hartman, Stoner, and Arora (1991)[e]	A	Multiple organizations (N = 97)	FWA	Telecommuting		Job satisfaction, productivity	0.50
Higgins (1986)	A	Office (N = 35, T = 17, C = 18)	SMT	Relaxation technique	Relaxation, desensitization	Personal strain (PSQ), emotional exhaustion (MBI), absenteeism (WSQ)	0.83
	B	Office (N = 36, T = 18, C = 18)	SMT	Multimodal	Goal-setting, time management, cognitive–behavioural skills		
Hill, Miller, Weiner, and Colihan (1998)[e]	A	Office, USA (N = 249, T = 157, C = 89)	FWA	Telecommuting		Job satisfaction, productivity	0.60
Hill, Ferris, and Märtinson (2003)	A	Multiple organizations, USA (N = 6,133, T = 441, C = 4,315)	FWA	Telecommuting	Home office	Job performance	0.38
Hornung and Glaser (2009)	A	Office, Europe (N = 1,008, T = 631, C = 377)	FWA	Telecommuting		Job satisfaction	0.63
Hülsheger, Alberts, Feinholdt, and Lang (2013)[d]	A	Multiple organizations, Europe (N = 64, T = 22, C = 42)	SMT	Multimodal	Mindfulness meditation, cognitive–behavioural skills	Emotional exhaustion (MBI), job satisfaction (BOJSM II)	0.80

(*Continued*)

Table 1. (Continued).

Author(s) and year	Interventions per study	Sample size[a] and description[b]	Intervention type		Treatment components	Outcome measured[c]	Study quality
Kaspereen (2012)	A	Education (N = 54, T = 27, C = 27)	SMT	Relaxation technique	Meditation, deep breathing, relaxation	Perceived stress (PSS), life stress (PLSS)	0.58
Kattenbach et al. (2010)[e]	A	Office, Europe (N = 167)	FWA	Flextime	Flexibility of working time	Exhaustion (OBI), performance	0.63
Kim and Campagna (1981)	A	Office (N = 346, T = 161, C = 185)	FWA	Flextime		Absenteeism	0.87
	B	Office (N = 94, T = 42, C = 52)	FWA	Flextime		Productivity	
Lee and Crockett (1994)	A	Psychological health care, Asia (N = 57, T = 29, C = 28)	SMT	Cognitive–behavioural intervention	Assertiveness training	Perceived stress (PSS)	0.66
Lloyd, Bond, and Flaxman (2013)	A	Office, Europe (N = 100, T = 43, C = 57)	SMT	Cognitive–behavioural intervention	Acceptance and commitment therapy	General mental health (GHQ-12), emotional exhaustion (MBI)	0.94
Masuda et al. (2012)[e]	A	Multiple organizations, Asia (N = 1,213)	FWA	Telecommuting		Strain, job satisfaction (MOAQ)	0.48
	B	Multiple organizations, Asia (N = 1,213)	FWA	Flextime			
	C	Multiple organizations, USA (N = 1,213)	FWA	Telecommuting			
	D	Multiple organizations, USA (N = 1,213)	FWA	Flextime			
	E	Multiple organizations (N = 1,492)	FWA	Telecommuting			
	F	Multiple organizations (N = 1,492)	FWA	Flextime			
Mazaheri, Darani, and Eslami (2012)	A	Manu-factoring, Asia (N = 83, T = 42, C = 41)	SMT	Multimodal	Relaxation, deep breathing, meditation, cognitive–behavioural skills	Role overload, role insufficiency, role ambiguity, job dissatisfaction (all OSI-R)	0.59
Murphy and Sorenson (1988)	A	Office (N = 97, T = 21, C = 76)	SMT	Relaxation technique	Muscle relaxation	Absenteeism (objective), job performance	0.63
Narayanan and Nath (1982)	A	Office (N = 239, T = 173, C = 66)	FWA	Flextime		Job satisfaction, productivity	0.61
Petchesawanga and Duchon (2012)[e]	A	Office, Asia (N = 60, T = 30, C = 30)	SMT	Relaxation technique	Meditation training	Work performance	0.57
Peters and Carlson (1999)	A	Office, USA (N = 40, T = 21, C = 19)	SMT	Multimodal	Relaxation, cognitive–behavioural skills, psychological health education, goal-setting	Anxiety, curiosity, anger, depression (all STPI), job satisfaction (LL)	0.74
Raghuram and Wiesenfeld (2004)[e]	A	Office (N = 756)	FWA	Telecommuting		Job stress	0.58
Roger and Hudson (1995)[f]	A	Office, Europe (N = 147, T = 75, C = 72)	SMT	Multimodal	Relaxation, cognitive–behavioural skills	Absenteeism	0.84
Sardeshmukh, Sharma, and Golden (2012)[e]	A	Office, USA (N = 417)	FWA	Telecommuting		Role conflict, role ambiguity, exhaustion (MBI)	0.75
Shapiro, Astin, Bishop, and Cordova (2005) [d]	A	Psychological health care, USA (N = 38, T = 10, C = 18)	SMT	Relaxation technique	Meditation, body scan, yoga, breathing	Psychological distress (BSI), perceived stress (PSS), burnout (MBI)	0.73
Siu et al. (2013)	A	Education (N = 98, T = 50, C = 48)	SMT	Multimodal	Cognitive–behavioural skills, relaxation	Emotional exhaustion (MBI), job satisfaction	0.73
Stavrou (2005)	A	Multiple organizations, Europe (N = 2,811)	FWA	Telecommuting	Telecommuting and home office	Absenteeism, job performance	0.46
ten Brummelhuis and van der Lippe (2010)[e]	A	Multiple organizations, Europe (N = 482)	FWA	Telecommuting	Telecommuting	Work performance	0.47
	B	Multiple organizations, Europe (N = 482)	FWA	Flextime	Flextime		

(*Continued*)

Table 1. (Continued).

Author(s) and year	Interventions per study	Sample size[a] and description[b]		Intervention type	Treatment components	Outcome measured[c]	Study quality
Virick et al. (2010)[e]	A	Multiple organizations, USA (N = 85)	FWA	Telecommuting		Job satisfaction (MOAQ), perceived performance	0.56
Wolever et al. (2012)	A	Office (N = 149, T = 96, C = 53)	SMT	Relaxation technique	Mindfulness	Perceived stress (PSS), mood and pain (CES-D), productivity (WLQ)	0.78
Yung, Fung, Chan, and Lau (2004)	A	Psychological health care, Asia (N = 47, T = 17, C = 30)	SMT	Relaxation technique	Stretch relaxation	Mental health (GHQ-12), state anxiety, trait anxiety (both STAI-T)	0.90
	B	Psychological health care, Asia (N = 48, T = 18, C = 30)	SMT	Relaxation technique	Cognitive relaxation		

[a] Based on sample size after attrition; [b] country and organization type, where the primary study was conducted; [c] frequently used scales noted in parentheses; [d] received statistical data from the authors; [e] converted r-values into Hedges' g; [f] converted t-values into Hedges' g A: first reported intervention in an article; B: second reported intervention with the same sample or the same control group as A; C: third intervention in a sample reported in the same article like A and B; D: fourth intervention with the same sample or the same control group as C; E: fifth intervention in a sample, reported in the same article like A, B, C and D; F: sixth intervention with the same sample or the same control group compared to E; N: total sample size; T: treatment group; C: control group, FWA: flexible work arrangements; SMT: stress management training; TSI: Teacher Stress Inventory; SISS: Stress in the School Setting; GHQ-12: General Health Questionnaire 12; JIG: Job in General Scale; BDI: Beck Depression Inventory; SIB: The Scale of Interpersonal Behaviour; SRLE: the survey of recent life experience; PCQ: Psychosomatic Complaints Questionnaire; STAI-T: State Trait Anxiety Inventory; OSQ: Occupational Stress Questionnaire; MSQ: Minnesota Satisfaction Questionnaire; MOAQ: Michigan Organizational Assessment Questionnaire; PSQ: Personal Strain Questionnaire; MBI: Maslach Burnout Inventory; PSS: Perceived Stress Scale; PLSS: Professional Life Stress Scale; STPI: State Trait Personality Inventory; LL: Live for Life Scale; BOJSM II: Brief Overall Job Satisfaction Measure II; CES-D: Center for Epidemiologic Studies Depression Scale; WLQ: The Work Limitation Questionnaire; WSQ: Work Schedule Questionnaire; BSI: Brief Symptom Inventory; OSI-R: Occupational Stress Inventory Revised; POMS-Bi: Profile of Mood States Bipolar Scale.

Table 2. Random effects model results based on flexible work arrangements.

	Flextime								Telecommuting							
					95% CI		Heterogeneity						95% CI		Heterogeneity	
	k	N	g	SE	LL	UL	Q_E (df)	I^2	k	N	g	SE	LL	UL	Q_E (df)	I^2
Psychological health	**7**	**9,987**	**.19****	.12	.07	.30	34.87 (6) ***	85.32%	**6**	**5,283**	**.22***	.21	.01	.43	60.62 (5) ***	93.03%
Job satisfaction	**5**	**6,268**	**.25*****	.12	.13	.37	19.68 (4) ***	80.47%	11	6,228	.12	.17	−.05	.29	66.31 (10) ***	89.87%
Job performance	5	1,129	.11	.19	−.08	.30	9.80 (4) *	56.19%	6	8,477	.07	.18	−.11	.25	19.04 (5) **	86.24%
Absenteeism	3	6,146	−.02	.05	−.07	.03	1.00 (2)	0%	1	2,811	–		–	–	–	–

k: number of primary studies; N: sample size; g: Hedges' g; SE: standard error; 95% CI: 95% confidence interval; LL: lower limit; UL: upper limit; Q_E: test of residual heterogeneity; I^2: amount of variability across studies due to between-study difference; values shown in bold reflect hypothesized results.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3. Random effects model results based on stress management training.

Outcome variable	Cognitive–behavioural skills training							Relaxation techniques							Multimodal stress management training						
				95% CI		Heterogeneity					95% CI		Heterogeneity					95% CI		Heterogeneity	
	k	*N*	g	LL	UL	Q_E (*df*)	I^2	k	*N*	g	LL	UL	Q_E (*df*)	I^2	k	*N*	g	LL	UL	Q_E (*df*)	I^2
Psychological health	**5**	**498**	**.43*****	**.22**	.63	5.53(4)	21.01%	**7**	**401**	**.77****	.27	1.26	33.67 (6)***	79.18%	**9**	**547**	**.25****	.09	.42	4.50 (8)	0%
Job satisfaction	1	44	–	–	–	–	–	0	–	–	–	–	–	–	6	408	.21	.27	.69	30.24 (5)***	83.03%
Job performance	0	–	–	–	–	–	–	**3**	**306**	**.77***	.06	1.48	16.45 (2)***	86.66%	0	–	–	–	–	–	–
Absenteeism	0	–	–	–	–	–	–	2	132	–	–	–	–	–	2	183	–	–	–	–	–

k: number of primary studies; *N*: sample size; *g* = Hedges' *g*; 95% CI: 95% confidence interval; LL: lower limit; UL: upper limit; Q_E: test of residual heterogeneity; I^2: amount of variability across studies due to between-study difference; values shown in bold reflect hypothesized results.
**p* < .05.
** *p* < .01.
*** *p* < .001.

we could only test hypothesis H6c, that multimodal SMT is positively related to job satisfaction, but not hypotheses H6a and H6b. The effect of multimodal SMT on job satisfaction was not statistically significant (*g* = .21, 95% CI = −.27, .69), which does not support hypothesis H6c. The highly significant Q_E value ($p < .001$) and the I^2-statistic indicate that 83% of total variance was due to between-study variance.

Primary studies with job performance as dependent variable were only available for relaxation techniques but neither for cognitive–behavioural skills training nor for multimodal SMT. Thus, we could only test hypothesis H7b that relaxation techniques are positively related to job performance but not hypotheses H7a and H7c. Table 3 shows that relaxation techniques are positively related to job performance (*g* = .77, 95% CI = .06, 1.48), which supports H7b. The Q_E value was highly significant ($p < .001$), and the I^2-statistic indicates that 86% of total variance was due to between-study variance.

When predicting absenteeism, we found no primary studies on cognitive–behavioural skills training and only two primary studies on relaxation techniques and multimodal SMT. Because the number of primary studies is below the threshold level of three, we could not conduct a meta-analytical analysis of the effects of SMT on absenteeism.

Moderator analyses

The mostly significant Q_E values and the I^2-statistics indicate substantial heterogeneity and the potential influence of moderators. In this section, we test whether study quality, age, gender, duration or intensity of FWAs and SMT explain systematic differences in effect sizes. As there is a risk of alpha inflation due to multiple testing, we used the Bonferroni–Holm correction (Holm, 1979). This correction was performed for all *p*-values of the moderator analyses. Due to the low frequencies of the original studies, analyses could only be performed on the inverse-variance weighted average outcome. Table A1 in the Appendix shows that study quality decreases the positive effects of multimodal SMT on the average outcome. The moderating influence is with a *p*-value of .08 marginally significant. None of the moderating effects of the intensity (cf. Table A2) or the duration (cf. Table A3) of the intervention, or of the mean age (cf. Table A4) or the gender (cf. Table A5) of the employees is statistically significant.

Test for publication bias

To assess publication bias, we performed the Egger test (Egger, Smith, Schneider, & Minder, 1997) on the average outcome. The results for both FWAs ($z = -1.24$, *ns.*) and SMT ($z = -.72$, *ns.*) indicate that no funnel plot asymmetry could be detected, which is evidence that publication bias does not seem to invalidate our meta-analytic results.

Discussion

The results of our meta-analysis of 43 primary studies show that FWAs (flextime and telecommuting) and SMT (cognitive–behavioural skills training, relaxation techniques and multimodal SMT) are positively related to psychological health. Our findings corroborate the COR theory and are in line with prior meta-

analyses (e.g., Baltes et al., 1999; Gajendran & Harrison, 2007). Flextime and telecommuting are likely to increase employees' resources because they enable employees to decide when and where they conduct their work. SMT, such as cognitive–behavioural skills training, relaxation techniques and multimodal SMT, enhances the employees' ability to cope with stressors at the workplace. Consequently, employees perceive fewer situations as stressful, which improves psychological health.

The largest effect size is found for relaxation techniques. Relaxation techniques are easy to learn and to implement (Bellarosa & Chen, 1997), which may explain why they are so effective in improving individual psychological health. Relaxation techniques help in refocusing attention away from the stress source and thus in reducing troubling thoughts or feelings. In contrast, cognitive–behavioural skills training is much more challenging to learn and to implement because it requires employees to take charge of their negative thoughts by changing their cognitive processes (Lamontagne et al., 2007). Hence, the outcomes of cognitive–behavioural skills training should be measured again in repeated follow-up studies. Meta-analyses based on longitudinal data are highly recommended.

When predicting job satisfaction, we find significantly positive effects of flextime but no significant effects of telecommuting and multimodal SMT. By offering flextime, organizations help the employees to protect their resources. With respect to telecommuting, the positive and negative job satisfaction aspects seem to neutralize each other. One drawback of telecommuting is that the permeability of work and life boundaries increases (Heijstra & Rafnsdottir, 2010; Igbaria & Guimaraes, 1999), which amplifies work–family conflict (Green, López, Wysocki, & Kepner, 2012). The main advantage of telecommuting is that telecommuters perceive higher autonomy and can flexibly choose the location of their work (Shamir & Salomon, 1985). Telecommuters also retain control over how they perform their particular job tasks. Unlike FWAs, SMT is concerned with the management of perceived stress rather than the elimination of the sources of stress (Cooper & Cartwright, 1997). In some cases, SMT may even have detrimental effects as it increases the awareness of and focus on work stressors (Cooper & Cartwright, 1997). Overall, the meta-analysis shows that SMT does not increase job satisfaction.

When predicting the effects of FWAs and SMT on job performance and absenteeism, we could not test all relationships due to an insufficient number of primary studies, a problem already addressed by Richardson and Rothstein (2008). The only kind of SMT that was found to have a significant effect on job performance was the implementation of relaxation techniques, which is consistent with the results of the earlier meta-analysis by Richardson and Rothstein (2008). One possible explanation has been mentioned earlier: of all intervention types, relaxation techniques are the easiest to learn (Bellarosa & Chen, 1997). Kaspereen (2012) and Wolever et al. (2012) demonstrate that relaxation techniques require only short training periods for improving employee-related and/or organizational outcomes. Moreover, even trainers with minimal expertise can teach relaxation techniques (Bellarosa & Chen, 1997). Concerning absenteeism, we could test only the influence of flextime, because only for flextime was a sufficient number of primary studies available. In contrast to our prediction based on the COR theory, flextime does not significantly reduce absenteeism. This may be caused by the construct itself. Absenteeism is described as a lack of presence at the expected time and place of work (Harrison & Price, 2003). Unfortunately, we do not know if absenteeism is a reaction to the workplace or if it is a response to an ordinary illness (Darr & Johns, 2008). While in the first case absenteeism is clearly a negative sign for the firm, in the second case it is not, which increases the standard errors, making insignificant results more likely.

Limitations and direction for further research

The meta-analyses show correlational associations rather than causal effects. Results are based on standardized mean differences between intervention and control group ex post. Most primary studies do not control for ex ante differences between the intervention and the control group. Because implementing FWAs and/or SMT is not random, pre-intervention characteristics are likely to differ and can lead to significant ex post differences even in the absence of a true treatment effect. Hence, we encourage field experiments that randomly assign employees to either the treatment or the control group to derive the causal effects of FWAs and SMT. Because randomized experiments are not always practical or ethical in social research, we advise future research to enhance the internal validity of quasi-experiments by including design features like removed treatment (Shadish, Cook, & Campbell, 2002) or to employ statistical techniques like propensity score matching to facilitate causal effect estimation (e.g., Guo & Fraser, 2014).

One further restriction of this meta-analysis is the limited availability of primary studies that analyse the effects of FWAs and SMT on job performance, job satisfaction and absenteeism. For example, the meta-analytic effect of relaxation techniques on job performance is based on only three primary studies. Hence, additional studies would not only contribute to this under-researched area, they would also increase the quality of future meta-analyses. We also encourage primary studies to differentiate between the *use* and *availability* of FWAs and SMT. Most existing primary studies are not clear on this point.

Even though the tested moderation effects were mostly insignificant, the heterogeneity in effect sizes is substantial and warrants future research. Hence, an important plea for future studies is to examine the moderating influence of organizational culture on the effect of FWAs and SMT and outcomes such as job satisfaction. Kossek and Lee (2005) show that employees who use FWAs have a lower salary growth if they work in an organization in which FWAs are stigmatized and whose managers consider such employees to be less committed. Therefore, the consequences of FWAs need to be studied within the context of the organizational culture in which they are embedded. We expect that FWAs have less positive effects on psychological health and job satisfaction if the organizational culture discourages their employees from making use of it.

In addition, we encourage more longitudinal research to assess the consistency of the possible effects of FWAs and SMT. Even though certain effects may need a longer time period to manifest, the number of primary studies that conducted follow-up measurements was insufficiently low to conduct a meta-analysis on long-term effects. Furthermore, it may be important to consider curvilinear relationships. For example, Golden and

Veiga (2005) and Virick, DaSilva, and Arrington (2010) found a curvilinear inversely u-shaped relationship between the extent of telecommuting and job satisfaction, which suggest that employees actually prefer medium intensities of telecommuting rather than no telecommuting or only telecommuting.

Practical implications

Our results clearly indicate that organizations should implement flextime, telecommuting, cognitive–behavioural skills training, training in relaxation techniques and multimodal SMT to improve the psychological health of their employees and thus to reduce psychological health-related costs. Psychological health-related costs not only include costs due to sick leave but also costs related to the lower performance of employees with impaired psychological health (Gosselin et al., 2013). Psychological health care costs are often substantial but typically neglected when conducting cost-efficiency programmes (e.g., Halpern, 2005). Giving training in relaxation techniques not only improves psychological health but also increases job performance, while offering flextime additionally increases job satisfaction, which is typically associated with higher organizational commitment (e.g., Brunetto, Teo, Shacklock, & Farr-Wharton, 2012). Our results further imply that FWAs and SMT have an independent positive effect on psychological health. For employees whose work is incompatible with FWAs (i.e., assembly-line work), organizations can still offer SMT and hence help employees to better cope with stress. Furthermore, the FWAs and SMT seem to be equally effective for men and women and for employees of different ages.

Conclusion

The current meta-analysis shows that FWAs (flextime and telecommuting) and different kinds of SMT improve employees' psychological health. Flextime additionally increases job satisfaction, while relaxation techniques, one kind of SMT, improve job performance. We find no evidence that age, gender, the duration of the intervention or the intensity of the intervention moderates the effects of FWAs as primary preventive interventions, nor of SMT as a secondary preventive intervention. Some effects of FWAs and/or SMT could not be tested meta-analytically due to an insufficient number of primary studies. There remains a shortage of primary studies that analyse how FWAs and SMT increase the effectiveness of the organizations' most important asset, their employees.

Notes

1. In addition to FWAs and SMT, absenteeism has also other antecedents such as an employee's personality and health (Jones, 2002), job satisfaction (Jones, 2001) or the absenteeism of co-workers (ten Brummelhuis, Johns, Lyons, & Ter Hoeven, 2016).
2. Job performance and absenteeism were measured via single items or via objective measurements.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

Allen, T. D., Johnson, R. C., Kiburz, K. M., & Shockley, K. M. (2013). Work–family conflict and flexible work arrangements: Deconstructing flexibility. *Personnel Psychology*, *66*, 345–376. doi:10.1111/peps.12012

American Psychological Association. (2015). *2015 work and well-being survey*. Washington, DC: Author.

*Anderson, S. E., Coffey, B. S., & Byerly, R. T. (2002). Formal organizational initiatives and informal workplace practices: Links to work-life conflict and job-related outcomes. *Journal of Management*, *28*, 787–810. doi:10.1177/014920630202800605

Baltes, B. B., Briggs, T. E., Huff, J. W., Wright, J. A., & Neuman, G. A. (1999). Flexible and compressed workweek schedules: A meta-analysis of their effects on work-related criteria. *Journal of Applied Psychology*, *84*, 496–513. doi:10.1037/0021-9010.84.4.496

Beauregard, T. A., & Henry, L. C. (2009). Making the link between work-life practices and organizational performance. *Human Resource Management Review*, *19*, 9–22. doi:10.1016/j.hrmr.2008.09.001

Beehr, T. A, & Newman, J. E. (1978). *personnel Psychology*, *31*, 31, 665–699. doi: 10.1111/j.1744-6570.1978.tb02118.x

Bellarosa, C., & Chen, P. Y. (1997). The effectiveness and practicality of occupational stress management interventions: A survey of subject matter expert opinions. *Journal of Occupational Psychological Health Psychology*, *2*, 247–262. doi:10.1037/1076-8998.2.3.247

Bianchi, S, Robinson, J, & Milkie, M. (2006). *The changing rhythms of american family life*. Russell Sage Foundation: New York.

Bloom, N., Liang, J., Roberts, J., & Ying, Z. J. (2014). Does working from home work? Evidence from a Chinese experiment. *The Quarterly Journal of Economics*, 165–208. doi:10.3386/w18871

*Bond, F. W., & Bunce, D. (2000). Mediators of change in emotion-focused and problem-focused worksite stress management interventions. *Journal of Occupational Psychological Health Psychology*, *5*, 156–163. doi:10.1037/1076-8998.5.1.156

*Brinkborg, H., Michanek, J., Hesser, H., & Berglund, G. (2011). Acceptance and commitment therapy for the treatment of stress among social workers: A randomized controlled trial. *Behavior, Research and Therapy*, *49*, 389–398. doi:10.1016/j.brat.2011.03.009

Brunetto, Y., Teo, S. T. T., Shacklock, K., & Farr-Wharton, R. (2012). Emotional intelligence, job satisfaction, well-being and engagement: Explaining organizational commitment and turnover intentions in policing. *Human Resource Management Journal*, *22*, 428–441. doi:10.1111/j.1748-8583.2012.00198.x

Campbell, J. P., McHenry, J. J., & Wise, L. L. (1990). Modeling job performance in a population of jobs. *Personnel Psychology*, *43*, 313–575. doi:10.1111/j.1744-6570.1990.tb01561.x

*Cecil, M. A., & Forman, S. G. (1990). Effects of stress inoculation training and coworker support groups on teachers' stress. *Journal of School Psychology*, *28*, 105–118. doi:10.1016/0022-4405(90)90002-O

*Chow, I. H.-S., & Chew, I. K.-H. (2006). The effect of alternative work schedules on employee performance. *International Journal of Employment Studies*. *14*, 105–130. Retrieved from http://web.b.ebscohost.com/

Cochran, W. (1954). Some methods for strengthening the common $\chi 2$ tests. *Biometrics*, *10*, 417-451. doi: 10.2307/3001616

Cooper, C. L., & Cartwright, S. (1997). An intervention strategy for workplace stress. *Journal of Psychosomatic Research*, *43*, 7–16. doi:10.1016/S0022-3999(96)00392-3

Costa, G., Akerstedt, T., Nachreiner, F., Baltieri, F., Carvalhais, J., Folkhard, S., … Silverio, J. (2004). Flexible working hours, psychological health and wellbeing in Europe: Some considerations from a SALTSA project. *Chronobiology International*, *21*, 831–844. doi:10.1081/CBI-200035935

Costa, G., Sartori, S., & Akerstedt, T. (2006). Influence of flexibility and variability of working hours on psychological health and well-being. *Chronobiology International*, *23*, 1125–1137. doi:10.1080/07420520601087491

Darr, W., & Johns, G. (2008). Work strain, psychological health and absenteeism: A meta-analysis. *Journal of Occupational Psychological Health Psychology*, *13*, 293–318. doi:10.1037/a0012639

*de Jong, G. M., & Emmelkamp, P. M. G. (2000). Implementing a stress management training: Comparative trainer effectiveness. *Journal of Occupational Psychological Health Psychology*, *5*, 309–320. doi:10.1037/1076-8998.5.2.309

de Menezes, L. M., & Kelliher, C. (2011). Flexible working and performance: A systematic review of the evidence for a business case. *International Journal of Management Reviews*, *12*, 452–474. doi:10.1111/j.1468-2370.2011.00301.x

DeLongis, A., Folkman, S., & Lazarus, R. S. (1988). The impact of daily stress on psychological health and mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology*, *54*, 486–495. doi:10.1037/0022-3514.54.3.486

*Dubrin, A. J. (1991). Comparison of the job satisfaction and productivity of telecommuters versus in-house employees: A research note on work in progress. *Psychological Reports*, *68*, 1223–1234. doi:10.2466/pr0.1991.68.3c.1223

*Dunham, R. B., Pierce, J. L., & Castanada, M. B. (1987). Alternative work schedules: Two field quasi-experiments. *Personnel Psychology*, *40*, 215–242. doi:10.1111/j.1744-6570.1987.tb00602.x

Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal*, *315*, 629–634. doi:10.1136/bmj.315.7109.629

*Flaxman, P. E., & Bond, F. W. (2010). Worksite stress management training: Moderated effects and clinical significance. *Journal of Occupational Psychological Health Psychology*, *15*, 347–358. doi:10.1037/a0020522

*Fonner, K. L., & Roloff, M. E. (2010). Why teleworkers are more satisfied with their jobs than are office-based workers: When less contact is beneficial. *Journal of Applied Communication Research*, *38*, 336–361. doi:10.1080/00909882.2010.513998

*Forman, S. G. (1982). Stress management for teachers: A cognitive-behavioural program. *Journal of School Psychology*, *20*, 180–187. doi:10.1016/0022-4405(82)90047-4

Gajendran, R. S., & Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology*, *92*, 1524–1541. doi:10.1037/0021-9010.92.6.1524

Gajendran, R. S., Harrison, D. A. & Delaney-Klinger, K. (2014). Are Telecommuters Remotely Good Citizens? Unpacking Telecommuting's Effects on Performance Via I-Deals and Job Resources. *Personnel Psychology*, *68*, 353–393. doi:10.1111/peps.12082

*Ganster, D. C., Mayes, B. T., Sime, W. E., & Tharp, G. D. (1982). Managing organizational stress: A field experiment. *Journal of Applied Psychology*, *67*, 533–542. doi:10.1037/0021-9010.67.5.533

Gilboa, S., Shirom, A., Fried, Y., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology*, *61*, 227–271. doi:10.1111/j.1744-6570.2008.00113.x

*Golden, T. D. (2006). The role of relationship in understanding telecommuter satisfaction. *Journal of Organizational Behavior*, *27*, 319–340. doi:10.1002/job.369

*Golden, T. D., & Veiga, J. F. (2005). The impact of extent of telecommuting on job satisfaction: Resolving inconsistent findings. *Journal of Management*, *31*, 301–318. doi:10.1177/0149206304271768

Gosselin, E., Lemyre, L., & Wayne, C. (2013). Presenteeism and absenteeism: Differentiated understanding of related phenomena. *Journal of Occupational Psychological Health Psychology*, *18*, 75–86. doi:10.1037/a0030932

Grandey, A. A., & Cropanzano, R. (1999). The conservation of resources model applied to work–family conflict and strain. *Journal of Vocational Behavior*, *54*, 350–370. doi:10.1006/jvbe.1998.1666

Green, K. A., López, M., Wysocki, A., & Kepner, K. (2012). *Diversity in the workplace: Benefits, challenges, and the required managerial tools*. FL (Gainesville): University of Florida.

Guo, S., & Fraser, W. M. (2014). *Propensity score analysis: Statistical methods and applications* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Hackman, J. R., & Oldman, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, *16*, 250–279. doi:10.1016/0030-5073(76)90016-7

Hall, A. T., Royle, M. T., Brymer, R. W., Perrewé, P. L., Ferris, G. R., & Hochwarter, W. A. (2006). Relationships between felt accountability as a stressor and strain reactions: The neutralizing role of autonomy across two studies. *Journal of Occupational Psychological Health Psychology*, *11*, 87–99. doi:10.1037/1076-8998.11.1.87

*Halpern, D. F. (2005). How time-flexible work policies can reduce stress, improve psychological health, and save money. *Stress and Psychological Health*, *21*, 157–168. doi:10.1002/smi.1049

Harrison, D. A., & Price, K. H. (2003). Context and consistency in absenteeism: Studying social and dispositional influences across multiple settings. *Human Resource Management Review*, *13*, 203–225. doi:10.1016/S1053-4822(03)00013-5

*Hartfiel, N., Havenhand, J., Khalsa, S. B., Clarke, G., & Krayer, A. (2011). The effectiveness of yoga for the improvement of well-being and resilience to stress in the workplace. *Scandinavian Journal of Work, Environment, and Psychological Health*, *37*, 70–76. Retrieved from http://www.jstor.org/stable/40967889

*Hartman, R. I., Stoner, C. R., & Arora, R. (1991). An investigation of selected variables affecting telecommuting productivity and satisfaction. *Journal of Business and Psychology*, *6*, 207–225. doi:10.1007/BF01126709

Heckhausen, J, & Brim, O. G. (1997). perceived problems for self and others: self-protection by social downgrading throughout adulthood. *Psychology And Aging*, *12*(610-619), (1997).Perceived. doi: 10.1037/0882-7974.12.4.610

Hedges, L. V. (1981). Distribution theory for Glass estimator of effect size and related estimators. *Journal of Educational Statistics*, *6*, 107–128. doi:10.3102/10769986006002107

Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. Orlando, FL: Academic Press.

Heijstra, T. M., & Rafnsdottir, G. L. (2010). The Internet and academics' workload and work–family balance. *Internet and Higher Education*, *13*, 158–163. doi:10.1016/j.iheduc.2010.03.004

*Higgins, C. N. (1986). Occupational stress and working women: The effectiveness of two stress reduction programs. *Journal of Vocational Behavior*, *29*, 66–78. doi:10.1016/0001-8791(86)90030-8

Higgins, J. P., & Green, S. (Eds.). (2011). (*Vol. 4*). John Wiley & Sons. Cochrane handbook for systematic reviews of interventions

*Hill, E. J., Ferris, M., & Märtinson, V. (2003). Does it matter where you work? A comparison of how three work venues (traditional office, virtual office, and home office) influence aspects of work and personal/family life. *Journal of Vocational Behavior*, *63*, 220–241. doi:10.1016/S0001-8791(03)00042-3

*Hill, E. J., Miller, B. C., Weiner, S. P., & Colihan, J. (1998). Influences of the virtual office on aspects of work and work/life balance. *Personnel Psychology*, *51*, 667–683. doi:10.1111/j.1744-6570.1998.tb00256.x

Hill, J. E., Grzywacz, J. G., Allen, S., Blanchard, V. L., Matz-Costa, C., Shulkin, S., & Pitt-Catsouphes, M. (2008). Defining and conceptualizing workplace flexibility. *Community, Work & Family*, *11*, 149–163. doi:10.1080/13668800802024678

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*, 513–524. doi:10.1037/0003-066X.44.3.513

Hobfoll, S. E., & Lilly, R. S. (1993). Resource conservation as a strategy for community psychology. *Journal of Community Psychology*, *21*, 128–148. doi:10.1002/1520-6629(199304)21:2<128::AID-JCOP2290210206>3.0.CO;2-5

Holm, S. (1979). A simple sequentially rejective multiple test procedure. *Scandinavian Journal of Statistics*. *6*, 65–70. Retrieved from http://www.jstor.org/stable/4615733

*Hornung, S., & Glaser, J. (2009). Home-based telecommuting and quality of life: Further evidence on an employee-oriented human resource practice. *Psychological Reports*, *104*, 395–402. doi:10.2466/PR0.104.2.395-402

*Hülsheger, U. R., Alberts, H. J. E., Feinholdt, A., & Lang, J. W. B. (2013). Benefits of mindfulness at work: The role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of Applied Psychology*, *98*, 310–325. doi:10.1037/a0031313

Igbaria, M., & Guimaraes, T. (1999). Exploring differences in employee turnover intentions and its determinants among telecommuters and non-telecommuters. *Journal of Management Information System*, *16*, 147–164. doi:10.1080/07421222.1999.11518237

Ivancevich, J. M., Matteson, M. T., Freedman, S. M., & Phillips, J. S. (1990). Worksite stress management interventions. *American Psychologist*, *45*, 252–261. doi:10.1037/0003-066X.45.2.252

Jamal, M. (1985). Relationship of job stress to job performance: A study of managers and blue-collar workers. *Human Relations*, *38*, 409–424. doi:10.1177/001872678503800502

Jones, G. (2002). Absenteeism and mental health. In J. Thomas (Eds.), *Handbook of mental health in the workplace* (pp. 437–456). Thousand Oaks (California): Sage Publikation

Jones, G. (2001). The psychology of lateness, absenteeism, and turnover. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work & organizational psychology* (pp. 232–252). London: Sage Publication

Kanfer, R, & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *Academy Of Management Review*, *29*(440-458, 3), 440-458. doi: 10.5465/AMR.2004.13670969

*Kaspereen, D. (2012). Relaxation intervention for stress reduction among teachers and staff. *International Journal of Stress Management*, *19*, 238–250. doi:10.1037/a0029195

*Kattenbach, R., Demerouti, E., & Nachreiner, F. (2010). Flexible working times: Effects on employees' exhaustion, work-nonwork conflict and job performance. *Career Development International*, *15*, 279–295. doi:10.1108/13620431011053749

Kelly, E. L, Moen, P, & Tranby, E. (2011). Changing workplaces to reduce work-family conflict: schedule control in a white-collar organization. *American Sociological Review*, *76*, 265-290. doi:10.1016/j.ssresearch.2004.04.006

Keyes, C. L. M. (1998). Social well-being. *Social Psychology Quarterly*, *61*, 121–140. Retrieved from http://www.jstor.org/stable/2787065

*Kim, J. S., & Campagna, A. F. (1981). Effects of flextime on employee attendance and performance: A field experiment. *Academy of Management Journal*, *24*, 729–741. doi:10.2307/256172

Kossek, E., & Lee, M. (2005). Alfred P. Sloan Foundation study technical report. *Making flexibility work: What managers have learned about implementing reduced-load work*. Michigan: Michigan State University and McGill University.

Lamontagne, A. D., Keegel, T., Louie, A. M., Ostry, A., & Landsbergis, P. A. (2007). A systematic review of the job-stress intervention evaluation literature, 1990-2005. *International Journal of Occupational and Environmental Psychological Health*, *13*, 268–280. doi:10.1179/oeh.2007.13.3.268

Lee, R., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, *81*, 123–133. doi:10.1037/0021-9010.81.2.123

*Lee, S., & Crockett, M. S. (1994). Effects of assertiveness training on levels of stress and assertiveness experienced by nurses in Taiwan, Republic of China. *Issues in Mental Psychological Health Nursing*, *15*, 419–432. doi:10.3109/01612849409006918

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.

*Lloyd, J., Bond, F. W., & Flaxman, P. E. (2013). The value of psychological flexibility: Examining psychological mechanisms underpinning a cognitive behavioural therapy intervention for burnout. *Work & Stress: An International Journal of Work, Psychological Health & Organisations*, *27*, 181–199. doi:10.1080/02678373.2013.782157

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Practice-Hall.

*Masuda, A. D., Poelmans, S. A. Y., Allen, T. D., Spector, P. E., Lapierre, L. M., Cooper, C. L., … Moreno-Velazquez, I. (2012). Flexible work arrangements availability and their relationship with work-to-family conflict, job satisfaction and turnover intentions: A comparison of three country clusters. *Applied Psychology: An International Review*, *61*, 1–29. doi:10.1111/j.1464-0597.2011.00453.x

*Mazaheri, M. A., Darani, F. M., & Eslami, A. A. (2012). Effect of a brief stress management intervention on work-related stress in employees of Isfahan Steel Company, Iran. *Journal of Research in Medical Science. 17*, 87–92. Retrieved from http://www.jrms.mui.ac.ir/index.php/jrms/article/view/7689

Morris, S. B. (2008). Estimating effect sizes from pretest-posttest-control group designs. *Organizational Research Methods*, *11*, 364–386. doi:10.1177/1094428106291059

Murphy, L. R., & Sauter, S. L. (2003). The USA perspective: Current issues and trends in the management of work stress. *Australian Psychologist*, *38*, 151–157. doi:10.1080/00050060310001707157

*Murphy, L. R., & Sorenson, S. (1988). Employee behaviors before and after stress management. *Journal of Organizational Behavior*, *9*, 173–182. doi:10.1002/job.4030090208

*Narayanan, V. K., & Nath, R. (1982). A field test of some attitudinal and behavioral consequences of flextime. *Journal of Applied Psychology*, *67*, 214–218. doi:10.1037/0021-9010.67.2.214

Orwin, R. G., & Vevea, J. L. (2009). Evaluating coding decisions. In H. Cooper, L. Hedges, & J. Valentine (Eds.), *The handbook of research synthesis and meta-analysis* (pp. 177–203). New York: The Russell Sage Foundation.

*Petchesawanga, P., & Duchon, D. (2012). Workplace spirituality, mediation, and work performance. *Journal of Management, Spirituality and Religion*, *9*, 189–208. doi:10.1080/14766086.2012.688623

*Peters, K. K., & Carlson, J. G. (1999). Worksite stress management with high-risk maintenance workers: A controlled study. *International Journal of Stress Management*, *6*, 21–44. doi:10.1023/A:1021958219737

Pierce, J. L., & Newstrom, J. W. (1980). Towards a conceptual clarification of employee responses to flexible working hours: A work adjustment approach. *Journal of Management*, *6*, 117–134. doi:10.1177/014920638000600202

R Core Team. (2013). *R: A language and environment for statistical computing*. Wien: R Foundation for Statistical Computing.

*Raghuram, S., & Wiesenfeld, B. (2004). Work-nonwork conflict and job stress among virtual workers. *Human Resource Management*, *43*, 259–277. doi:10.1002/hrm.20019

Raudenbush, S. W. (2009). Analyzing effect sizes: Random-effects models. In H. Cooper, L. Hedges, & J. Valentine (Eds.), *The handbook of research synthesis and meta-analysis* (pp. 295–315). New York: The Russell Sage Foundation.

(References marked with an asterisk indicate studies included in the current meta-analysis.)

Richardson, K. M., & Rothstein, H. R. (2008). Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Psychological Health Psychology*, *13*, 69–93. doi:10.1037/1076-8998.13.1.69

*Roger, D., & Hudson, C. (1995). The role of emotion control and emotional rumination in stress management training. *International Journal of Stress Management*, *2*, 119–132. doi:10.1007/BF01740298

Saltzstein, A. L., Ting, Y., & Saltzstein, G. H. (2001). Work-family balance and job satisfaction: The impact of family-friendly policies on attitudes of federal government employees. *Public Administration Review*, *61*, 452–467. doi:10.1111/0033-3352.00049

*Sardeshmukh, S. R., Sharma, D., & Golden, T. D. (2012). Impact of telework on exhaustion and job engagement: A job demands and job resources model. *New Technology, Work, and Employment*, *27*, 193–207. doi:10.1111/j.1468-005X.2012.00284.x

Scandura, T, & Lankau, M. (1997). *Relationships Of Gender, Family Responsibility And Flexible Work Hours To Organizational Commitment And Job Satisfaction, Journal Of Organizational Behavior, (4) (4) 18*, 377-391. doi:10.1002/(SICI)1099-1379(199707)18:4<377::AID-JOB807>3.0.CO;2-1

Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior*, *30*, 893–917. doi:10.1002/job.595

Schmidt, F. L., & Hunter, J. E. (2015). *Methods of meta-analysis* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Schmidt, F. L., Huy, L., & Oh, I.-S. (2009). Correcting for the distorting effects of study artifacts in meta-analysis. In H. Cooper, L. Hedges, & J. Valentine (Eds.), *The handbook of research synthesis and meta-analysis* (pp. 317–333). New York: The Russell Sage Foundation.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin.

Shamir, B., & Salomon, I. (1985). Work-at-home and the quality of working life. *Academy of Management Review*, *10*, 455–464. doi:10.5465/AMR.1985.4278957

*Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-based stress reduction for psychological health care professionals: Results from a randomized trial. *International Journal of Stress Management*, *12*, 164–176. doi:10.1037/1072-5245.12.2.164

*Siu, O. L., Cooper, C. L., & Phillips, D. R. (2013). Intervention studies on enhancing work well-being, reducing burnout, and improving recovery

experiences among Hong Kong psychological health care workers and teachers. *International Journal of Stress Management*. no Pagination Specified. doi:10.1037/a0033291

Slaski, M., & Cartwright, S. (2003). Emotional intelligence training and its implications for stress, psychological health and performance. *Stress and Psychological Health*, *19*, 233–239. doi:10.1002/smi.979

Smith, M. R., Rasmussen, J. L., Mills, M. J., Wefald, A. J., & Downey, R. G. (2012). Stress and performance: Do service orientation and emotional energy moderate the relationship? *Journal of Occupational Psychological Health Psychology*, *17*, 116–128. doi:10.1037/a0026064

*Stavrou, E. T. (2005). Flexible work bundles and organizational competitiveness: A cross-national study of the European work context. *Journal of Organizational Behavior*, *26*, 923–947. doi:10.1002/job.356

Steverink, N, & Lindenberg, S. (2006). Which social needs are important for subjective well-being? what happens to them with aging? psychology and aging,21. *21*, 281-290. doi: http://dx.doi.org/10.1037/0882-7974.21.2.281

Sullivan, S. E., & Bhagat, R. S. (1992). Organizational stress, job satisfaction and job performance: Where do we go from here? *Journal of Management*, *2*, 353–374. doi:10.1177/014920639201800207

Sutton, A. J. (2009). Publication bias. In H. Cooper, L. Hedges, & J. Valentine (Eds.), *The handbook of research synthesis and meta-analysis* (pp. 295–315). New York: The Russell Sage Foundation.

ten Brummelhuis, L. L., Johns, G., Lyons, B. J., & ter Hoeven, C. L. (2016). Why and when do employees imitate the absenteeism of co-workers. *Organizational Behavior and Human Decision Processes*, *134*, 16–30. doi:10.1016/j.obhdp.2016.04.001

*ten Brummelhuis, L. L., & van der Lippe, T. (2010). Effective work-life balance support for various household structures. *Human Resource Management*, *49*, 173–193. doi:10.1002/hrm.20340

Thomas, L. T., & Ganster, D. C. (1995). Impact of family-supportive work variables on work-family conflict and strain: A control perspective. *Journal of Applied Psychology*, *80*, 6–15. doi:10.1037/0021-9010.80.1.6

Valentine, J. C., & Cooper, H. (2008). A systematic and transparent approach for assessing the methodological quality of intervention effectiveness research: The study design and implementation assessment device (Study DIAD). *Psychological Methods*, *13*, 130–149. doi:10.1037/1082-989X.13.2.130

van der Hek, H., & Plomp, H. N. (1997). Occupational stress management programmes: A practical overview of published effect studies. *Occupational Medica*, *47*, 133–141. doi:10.1093/occmed/47.3.133

van der Klink, J. J. L., Blonk, R. W. B., Schene, A. H., & van Dijk, F. J. H. (2001). The benefits of interventions for work-related stress. *American Journal of Public Psychological Health*, *91*, 270–276. doi:10.2105/AJPH.91.2.270

Viechtbauer, W. (2005). Bias and efficiency of meta-analytic variance estimators in the random-effects model. *Journal Of Educational And Behavioral Statistics*, *30*, 261-293. doi:10.3102/10769986030003261

Viechtbauer, W. (2007). Confidence intervals for the amount of heterogeneity in meta-analysis. *Statistics In medicine*, *26*, 37–52. doi: 10.1002/sim.2514

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software*, *36*, 1–48. doi:10.18637/jss.v036.i03

*Virick, M., DaSilva, N., & Arrington, K. (2010). Moderators of the curvilinear relation between extent of telecommuting and job and life satisfaction: The role of performance outcome orientation and worker type. *Human Relations*, *63*, 137–154. doi:10.1177/0018726709349198

Wang, H. C., He, J., & Mahoney, J. T. (2009). Firm-specific knowledge resources and competitive advantage: The roles of economic- and relationship-based employee governance mechanisms. *Strategic Management Journal*, *30*, 265–1285. doi:10.1002/smj.787

*Wolever, R. Q., Bobinet, K. J., McCabe, K., Mackenzie, E. R., Fekete, E., & Kusnick, C. A. (2012). Effective and viable mind-body stress reduction in the workplace: A randomized controlled trial. *Journal of Occupational Psychological Health Psychology*, *17*, 246–258. doi:10.1037/a0027278

Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: A resource-based perspective. *International Journal of Human Resource Management*, *5*, 301–326. doi:10.1080/09585199400000020

*Yung, P. M. B., Fung, M. Y., Chan, T. M. F., & Lau, B. W. K. (2004). Relaxation training methods for nurse managers in Hong Kong: A controlled study. *International Journal of Mental Psychological Health Nursing*, *13*, 255–261. doi:10.1111/j.1445-8330.2004.00342.x

Appendix

Table A1. Mixed effects model results of the average effect size on the basis of study quality.

							Heterogeneity test		
Variables	Moderator	*k*	*g*	*SE*	*z*-test	*p*-value[a]	Q_M (*df*)	Q_E (*df*)	I^2
Flexitime	Intercept	12	.56	.33	1.74	.08 (1.00)	1.11 (1)	228.61 (10) ***	96.86%
	Quality		−.58	.55	−1.05	.29 (1.00)			
Telecommuting	Intercept	16	.22	.30	.73	.46 (1.00)	.09 (1)	85.82 (14) ***	90.29%
	Quality		−.16	.53	−.30	.77 (1.00)			
Cognitive–behavioural skills training	Intercept	–	–	–	–	–	–	–	
	Quality	–	–	–	–	(1.00)			
Relaxations techniques	Intercept	9	.17	1.18	.14	.89 (1.00)	.16 (1)	31.67 (7) ***	73.66%
	Quality		.59	1.48	.40	.69 (1.00)			
Multimodal stress management training	Intercept	10	2.64	.88	3.00	.003 (.04)	7.68 (1) **	9.47 (8)	18.87%
	Quality		−3.14	1.13	2.77	.006 (.08)			

[a]Number in parentheses represents *p*-value after Bonferroni–Holm correction; *k*: number of primary studies; g: Hedges' g; *SE*: standard error; Q_M: test of moderators; Q_E: tests of residual heterogeneity.

*$p < .05$.

** $p < .01$.

*** $p < .001$.

Table A2. Mixed effects model results of the average effect size of the duration of the intervention.

								Heterogeneity test		
Variables	Moderator	*k*	*N*	*g*	*SE*	*z*-test	*p*-value[a]	Q_M (*df*)	Q_E (*df*)	I^2
Flexitime	Intercept	3		.68	.84	.80	.42 (>.999)	.44 (1)	.13 (1)	0%
	Duration			−.04	.05	−.67	.50 (>.999)			
Telecommuting	Intercept	6		.22	.59	.37	.71 (>.999)	.08 (1)	44.90 (4) ***	91.72%
	Duration			−.003	.01	−.27	.78 (>.999)			
Cognitive–behavioural skills training	Intercept	–	–	–	–	–		–	–	
	Duration	–	–	–	–					
Relaxations techniques	Intercept	8		.68	.35	1.95	(.52) .05 (.66)	<.001 (1)	27.96 (6) ***	74.28%
	Duration			−.002	.20	−.01	.99 (>.999)			
Multimodal stress management training	Intercept	10		.23	.24	.96	.34 (>.999)	.004 (1)	19.47 (8) *	59.34%
	Duration			−.01	.13	−.10	.95			

[a] Number in parentheses represents *p*-value after Bonferroni–Holm correction; *k*: number of primary studies; *g*: Hedges' *g*; *SE*: standard error; Q_M: test of moderators; Q_E: tests of residual heterogeneity.
*$p < .05$.
** $p < .01$.
** $p < .001$.

Table A3. Mixed effects model results of the average effect size of the intensity of the intervention.

							Heterogeneity test		
Variables	Moderator	*k*	*g*	*SE*	*z*-test	*p*-value[a]	Q_M (*df*)	Q_E (*df*)	I^2
Flextime	Low intensity	1	-	-	-	-	-	-	-
	High intensity	2	-	-	-	-			
Telecommuting	Low intensity	3	0.11	0.23	0.49	0.63 (>.999)	.10 (1)	57.37 (5) ***	93.53%
	High intensity	4	0.07	0.31	0.23	0.82 (>.999)			
Cognitive–behavioural skills training	Low intensity	0	-	-	-	-	-	-	-
	High intensity	5	-	-	-	-			
Relaxations techniques	Low intensity	7	-	-	-	-	-	-	-
	High intensity	2	-	-	-	-			
Multimodal stress management training	Low intensity	3	0.48	0.21	2.31	0.02	2.15 (1)	14.03 (8)	44.24%
	High intensity	7	−.35	0.24	−1.47	0.14 (>.999)\			

[a] Number in parentheses represents *p*-value after Bonferroni–Holm correction; *k*: number of primary studies; *g*: Hedges' *g*; *SE*: standard error; Q_M: test of moderators; Q_E: tests of residual heterogeneity.
*$p < .05$.
** $p < .01$.
*** $p < .001$.

Table A4. Mixed effects model results of the average effect size of mean age.

							Heterogeneity test		
Variable	Moderator	*k*	*g*	*SE*	*z*-test	*p*-value[a]	Q_M (*df*)	Q_E (*df*)	I^2
Flextime	Intercept	7	−.37	1.58	−.23	.41 (>.999)	.15 (1)	388.60 (5) ***	97.91
	Mean age		.02	.04	.39	.65 (>.999)			
Telecommuting	Intercept	12	.10	.90	.11	.54 (>.999)	.001 (1)	76.28 (10) ***	91.88
	Mean age		.001	.02	.03	.51 (>.999)			
Cognitive–behavioural skills training	Intercept	3	−3.45	1.98	−1.74	.14 (>.999)	3.65 (1)	0	0
	Mean age		.09	.05	1.91	.97 (>.999)			
Relaxations techniques	Intercept	3	−13.99	4.47	−3.13	.002 (.05)	11.58 (1) **	0	0
	Mean age		.37	.11	3.40	.99 (>.999)			
Multimodal stress management training	Intercept	6	.22	1.57	.14	.56 (>.999)	.002 (1)	16.76 (4)	76.13
	Mean age		.002	.04	.05	.52 (>.999)			

[a]Number in parentheses represents *p*-value after Bonferroni–Holm correction; *k*: number of primary studies; *g*: effect size Hedges' *g*; *SE*: standard error; Q_M: test of moderators; Q_E: test of residual heterogeneity.
*$p < .05$.
** $p < .01$.
*** $p < .001$.

Table A5. Mixed effects model results of the average effect size on the basis of gender.

							Heterogeneity test		
Variables	Moderator	k	g	*SE*	z-test	*p*-value[a]	Q_M (*df*)	Q_E (*df*)	I^2
Flextime	Intercept	3	3.96	1.96	2.01	.04 (.66)	3.46 (1)	73.34 (1) ***	98.64
	Female		−.07	.04	−1.86	.06 (.82)			
Telecommuting	Intercept	9	.33	.32	1.06	.29 (1.00)	.51 (1)	64.26 (7) ***	90.61
	Female		−.01	.01	−.72	.47 (1.00)			
Cognitive–behavioural skills training	Intercept	4	−1.20	.65	−1.83	.07 (.81)	6.39 (1)	1.30 (2)	0
	Female		.02	.01	22.53	.02 (.18)			
Relaxations techniques	Intercept	7	2.17	2.11	1.03	.30 (1.00)	.51 (1)	26.98 (5) ***	77.31
	Female		−.02	.02	−.71	.48 (1.00)			
Multimodal stress management training	Intercept	9	−.07	.17	−.39	.70 (1.00)	1.28 (1)	2.46 (7)	0
	Female		.003	.003	1.13	.26 (1.00)			

[a] Number in parentheses represents *p*-value after Bonferroni–Holm correction; *k*: number of primary studies; *g*: Hedges' *g*; *SE*: standard error; Q_M: test of moderators; Q_E: tests of residual heterogeneity.
*$p < .05$.
** $p < .01$.
*** $p < .001$.